

Digital Technology

Class Eight



NATIONAL CURRICULUM AND TEXTBOOK BOARD, BANGLADESH



মাননীয় প্রধানমন্ত্রী শেখ হাসিনা টিকাদান কর্মসূচির সফল
বাস্তবায়নের জন্য ‘ভ্যাকসিন হিরো’ পুরস্কার গ্রহণ করছেন।

বাংলাদেশের টিকাদান কর্মসূচিতে সফলতার স্বীকৃতিস্বরূপ প্রধানমন্ত্রী শেখ হাসিনাকে ‘ভ্যাকসিন হিরো’ পুরস্কার দিয়েছে গ্লোবাল এ্যালায়েন্স ফর ভ্যাক্সিনেশন এন্ড ইমুনাইজেশন (GAVI)। জাতিসংঘ সদর দপ্তরে ‘ইমুনাইজেশনের ক্ষেত্রে বাংলাদেশের রাজনৈতিক নেতৃত্বের স্বীকৃতি’ শীর্ষক অনুষ্ঠানে প্রধানমন্ত্রীর হাতে এ পুরস্কার তুলে দেন GAVI এর বোর্ড সভাপতি ড. এনগোজি অকোনজো ইবিলা এবং সংস্থাটির প্রধান নির্বাহী কর্মকর্তা সেথ ফ্রাংকলিন বার্কলে। প্রতিটি শিশুকে টিকাদান কর্মসূচির আওতায় এনে শিশুদের জীবন রক্ষাকারী জরুরি টিকাদান সম্পন্ন করার সুনির্দিষ্ট লক্ষ্যমাত্রা অর্জনই ছিল এ পুরস্কার প্রদানের বিবেচ্য বিষয়।

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Digital Technology

Class Eight

(Experimental Version)

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Preface

In this ever-changing world, the concept of life and livelihood is changing every moment. This process of change has been accelerated due to the advancement of technology. There is no alternative to adapting to this fast changing world as technology is changing rapidly ever than before. In the era of fourth industrial revolution, the advancement of artificial intelligence has brought about drastic changes in our employment and lifestyles that will make the relationship among people more and more intimate. Various employment opportunities will be created in near future which we cannot even predict at this moment. We need to take preparation right now so that we can adapt ourselves to that coming future.

Although a huge economic development has taken place throughout the world, problems like climate change, air pollution, migrations and ethnic violence have become much more intense nowadays. The breakouts of pandemics like COVID 19 have crippled the normal lifestyle and economic growth of the world. Thus, different challenges as well as opportunities, have been added to our daily life.

Standing amid the array of challenges and potentials, sustainable and effective solutions are required to transform our large population into a resource. It entails global citizens with knowledge, skill, values, vision, positive attitude, sensitivity, adaptability, humanism and patriotism. Amidst all these, Bangladesh has graduated into a developing nation from the underdeveloped periphery and is continuously trying to achieve the desired goals in order to become a developed country by 2041. Education is one of the most crucial instruments to attain the goals. Hence, there is no alternative to the transformation of our education system. This transformation calls for developing an effective and updated curriculum.

Developing and updating the curriculum is a routine and important activity of National Curriculum and Textbook Board. The curriculum was last revised in 2012. Since then, more than a decade has elapsed. Therefore, there was a need for curriculum revision and development. With this view, various research and technical studies were conducted under NCTB from 2017 to 2019 to analyze the current state of education and identify the learning needs. Based on the researches and technical studies, a competency-based and seamless curriculum from K–12 has been developed to create a competent generation capable of surviving in the new world situation.

Under the framework of this competency based curriculum, the textbooks have been prepared for all streams (General, Madrasah and Vocational) of learners for Class Eight. The authentic experience-driven contents of this textbook were developed with a view to making learning comprehensible and enjoyable. This will connect the textbooks with various life related phenomenon and events that are constantly taking place around us. It is expected that, through this, learning will be much more insightful and lifelong.

In developing the textbooks, due importance has been given to all – irrespective of gender, ethnicity, religion and caste while the needs of the disadvantaged and special children are taken into special considerations.

I would like to thank all who have put their best efforts in writing, editing, revising, illustrating and publishing the textbook.

If any errors or inconsistencies in this experimental version are found or if there is any suggestions for further improvement of this textbook, you are requested to let us know.

Professor Md. Farhadul Islam
Chairman

National Curriculum and Textbook Board, Bangladesh

Dear student,

Welcome to the new academic year. You have novelty in your studies through the new curriculum. You have learned and understood many new things by going through various experiences in the last academic year. This year is also going to be a year full of fun experiences.

As a student of the new generation, you too have some responsibilities to get the highest benefit from the new curriculum and the new method of learning. You have to complete each experience through some specific tasks. Some tasks you can do with all your friends and some tasks you have to do alone. Besides, you will see that there are some blank spaces in your textbook where you are asked to write. You will fill those blank spaces according to the teacher's instructions and take the help of the teacher if necessary. In the new method of learning, you will be able to achieve the most when you learn to ask questions.

This year you will acquire qualifications in digital technology through 6 fun learning experiences. You will verify information using various media, learn to secure personal information on digital platforms, take advantage of various citizen services and e-commerce, solve small problems through programming, connect to a network using computers, and achieve Asia-Pacific diversity certificate by presenting reports on the use of digital technologies in the Asia-Pacific region.

You already know that learning is no longer confined to textbooks, so we have to look at everything around us with the eyes of inquiry. We have to find answers by asking logical questions. In today's world, the scope of knowledge is so vast, the opportunity to learn is so widespread that we have to expand our scope of knowledge and change our way of learning to survive as global citizens. So, if we limit ourselves to writing answers from memory in the exam paper, we will lag behind.

We can no longer just be users of technology; we have to be innovators as well. So, we have to know how to use technology safely, and also try to create something new through various experiences. All the inventions in the world have been made with the aim of solving problems, so we will try to solve various problems of daily life by applying what we learn in class. By using various technologies including programming, we will become global digital citizens by solving real-life problems.

We wish you all the best in your new journey.



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Learning Experience 1



Information Verification Campaign

We all know that every day we need information to make any decision, big or small, or to solve any problem. However, in the process of gathering this information, sometimes we get wrong information, which can lead to wrong decisions. Now we will know the process of how to make the right decision by verifying the right information.

We will verify any information before believing it and help our family or people around us who are in confusion about the accuracy of information. This will be our 'Information Verification Campaign'.

Session 1: Varieties of Wrong Information



Figure 1.1: Different types of misinformation

As we verify the information to find the correct information, we will understand what process can lead to incorrect information. Earlier we verified the information by knowing some general rules for checking whether any information is correct. Now we will check the accuracy of the information using technology.

Situation 1

In a news article, it has been published that a person named 'a' has been elected chairman of an institution. However, the picture under the news is not of 'a'. This is an example of wrong information but the news authorities did not intentionally make this mistake. This is called unintentional wrong information or misinformation.

Situation 2

A video report shows a 'safe food drive' is being conducted in a restaurant. The presenter of the report says, "The name of this restaurant is 'c'. Here food is prepared using date-expired spices". In fact, the name of the restaurant which prepares adulterated food is 'd'. To defame the restaurant 'c', someone or some organization, downloaded the report on 'd' restaurant. Then they intentionally changed the name of the restaurant to 'c' by voice-over and uploaded the video on the internet. This kind of wrong news that is spread on purpose is called fake information or fake news or disinformation.

Situation 3

Sometimes even accurate news can create misunderstandings. For example, an online version of a media outlet published a news report saying 'Shamim Ahmed, a school teacher from Koronkhain village of Dholghat union, has received a special award'. Seeing this news, some people rushed to Shamim Ahmed's house to congratulate him. But it turned out that there were two teachers named Shamim Ahmed in that village. One lived in ward 3, and the other in ward 4. The people mistakenly went to the house of the teacher from ward 3, but the actual award recipient was Shamim Ahmed from ward 4. When the villagers went to congratulate Shamim Ahmed from ward 3, he explained the situation and then the villagers understood the real incident. Although this news is true, this confusion was created in the minds of the villagers because there were two teachers of the same profession and name in one village. This type of disseminated news is called misinformation or malinformation.

Here we have read examples of three different situations. How can we understand if any of the above information is wrong? Let's write down our ideas on the next page.

Table: 1.1

How I could verify the correct information – (an example given below)

Situation 1
<p>I would check two other news media to verify how the same news was reported in another news media. Then I would understand that the supplied picture is wrong. If we search the Internet with the title or keyword of the title of the news, the same news will come up from a few other news media.</p>
Situation 2
<p>How I could verify the correct information (Let me write my ideas in the box)</p>
Situation 3
<p>How I could verify the correct information (Let me write my ideas in the box)</p>

I will get my answers checked by the teacher.

Collecting information for verification: We will know the verification process by checking some information as examples. But for that to happen, we first have to decide what specific information we will verify. We will ask our acquaintances what information they need to verify. For this, we will use Google Forms. To create a Google Form, we need to login to the Gmail account and go to Google Drive. Let's do the task by following the steps below.

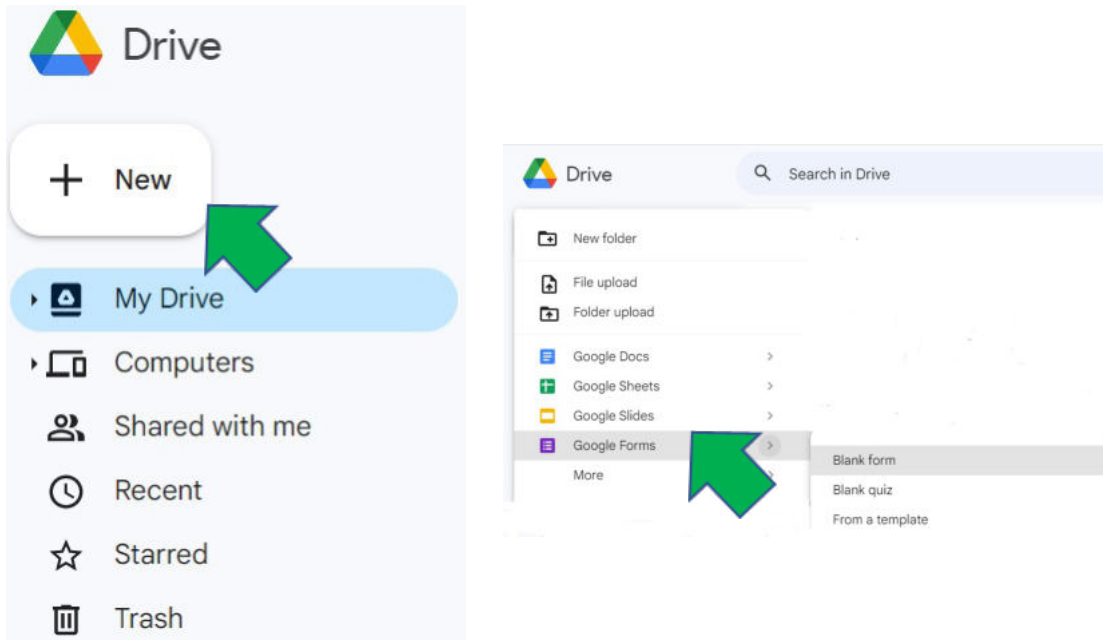


Figure 1.2 and 1.3: If we go to Google Drive and click on 'New', many of Google's features will appear. From there, selecting 'Google Form' will bring some more features to the right. From there, we will select 'Blank Form'

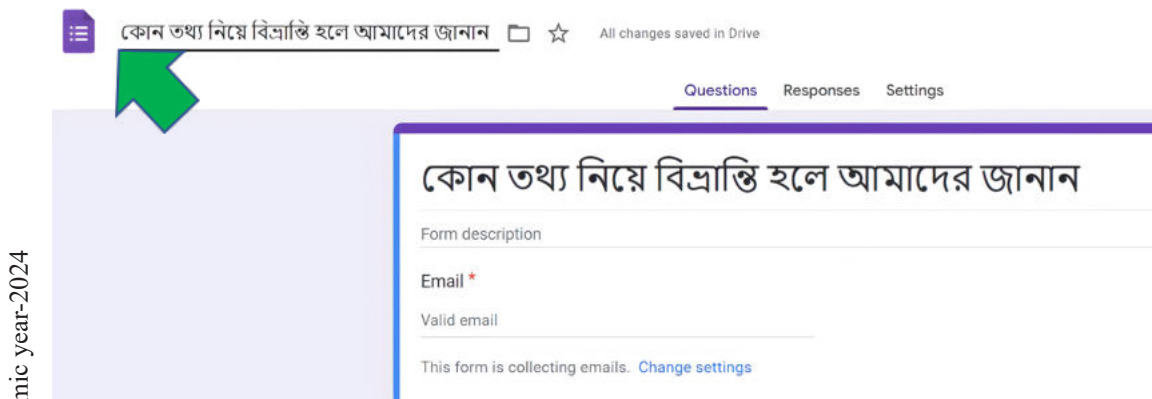


figure 1.4: Give a name to the Google Forms.

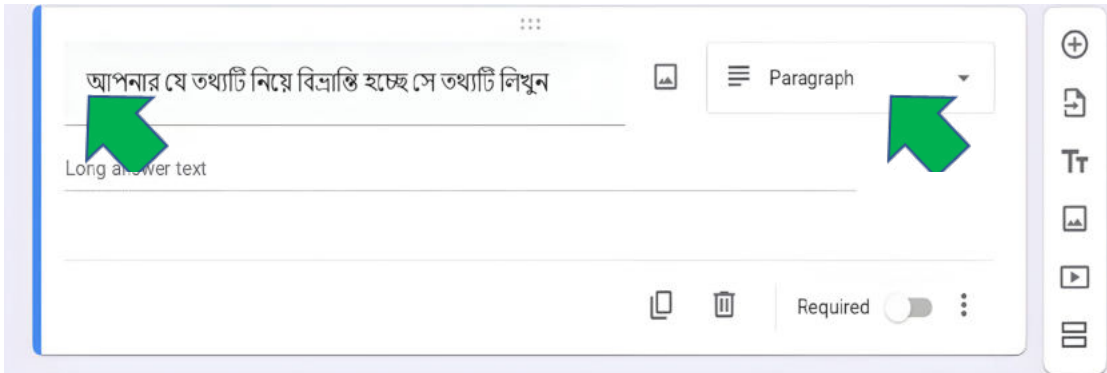


Figure 1.5: We'll write our first question in the area indicated by the green arrow sign. If we click on this ' ▼ ' dropdown menu at the arrow on the left, we will select what kind of answer we expect from our question.

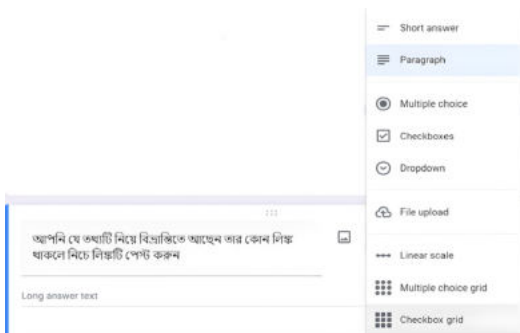
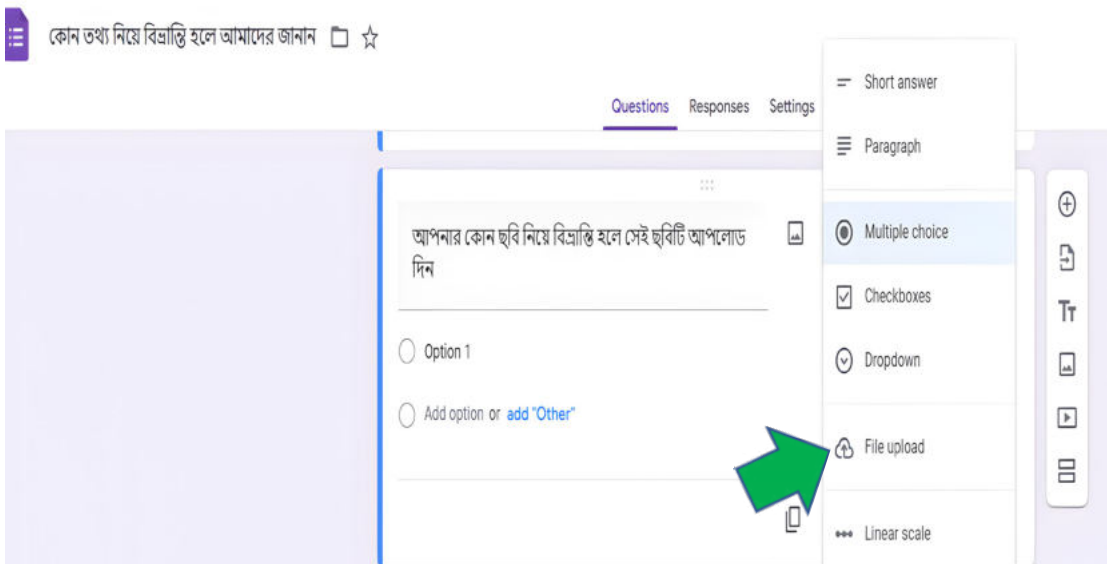


Figure 1.6, 1.7, 1.8: We will create all the questions based on the type of answers we need, such as image, link, or multiple-choice answers.

আপনি কোন মাধ্যমে সংবাদটি পেয়েছেন ?

Multiple choice

সংবাদ পত্রে ×

টেলিভিশনে ×

সংবাদপত্রে বা টেলিভিশনের অনলাইন পেইজে ×

অনলাইন নিউজ পোর্টালে ×

কোন ব্যক্তির কাছ থেকে সরাসরি ×

কোন ব্যক্তির কাছ থেকে অনলাইনের মাধ্যমে ×

অন্যান্য ×

The questions given above are to facilitate our work. We can also write the questions in our own way.

Once the Google Form is ready, we will send the Google Form link to our acquaintances and ask them to submit it with appropriate information within the scheduled time. Here, one to two weeks can be given.

Session-2: Content Variations

We have already sent the Google Form we created to our acquaintances. Some information will come through the 'Form' which we will verify and provide them the results. In the meantime, we will get some time in which we will know for ourselves how to verify any information. Sometimes, when we make a mistake in understanding the purpose of a content, any information can create a different meaning for us. So, let us try to understand that different content have different objectives—

Dissemination of information: The types of content used to disseminate neutral information are newspaper or television reports, investigative reports, breaking news, online news, etc.

Entertainment: Examples of entertainment campaigns aimed at a particular target group can be plays, films, photographs, songs, games, etc.

Creating awareness: Awareness-raising plays, songs, speeches, statements, notifications, etc. are used to make a certain group of people conscious of some issues.

Giving opinions: Letters from newspaper readers, interviews with ordinary people, giving opinions on blogs or vlogs, and personal opinions on social media.

Campaign for business purposes: Advertising on television, newspaper, social media; positive news reports made on a particular product or service; positive statements made by a famous person about a particular product.

The table below has some specific content and their purposes. In the empty cell on the right, I will write the name of one such content I have seen -

Table 1.2

Content	Purpose	Examples of such content
Drama/Fiction	Entertainment	<i>Sangshaptak</i>
Film	Entertainment	Guerilla
Public Service Announcement	Making public awareness	Polio Vaccine
News Report	Disseminate information and make people aware	
Editorial of Newspaper	Disseminate expert opinions rich in information	
Television Talk Show	Talks and debates among specialists and experienced persons on some topics	
Song	Entertainment	
Status, video, and photo from personal accounts on social media	Giving personal opinion	
Blog/Vlog	Exchanging personal opinion and information	
Books on Historical event	Disseminating historical information	

We will collect information considering the purpose of the content. Otherwise, we are likely to get wrong information. For example, We may want to find out ‘What is the current foreign exchange reserve of Bangladesh?’ Then we will definitely go to the Bangladesh Bank website and search or look for a reliable news media. We will not look at any advert, joke, or the social media status of someone who has no idea about it, will we?



Figure.- 1.9: Source of information

Now let us discuss and find out what the wrong source and the right source are in searching for information. Together, we will tell the teacher our opinions and one of us will write those on the board. We all will write the same answer in the table below in our textbook.

Table 1.3

Necessary Information	Probable Wrong Source (Write one or two answers)	Probable Right Source (Write one or two answers)
What is the current foreign exchange reserve of Bangladesh?	1. Drama 2. Personal opinion on social media	1. Bangladesh Bank website 2. Trustworthy news media
What nutritional value does Malabar Spinach have?	1. 2.	1. 2.
Has the government given any scholarships to the students?	1. 2.	1. 2.
Which configuration of computer should I buy to do graphics work?	1. 2.	1. 2.

It is now much easier for us to find the right information and we are also becoming aware that we should not be influenced by wrong information.

Preparing for the next session: We will go home and watch two plays and watch/read two news reports.

- Those of us in the classroom with even ID numbers will write a script for a play on the ‘Harmful Effects of Misinformation’.

- Those of us in the classroom with odd ID numbers will write a news report on the ‘Harmful Effects of Misinformation’.

Session -3: The Use of Technology to Verify Misinformation

One afternoon Soha was playing with her cousin Pushpa. Suddenly, one of their uncles came there and said, ‘You know, a house has suddenly appeared in the middle of the river in Shampur area.’ Soha and Pushpa could not believe such a strange thing. But their uncle is an adult and he certainly would not say the wrong thing. Still, they asked their uncle, ‘From whom did you hear this?’ ‘I have seen it with my own eyes, I mean, I have seen the video on my mobile phone with my own eyes,’ he said. Then he showed a video to Soha and Pushpa on his mobile phone. They were very surprised to see that a house had actually risen from the water of the river. They couldn't believe their eyes. Pushpa said, ‘This is not possible in any way. Let's try to analyze the video with a little more attention’. The uncle said, ‘See as much as you want. I have seen it with my own eyes. How can this be false? And see below, the caption reads that this incident happened in Shampur.’ Saying this, he too began to watch the video carefully with Soha and Pushpa. They saw a few inconsistencies in the video –

1. The house is said to have risen from the river but the house is dry. If the house had actually risen from the river, it would have looked wet.

2. In the video, many people in the surrounding area can be heard shouting before the house appears, but people were not supposed to know earlier that a house would appear. So, it is not normal that a shouting crowd would be there beforehand.

3. Some soil is rising up from the bank of the river.

In the video, Soha and Pushpa found so many inconsistencies that they felt like detectives themselves. They discussed with their uncle and came to the conclusion that this is a scene of landslide caused by riverbank erosion; A house has collapsed into



Figure 1.10: Soha and Pushpa looking for data inconsistencies

the river and someone dishonest has reversed the video from the end to the beginning and uploaded it on the internet. As a result, the last scene is appearing first and the first scene is appearing later. That's why it seems like the house is rising from the river instead of sinking into it.

We also see such false information, pictures, videos from time to time like Soha and Pushpo did. However, it is not always possible to verify and find out the correct information or confirm that the information is wrong the way Soha and Pushpo did. So, today we will practise some methods of how to verify the correct information using technology.

1. Verifying the authenticity of images: We learned earlier how to search with keywords from Google, Bing, or similar search engines. But these search engines can also be searched using pictures. If we suspect that an image is false, we can search with the image on these search engines. Then we can find out when the image was first uploaded to the Internet and what the original picture was.

Well, how is an image turned into a fake image?

- a. By changing the caption or title of the image.
- b. By changing the date of the image.
- c. By changing any text, sign, or address inside the image through a photo editing application and writing something else.
- d. By replacing the face of someone inside the image with the face of another person.

In these situations, if the real image has ever been uploaded to the internet before, we can find the real image through image search. We will practice the process of searching with images in the classroom through the widely used Google search engine –

1. First, we will save the image that seems fake in the computer.
2. We will go to Google homepage.
3. We will select the 'Image' option from the homepage. (Fig. 1.11)
4. Now we will click on Image from the search bar. Then we will select the image from the computer where it is saved. If there is a link to the image, we can also 'paste' it here. (Fig. 1.12)
5. Clicking 'Enter' will bring all the pictures, websites, and information related to that image as suggestions. (Fig. 1.13)
6. Now if we check them, we will get it as the first image or all the related images. By looking at the date, we can understand when and how this image was first uploaded to the internet.

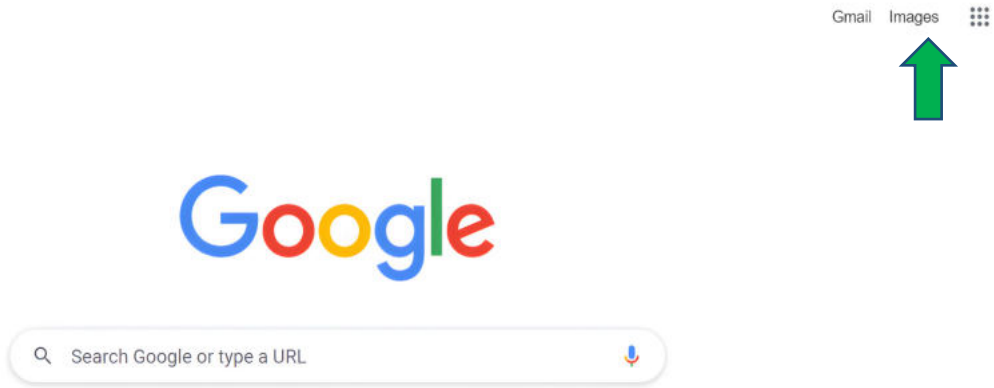


Figure- 1.11

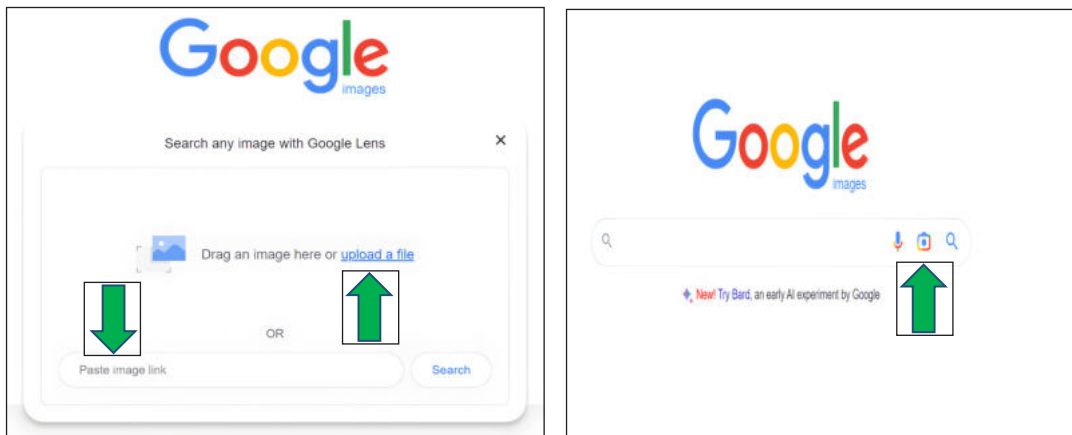


Figure- 1.12

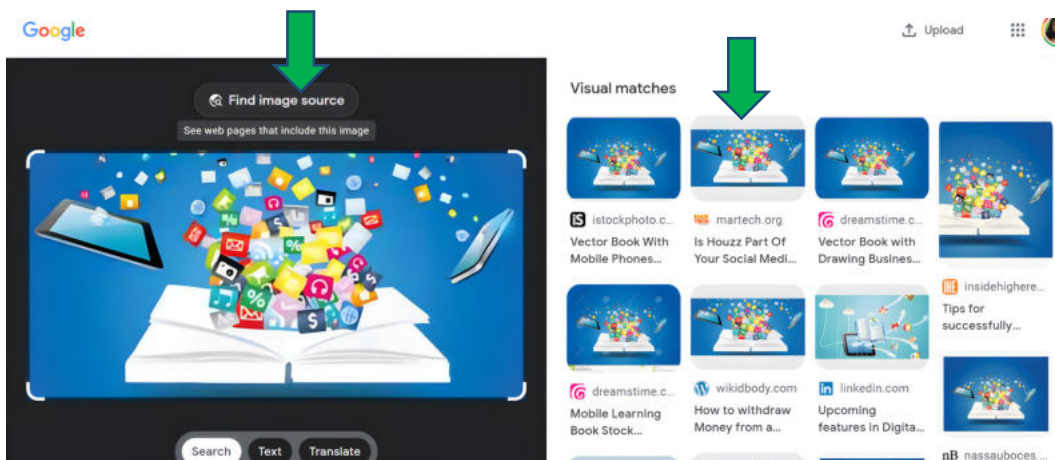


Figure- 1.13

If the image we want to verify is uploaded somewhere on the internet, we can find its original source. If I take a picture with my camera and search for it, I will not find anything. It is because my camera or I am the main source of it in this case.

2. Verifying the authenticity of videos: There are some programs to verify the authenticity of videos through technology. InVID is such a widely known free programme. It can be installed on mobile phones and computers. After installing, if you link a video stored on the computer/mobile or a video on the internet, it will show pictures/images of some important part of the video. Right-clicking on those pictures will bring the 'fake news debunker by InVID' option (last picture below). Clicking on it and then clicking on 'Image reverse search Google' will bring out the original source of the video or the original video itself.

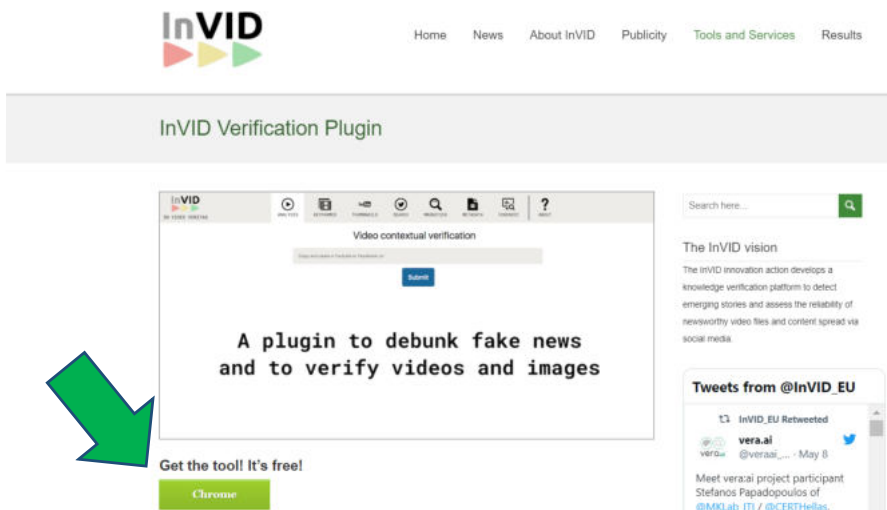


Figure- 1.14
Download the INVID programme

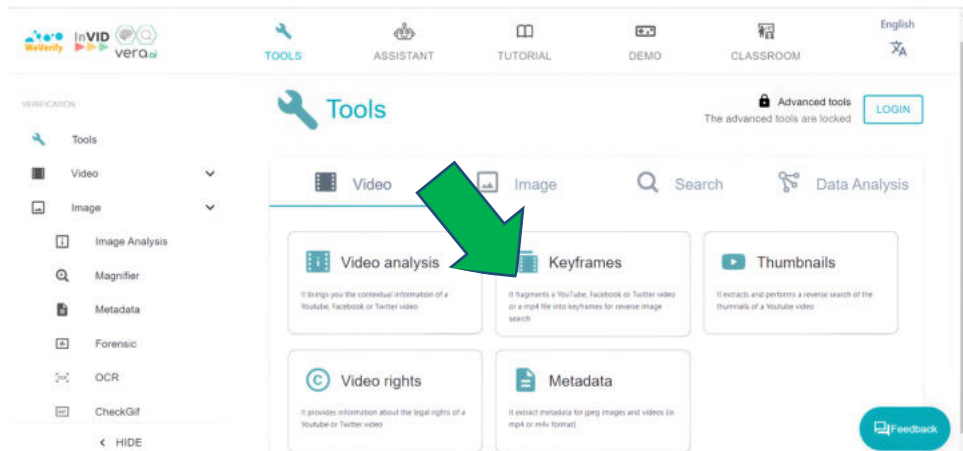


Figure- 1.15 One way of video analysis is to find Keyframes

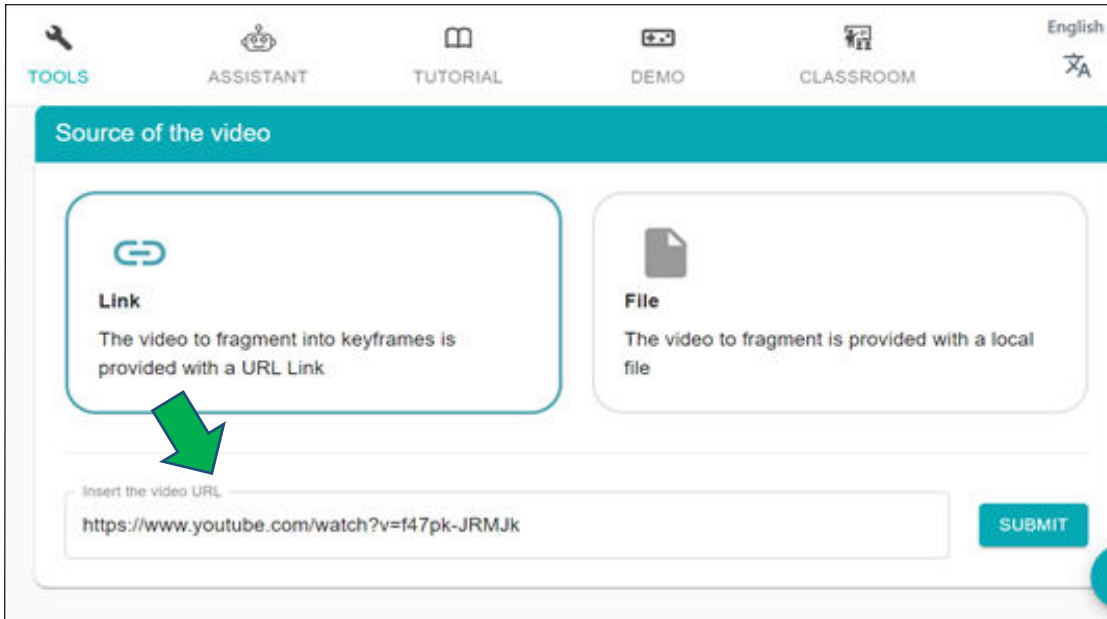


Figure 1.16: I will paste the link of the video that I want to analyze here

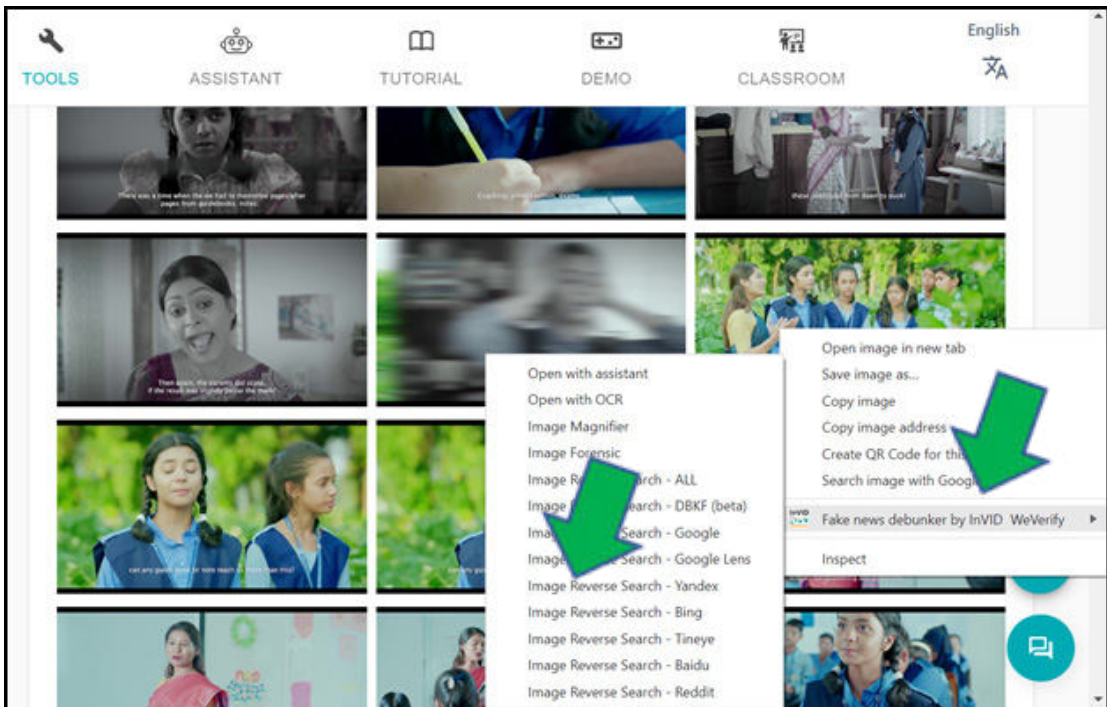


Figure 1.17: After finding the keyframes, right click on the image and select 'Reverse Image Search' option to find the original source of the video.

We will find such fake videos on the internet and through them practise video analysis using this programme. There are other features in this programme that we can practise at home or school using a mobile or computer.

We will soon receive the Google Forms for wrong information that we sent earlier. We are taking all kinds of preparations before giving them solutions. We will go home and write our feelings in the box regarding today's activity-

A large, empty rectangular box with a thin black border, intended for students to write their feelings about the activity.

Session 4: Coordination of Information

Information can be organized using spreadsheets, which we learned earlier as well. Today we will practise some simple rules to integrate data directly using a spreadsheet. We will take a look at some new features that we can use later in difficult mathematical solutions.

Earlier, we learned about 'Columns', 'Rows', and 'Cells'. From the picture below, identify the columns, rows, and cells –

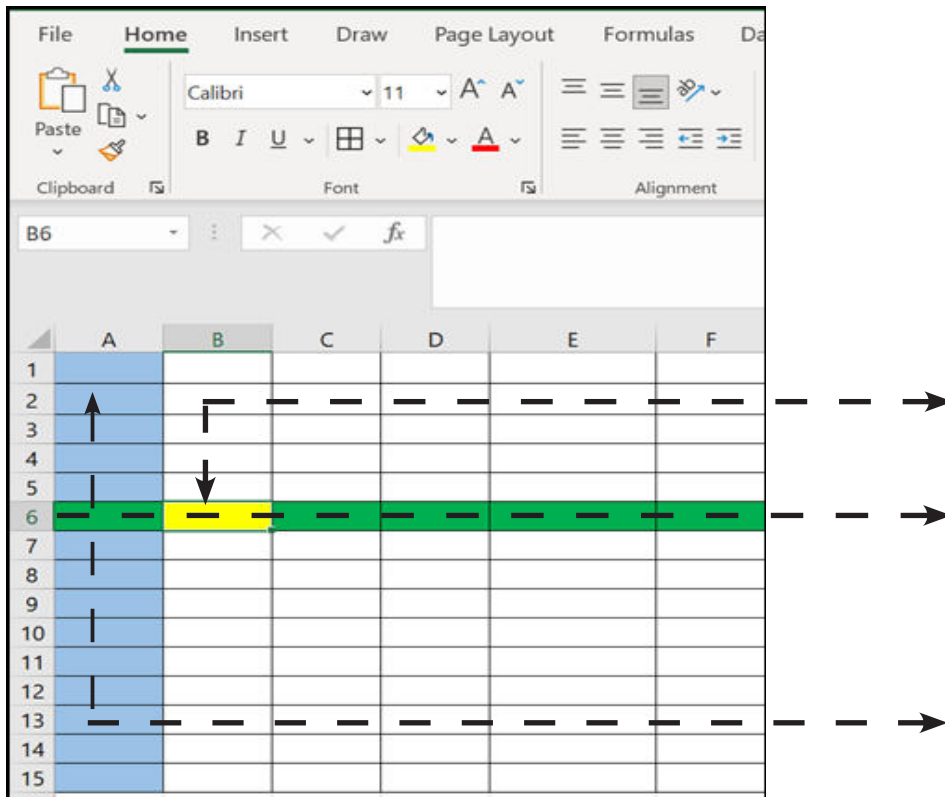


Figure 1.18: Column, Row and Cell

To learn to use spreadsheets, we will practise through the widely used application 'Excel'. Here the cells A, B, C, D, E, F are 'columns' and 1,2,3,4,5... are 'rows'. Each box is called a 'cell'. For example, the names of these cells are 'A6' 'B6'..... All the cells in a spreadsheet have an identity, which is a combination of a rows and a column. We will practise 'addition', 'subtraction', 'multiplication' and 'division' using Excel in our class. We can do this with a calculator, right? So, why are we learning to use Excel? Because once we put any data in a single cell, and once we use a formula, we

can count thousands of data in a few seconds. We will know a little later what a formula is. Let us first look at the symbols with which 'addition' 'subtraction', 'multiplication', and 'division' are expressed in Excel–

‘Addition’, it is expressed by the sign ‘+’ on the keyboard

‘Subtraction’, it is expressed by the sign ‘-’ on the keyboard

‘Multiplication’, it is expressed by the sign ‘*’ on the keyboard

‘Division’, it is expressed by the sign ‘/’ on the keyboard

The screenshot shows the Microsoft Excel interface with a spreadsheet containing the following data:

	A	B	C	D	E	F
1	Class 6	Attendance (Day)	Class 7	Attendance (Day)		
2	Student 1	102	Student 1	104		
3	Student 2	85	Student 2	107		
4	Student 3	105	Student 3	108		
5	Student 4	99	Student 4	112		
6	Student 5	92	Student 5	103		
7	Student 6	81	Student 6	107		
8	Student 7	107	Student 7	98		
9	Student 8	102	Student 8	96		
10	Student 9	100	Student 9	92		
11	Student 10	96	Student 10	109		
12						
13						
14						
15						

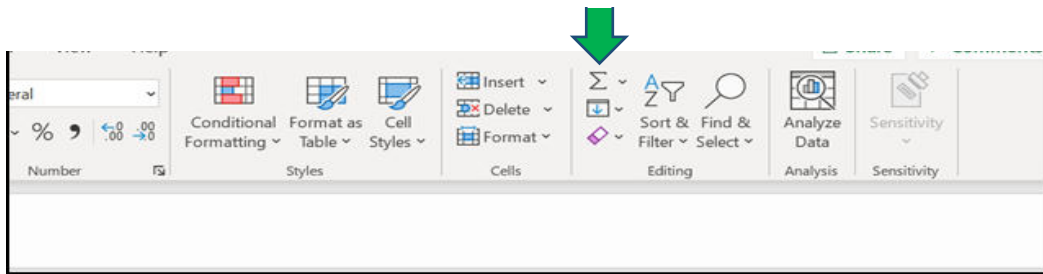
Figure 1.19: A spreadsheet

Here we've got an imaginary spreadsheet. Here column A contains the names of sixth graders; the number of their attendance in B; the names of the same students in class VII in C, and the number of their attendance in seventh grade in D. We can also create such a sheet. We will practise on this sheet.

Addition:

Suppose we want to add all the numbers in column B. This will bring out the total number of days attended by 10 students. We can do it in two ways.

1. We will select from the very first number of the 'B' column to the last number by holding our mouse cursor. There is a very small sign \downarrow next to the symbol Σ on the right side of the Menu Bar. Clicking on it will show some new features; from there if we click on 'SUM', all the numbers will be added and the result will come to the bottom of the B column. The Σ sign has some other features besides 'SUM'. We can click the features one by one to see what happens with each click.

Figure 1.20: On the Menubar Symbol Σ

2. Now we will do Addition using a formula. Suppose, we want to add the attendance at sixth grade and seventh grade of Student 4. In the cell where we wish to see the sum-
 - a. First we will put the cursor there. Then we will click the '=' sign on the keyboard.
 - b. We will put the cursor in the cell where the student's attendance in sixth grade is and click on it.
 - c. If we click it, the name of that cell will come next to the '=' sign.
 - d. Now we will press on the '+' sign on the keyboard.
 - e. Then we will click on the cell where the student's attendance in seventh grade is. By doing this, the name of that cell will come next to the '+' sign.
 - f. We will press Enter on the keyboard.

Now we have got the result of the sum! Now let us increase or decrease the number of attendance of Student 4.

We can see that the result is changing automatically.

	A	B	C	D	E
1	Class 6	Attendance (Day)	Class 7	Attendance (Day)	
2	Student 1	102	Student 1	104	
3	Student 2	85	Student 2	107	
4	Student 3	105	Student 3	108	
5	Student 4	99	Student 4	112	=B5+D5
6	Student 5	92	Student 5	103	
7	Student 6	81	Student 6	107	
8	Student 7	107	Student 7	98	
9	Student 8	102	Student 8	96	
10	Student 9	100	Student 9	92	
11	Student 10	96	Student 10	109	
12					

Figure 1.21: Sum of attendance using a formula

Subtraction, Multiplication, Division:

We can do subtraction, multiplication, and division in the same way using formulas. We have only to use ‘-’, ‘*’ and ‘/’ signs in the place of ‘+’.

Do the following tasks on the computer. Write below what we have done.

1. What is the difference between student 1's attendance in sixth grade and seventh grade?

The formula would be like this: = B2 – D2 (Press Enter) , result = 2

2. Multiplying the attendance of Student 1 in sixth grade with that of Student 10 in seventh grade.

The formula that we have used on the computer,

.....

3. Dividing the attendance of Student 9 in sixth grade by 10 will give the result of 10.

The formula that we have used on the computer,

We can put some different numbers ourselves and see if the computer makes a mistake. In the next session, we will practise some more spreadsheet work. Today, we will call, email, or meet the people whom we have sent Google Forms asking for information, and tell them to send us the information they want to verify before our next session.

Session -5: The Magic of Calculations on Spreadsheet

We discussed in the last session how to put a formula and do hundreds and thousands of calculations in one moment. But in the practice sessions, we used different formulas for each calculation. Today we will learn the use of a fun tool which can be used to solve mathematical problems instantly. This tool is called Fill Handle!

	D	E	F
Attendance (Day)			
104			
107			
108			

Figure 1.22 Fill Handle

When the mouse is taken to the lower right corner of a cell, a + sign is seen which is called 'Fill handle'. If we put a formula in a cell, and if that formula is also applicable to the following cells, then by placing the cursor in the corner of the cell having the formula and dragging it downwards, we can have results of all the calculations that are inside the cells up to the point we have dragged.

Suppose we want to multiply each student's sixth and seventh-grade attendance. We will insert the formula in the column on the foremost right of the row having Student 1 and press Enter.

	A	B	C	D	E
1	Class 6	Attendance (Day)	Class 7	Attendance (Day)	Class 6 X Class 7
2	Student 1	102	Student 1	104	=B2*D2
3	Student 2	85	Student 2	107	
4	Student 3	105	Student 3	108	
5	Student 4	99	Student 4	112	
6	Student 5	92	Student 5	103	
7	Student 6	81	Student 6	107	
8	Student 7	107	Student 7	98	
9	Student 8	102	Student 8	96	
10	Student 9	100	Student 9	92	
11	Student 10	96	Student 10	109	

Figure 1.23: Multiplication formula inserted

After pressing Enter, we have got the result for Student 1. Now we will use the filler handle to go down to student 10. We will see that as we lower the cursor, it's all sorted out.

	A	B	C	D	E
1	Class 6	Attendance (Day)	Class 7	Attendance (Day)	Class 6 X Class 7
2	Student 1	102	Student 1	104	10608
3	Student 2	85	Student 2	107	9095
4	Student 3	105	Student 3	108	11340
5	Student 4	99	Student 4	112	11088
6	Student 5	92	Student 5	103	9476
7	Student 6	81	Student 6	107	
8	Student 7	107	Student 7	98	
9	Student 8	102	Student 8	96	
10	Student 9	100	Student 9	92	
11	Student 10	96	Student 10	109	
12					

Figure 1.24: Solution using fill handle

Now we understand how adults can do calculations of thousands of numbers in an instant, don't we? We will do calculations using fill handle a few more times by inserting other formulas ourselves. Everyone in the classroom will try once.

There are many features in the spreadsheet, which will be very useful in our studies and careers. However, new programmes are being created everyday; and the applications we are learning today, may not be there after a few years. That is why we are learning the very necessary features so that no matter what new application comes, we can master it very quickly.

Now we will practise another tool called 'Sort & Filter'. Suppose we need to find out who had the highest attendance among the students of sixth grade.

1. First, we will select the column in which the attendance of sixth-grade students is given (B).
2. We will click on 'Sort & Filter' in the right corner of the menu.
3. Here are some options from which we will click on 'Sort largest to smallest'.
4. There will be a window where there will be two options : * Expand the selection, *Continue with the current selection. We will click on the first option. Selecting the second will only change that column, while the other columns will remain unchanged. If the other columns remain unchanged, the students' names will not be consistent with their attendance.
5. That window will have "Sort" written on it. If we click on 'Sort', the student with the highest attendance will come to the top, and the student with the lowest attendance will go down.

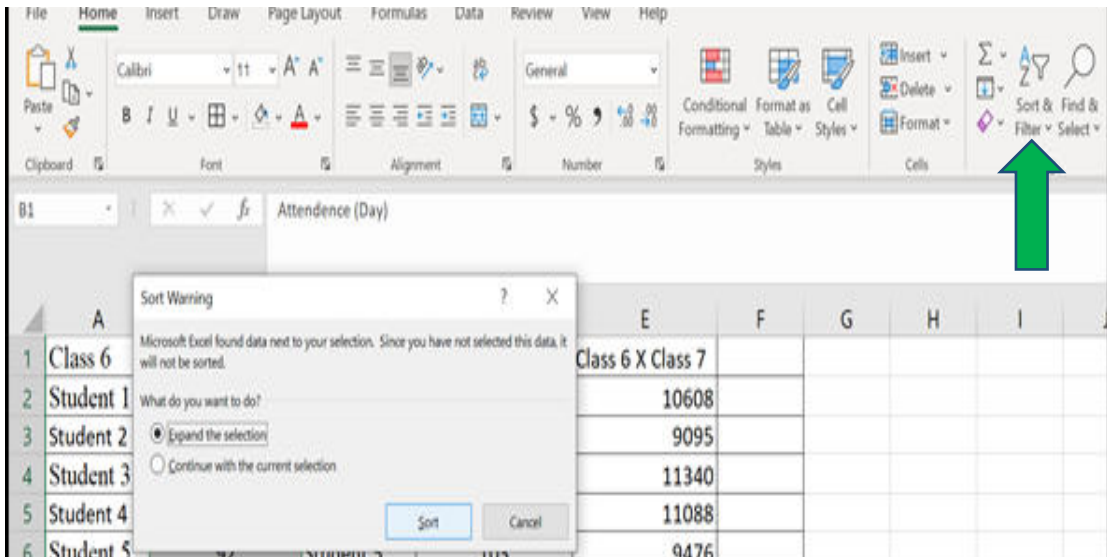


Figure- 1.25: Sort & Filter

	A	B	C	D	E	F
1	Class 6	Attendance (Day)	Class 7	Attendance (Day)	Class 6 X Class 7	
2	Student 7	107	Student 7	98		
3	Student 3	105	Student 3	108	11340	
4	Student 1	102	Student 1	104	10608	
5	Student 8	102	Student 8	96		
6	Student 9	100	Student 9	92		
7	Student 4	99	Student 4	112	11088	
8	Student 10	96	Student 10	109		
9	Student 5	92	Student 5	103	9476	
10	Student 2	85	Student 2	107	9095	
11	Student 6	81	Student 6	107		

Figure1.26: Sorted information based on attendance

Sessions 6 & 7: Verifying Information Together

Today we will open the Google Forms that we sent to everyone and see what information has been sent by our acquaintances. We will divide the information that has come among us. All students in the class will form 5/6 groups. Each group will verify a few pieces of information.

Let's look at the Google form first. Below is a picture of a used Google form to help our understanding.

↓

Questions Responses **61** Settings

ডিজিটাল সময়ে কৈশোর - কুইজ ১

‘ডিজিটাল সময়ে কৈশোর’ অনুষ্ঠানে আলোচিত বিষয়ের উপর এই কুইজ প্রতিযোগিতা। চার পর্বে অনুষ্ঠিত হবে এই প্রতিযোগিতা। প্রতিটি পর্বে আলাদা বিজয়ী ঘোষণা করা হবে। চারটি পর্বের সকল কুইজ বিজয়ী থেকে চূড়ান্তভাবে ১ ঘোষণা হবে।
প্রথম পর্বের এই কুইজের উত্তর দিতে হবে আগামীকাল দুপুর ১২ টার মধ্যে।

Question

Short-answer text

Figure 1.27: A Google Form which been used

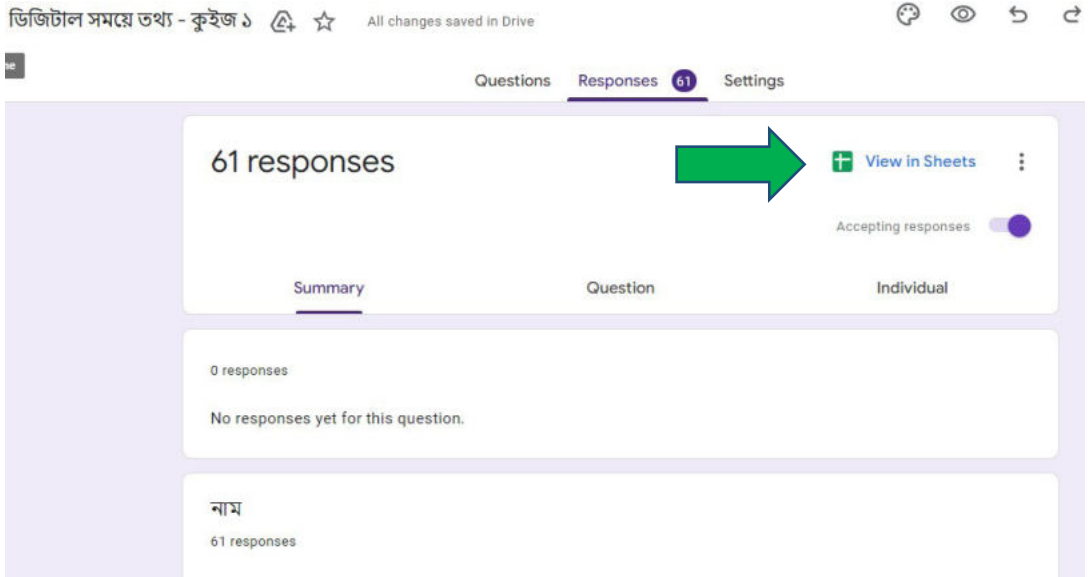


Figure1.27: Click 'View in Sheets' to see the information

Our 'Form' looks somewhat like this. By clicking on 'Response' in the form, we can see who sent us what questions. We could see each one in Google form, but for the convenience of the work, we open out the information coming from others in a spreadsheet. So, we will click on 'View in Sheet'. If we click it, a new Google spreadsheet will appear in the next window. The sheet will look like this–

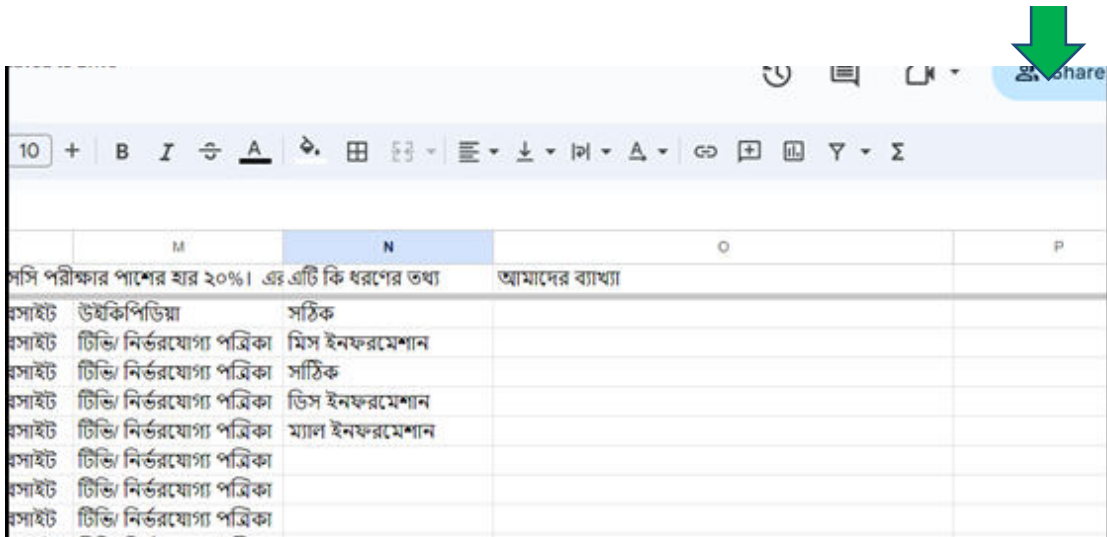
The screenshot shows a Google Spreadsheet with the following data:

নাম	বিদ্যালয়ের নাম	জেলার নাম	ফেইসবুকে কোনো তথ্যে কোন ছবি ফটোশপ করে নি কোন সংবাদ মাধ্যমের
Rabeya Akter	Shypiard School & College Khulna		কোন নির্ভরশীল সংবাদ মাগ গুগলে রিভার্স সার্চ দিয়ে দে ওই সংবাদমাধ্যমের ও
Fahim Faisal	Naogaon K.d Govt. High Naogaon		পোস্টটি মজার কিনা গুগলে রিভার্স সার্চ দিয়ে দে ওই সংবাদমাধ্যমের ও
Md Nafis Ullah	Government Laboratory Dhaka		কোন নির্ভরশীল সংবাদ মাগ ছবির বিষয়বস্তু প্রাসঙ্গিক বি ওই সংবাদমাধ্যমের ও
Md. Shamim Hosaain	Cantonment college Jessi, Jessore		কোন নির্ভরশীল সংবাদ মাগ গুগলে রিভার্স সার্চ দিয়ে দে ওই সংবাদমাধ্যমের ও
জারিন তাসনিম	ইকু গবেষণা উচ্চ বিদ্যালয় পাবনা		কোন নির্ভরশীল সংবাদ মাগ গুগলে রিভার্স সার্চ দিয়ে দে ওই সংবাদমাধ্যমের ও
মোহাঃ ফারহানা সাদিকা	এসকে.এস স্কুল এ্যান্ড কলে পাইবান্দা		কোন নির্ভরশীল সংবাদ মাগ গুগলে রিভার্স সার্চ দিয়ে দে ওই সংবাদমাধ্যমের ও
Mahi Afroja	Lake circus girls high sch Dhaka		কোন নির্ভরশীল সংবাদ মাগ ছবিটির কোয়ালিটি (রেজুলে ওই সংবাদমাধ্যমের ও
Rahul saha	Dhaka College Dhaka		কোন নির্ভরশীল সংবাদ মাগ ছবিটির কোয়ালিটি (রেজুলে ওই সংবাদমাধ্যমের ও
Samia Hossain Payel	KC Model School and Cc Dhaka		কোন নির্ভরশীল সংবাদ মাগ ছবির বিষয়বস্তু প্রাসঙ্গিক বি ওই সংবাদমাধ্যমের ও
Mahi Afroja	Lake circus girls high sch Dhaka		কোন নির্ভরশীল সংবাদ মাগ ছবিটির কোয়ালিটি (রেজুলে ওই সংবাদমাধ্যমের ও
Ferdous Rahman	Sena Polli high school Dhaka		যার নামে তথা তাকে আমি ছবির বিষয়বস্তু প্রাসঙ্গিক বি ওই সংবাদমাধ্যমের ও
Tawhidul Islam.	Sylhet govt.pilot high sch Sylhet.		কোন নির্ভরশীল সংবাদ মাগ গুগলে রিভার্স সার্চ দিয়ে দে ওই সংবাদমাধ্যমের ও
জারিন তাসনিম	ইকু গবেষণা উচ্চ বিদ্যালয় পাবনা		কোন নির্ভরশীল সংবাদ মাগ গুগলে রিভার্স সার্চ দিয়ে দে ওই সংবাদমাধ্যমের ও

Figure 1.29: Information in the Spreadsheet

Looking at the Google spreadsheet, we understand that it is similar to the Excel sheet in which we have practised the use of different tools of the spreadsheet for the last two days. On the right side of this sheet, we will mention whether the information received in earlier column is correct information, unintentional wrong information (misinformation), wrong information (disinformation), or bad information (malinformation). Do you remember that we learned about it in the first session? We can read the part of the first session once again.

In the next column on the right, we will explain why we consider it 'misinformation' or 'disinformation' or 'malinformation'.



	M	N	O	P
সসি পরীক্ষার পাশের হার ২০%। এর এটি কি ধরণের তথ্য		আমাদের ব্যাখ্যা		
বসাইট	উইকিপিডিয়া	সঠিক		
বসাইট	টিভি নির্ভরযোগ্য পত্রিকা	মিস ইনফরমেশান		
বসাইট	টিভি নির্ভরযোগ্য পত্রিকা	সঠিক		
বসাইট	টিভি নির্ভরযোগ্য পত্রিকা	ডিস ইনফরমেশান		
বসাইট	টিভি নির্ভরযোগ্য পত্রিকা	ম্যাল ইনফরমেশান		
বসাইট	টিভি নির্ভরযোগ্য পত্রিকা			
বসাইট	টিভি নির্ভরযোগ্য পত্রিকা			
বসাইট	টিভি নির্ভরযোগ্য পত্রিকা			

Figure 1.30: to those who wanted to know about the accuracy of information

In two more columns next to the Google sheet we have got, we will verify each piece of information like the figure above and write our conclusions and explanations. In the explanation section, we will describe how we came to know that the information is incorrect or correct.

We will be working on verifying the data today and throughout the next session. When the work is done, by clicking on the Share button we will send a link to this Google sheet to those who have asked us for the accuracy of information.

Session-8: After the Campaign



Figure 1.31: At the end of the campaign, the students are conveying the information to those who wanted to know the correct information

Our Information Verification Campaign is over and we have already conveyed verified conclusions to those who have asked us for information. But that's not where our work ends. It is because we need to verify information all the time. Not only in digital technology, but we will also need to search and verify information even if we want to work in other fields. Through this experience, we have investigated how the risk of fake information being spread in different ways. In the table below, we will write 10 ways of circulating wrong information. We will write this based on our ideas and experiences. Let's discuss it with the friend sitting next to us.

An example is given below:

By creating a video with misinformation and adding the logo of a television channel to it, that video can claim itself to be a well-known television report.

1.

2.

3.

4.

5.

6.

7.

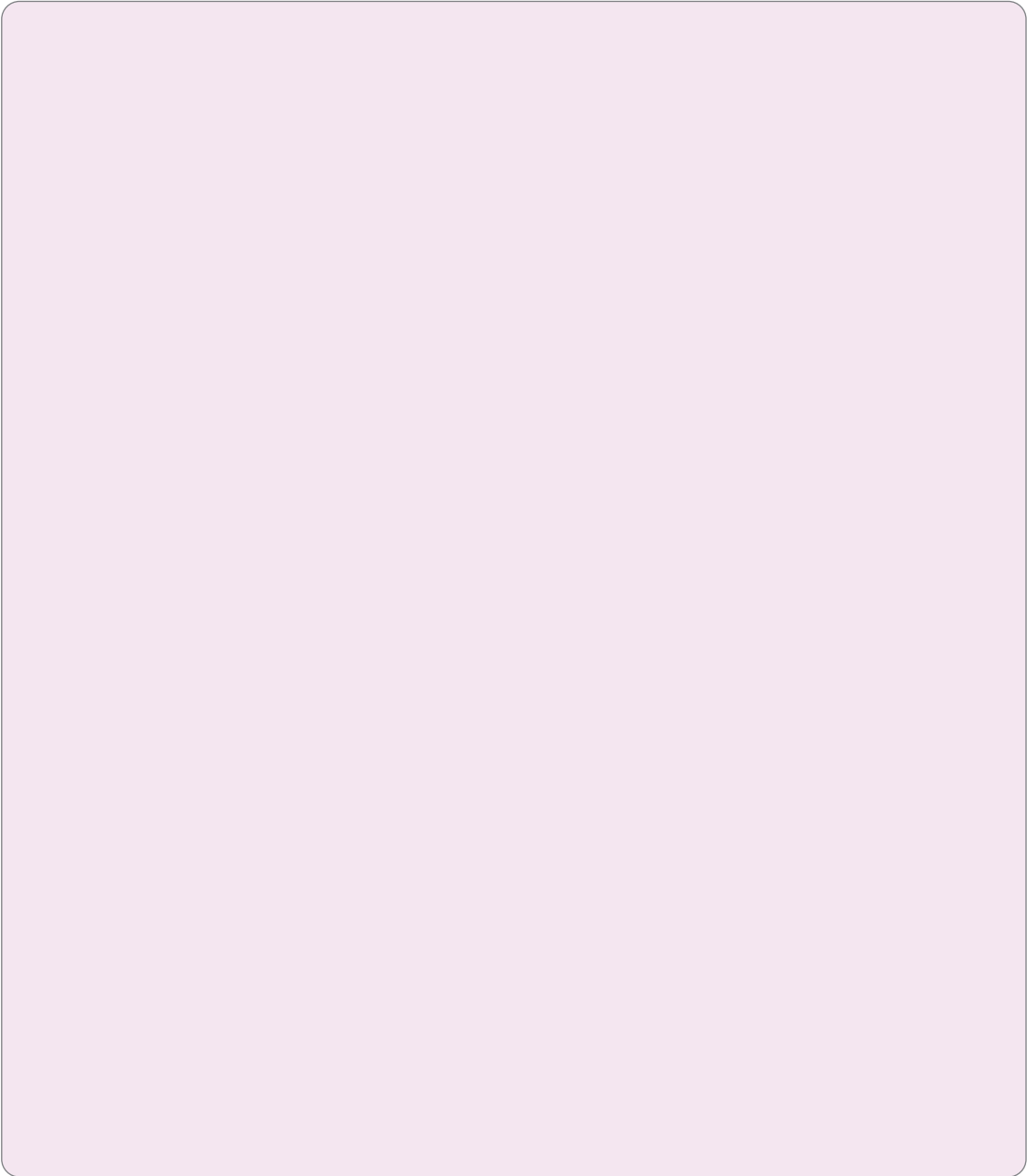
8.

9.

10.

After writing 10 different ways, I will give it to my friend beside me to read. I will also take his or her book and read what he or she has written.

I will write a letter to my guardian informing him or her of what I came to know and what I liked during this whole experience. I will write the letter after going home. After I have finished writing the letter, I will read it out to my guardian.



Learning Experience-2



Security Risks of Personal Information on Digital Platforms

Digital technology is constantly changing the world's situation. Since the pace of technology is faster than the normal evolution of society, it often cannot keep pace with the customs and laws of society and cannot protect us. Therefore, we ourselves have to be conscious to live a safe and balanced digital life. Not only that, after learning it ourselves, we have to teach it to our family members as well. That is what we are going to experience here.

Session-1: How Much Do I Know About Information Risk and Cybercrime

We already have learnt basic concepts of information risk and cybersecurity in the previous grade. Furthermore, we have also made our family members very aware of these things. At this stage, we will go a little deeper into these ideas. Cyber miscreants have found many ways to steal people's personal information. Let's explore some of these now.

Many of our parents or acquaintances get messages or emails on their mobile phones. The messages ask them to click on a given link. They say that clicking the link, you will get a lot of money or expensive prizes. This kind of event is called phishing.

Phishing

Although the English spelling is different, it originally came from the idea of fishing by laying a fishhook trap. Phishing is the act of stealing important, confidential information or financial resources from us by communicating digitally under the identity of a person or organization we know or trust.

Let us look at the following email:

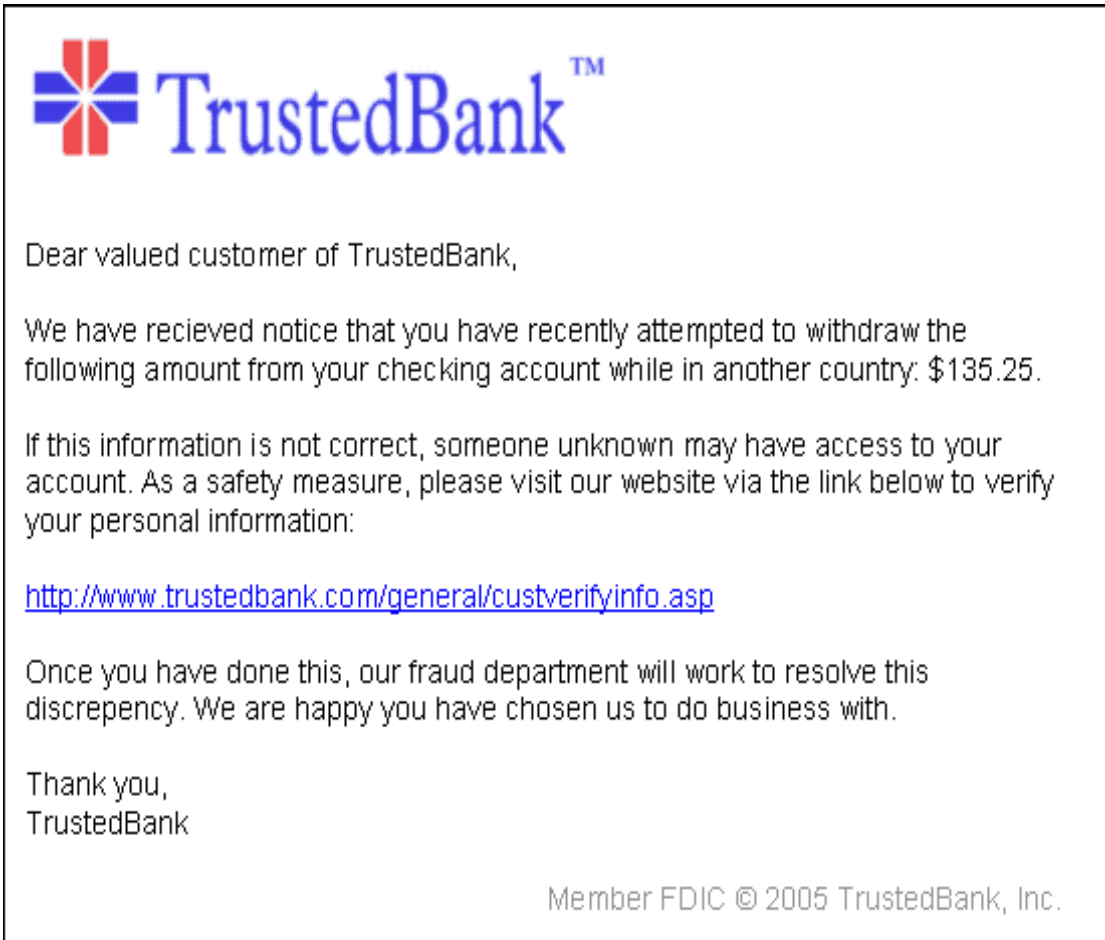


Figure 2.1: An email sent to the customers of a US bank

It was really sent to customers of a bank in the United States. Since most of the customers were English speakers, the language of the email was English.

When a bank sends a letter, it usually does not contain grammatical or spelling errors because it goes to the customer after proper correction. Let us see what mistakes are there in the above letter...

Spelling mistake: 'recieved', 'discrepancy'

Phishing messages can come not only as emails but also on mobile phones. Notice the message below. It was also sent to some people in real life.

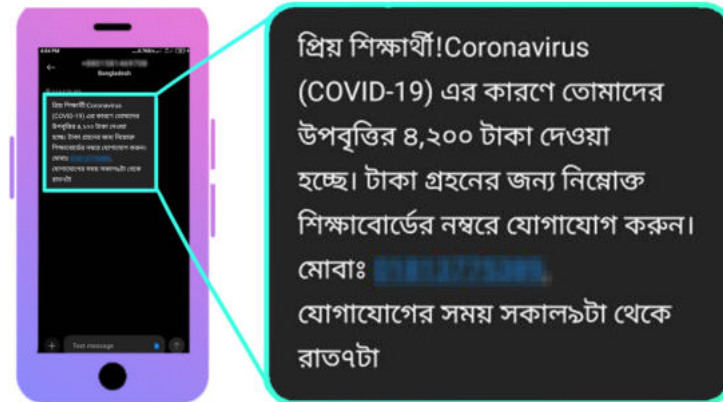


Figure 2.2: Message sent to students' mobile phone

If we get such a message, how do we know if it's real or fake?

First, we will consult our classroom teacher. If s/he says that such a message is supposed to come at this time, then we will take this message seriously and move on to the next step of verification. If s/he says such a message isn't supposed to come at this time, we are pretty sure it's a hoax!

Then we will think about whether we are likely to get any kind of stipend. Suppose I have no possibility of getting any stipend this time. In that case, the message sent to another person may have come to us by mistake. So, we are going to ignore or delete it because it's irrelevant.

Suppose we are in a class where stipends are given. Then? First, see if the phone number from which the message came or the number we have been asked to contact is real or fake. In this message, we see that a number has been sent to be contact. Is this the number of the education board we are under? How will we know that? Very simple. First, we will use the internet to go to the website of that board.

Think, we are under the Chattogram Education Board. The web address of this education board is <https://bise-ctg.portal.gov.bd/>. We have already learned in the previous grade how to go from an address to a website. If we go there, we can see the following webpage

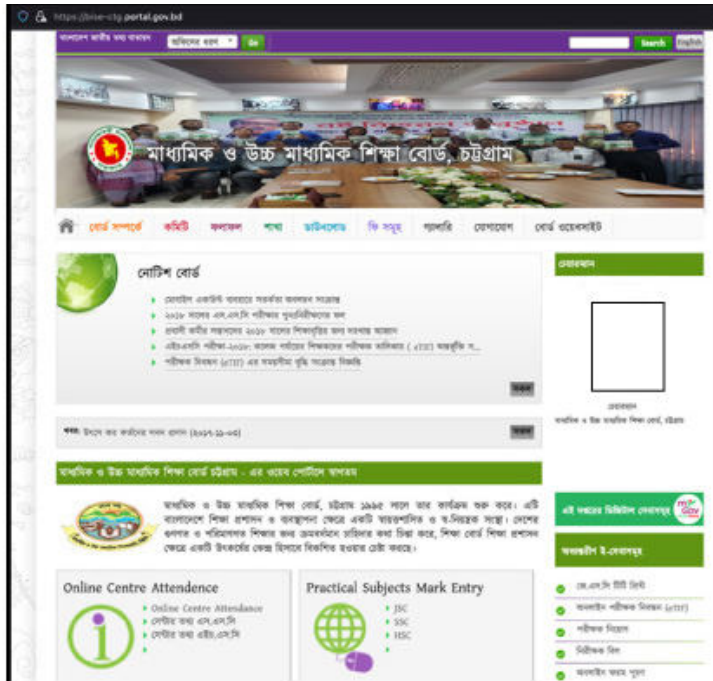


Figure 2.3: Webpage of Chattogram Education Board

Where can we find the official phone number on this website? Let's take a close look at the page. We will see that there is the word "contact" in one place. Specify it with a round mark. If we press on the computer or mobile screen on that word, we will see that we have gone to another webpage that looks like the following.



Figure 2.4: Contact address of Chattogram education board

We can verify the authenticity of the message sent to us by contacting a number given in Chattogram Education Board's contact address.

To protect ourselves from phishing attempts coming from unknown numbers, we will now fill out the mind map below...



Session -2: How Safe is my Family Mobile Phone

The number of mobile phone subscribers in Bangladesh is more than our total population. This means that even if we do not yet own mobile phones due to age or any

other reason, many people around us or many family members are using mobile phones at the moment. Many also have multiple numbers at the same time. We may also have the opportunity to use it soon. Therefore, it is necessary to be aware of the safe use of mobile phones from now on.

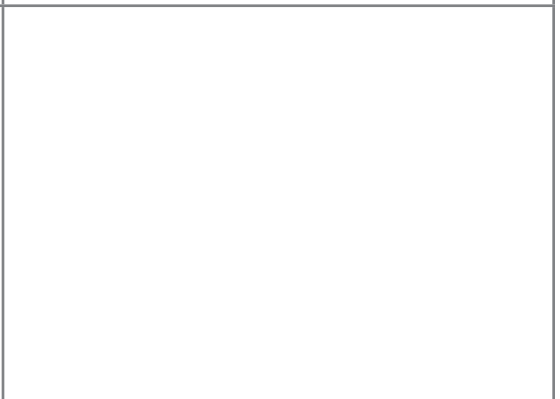
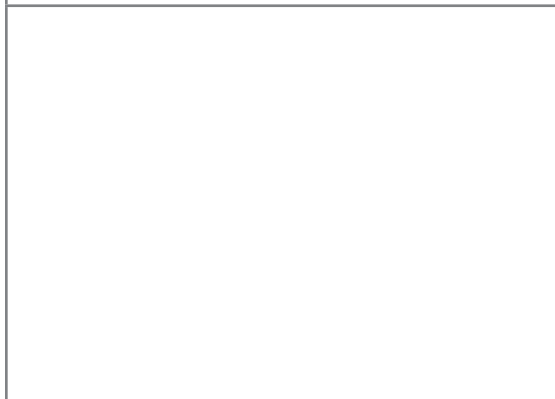
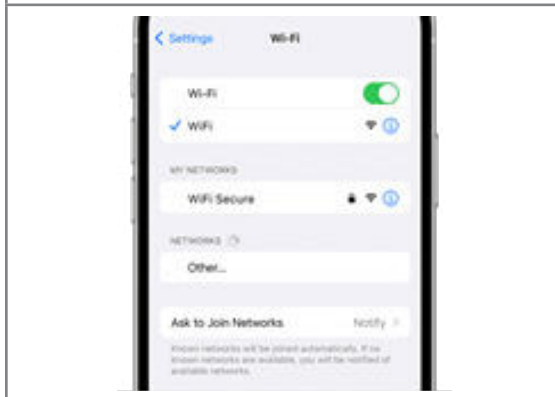
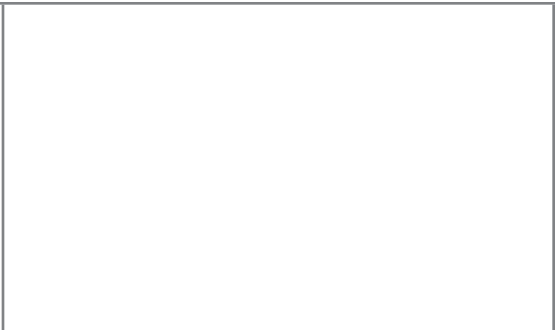
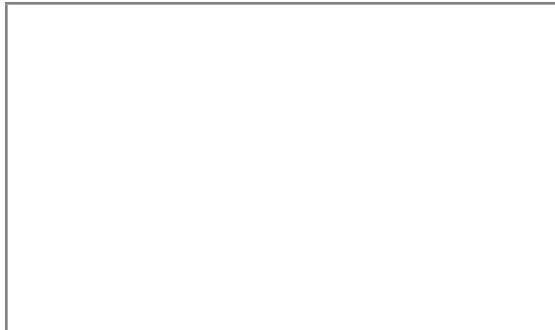
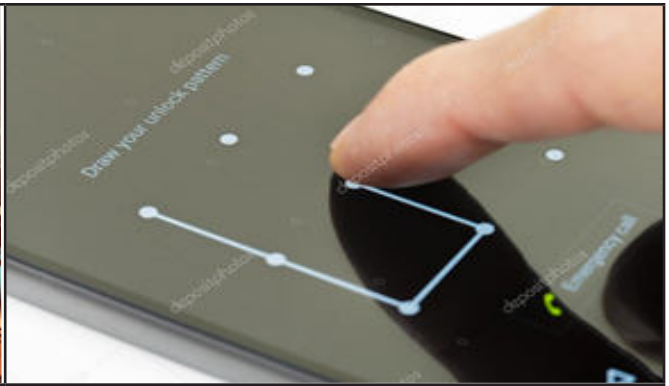
A modern or smart mobile phone, also known as a smartphone, looks like the following image. Its design, functions, parts, etc. are changing rapidly. Frequently, different models and versions of different brands of mobile phones come to the market. The new ones are faster and more efficient than the previous ones.



Figure 2.5: Mobile phone

When someone grabs our mobile phone for dishonest purposes, they enter our account using various software. Even the important hardware parts controlled by the software go under their control. Using our account, they keep sending misleading messages to different people. Sometimes, they ask different people for different things or also ask for financial help in our names. Moreover, they can do activities that are insulting to us or make us responsible for any act of sabotage. They can also leak personal information from our mobile phones or devices, which can be very insulting to us.

We can see the images of four widely used software or apps of the mobile phone below. Under each picture, in the blank space, we will write what kind of security risk the user's carelessness can create.



The first step to safe use of a mobile phone is to ensure that no one but authorized people can use it. Usually, the way this is done is known by various names like password, passcode, pin code, pin number or passkey. If someone turns on their mobile phone, and if we take that mobile phone, we will see on the screen something similar to the picture below. What's going on here? Here the mobile phone says to the user, "To make sure you are its real user, enter the correct pin code."



Figure 2.6: Place where pin code to be entered on a mobile phone

Usually, the number key is of four digits. But sometimes it is even of more digits. We have already learned about credit card pin codes in the previous grade. The number key (pin code) of the mobile phone works in the same way.

Now we will fill the following table at home and bring it class later.

How many members of the family have activated pin codes for security?
Answer:
What steps are taken by the family members for the safety of the mobile phones?
Answer:

Analyzing previously stolen personal data, researchers have compiled a list of widely used and rarely used pin codes (Reference: Data Genetics). It has been found that the

most widely used pin codes are 0000, 1111, 2222, etc. The pin codes must have some features so that no one can retrieve them. For example, the pin code should not have the same letters or numbers. Moreover, pin codes like 1234 or 9876 can be easily guessed.

Now we will write some easy and difficult pin codes below.

Easy	Difficult
3333	2516

We will show the above list to the family members. We will ask them if their pin codes are in the widely used or easily guessed list. If their pin codes are in the widely used or easily guessed list, we will encourage them to change it.

Session -3: Counterfeit Digital Data and a Team of Classroom Investigators

We must have seen advertisements of real and fake products in newspapers or around us at different times. A practice, we know, has been around for a long time in our society but due to digital technology, its speed and impact have increased a lot. If someone does good work using digital technology, it spreads very quickly. If someone does something bad, it can also spread at an unstoppable speed and harm many people.

For this reason, it is very important to understand the metadata of digital data. Let's say someone sends us a photo of an incident on the mobile phone and says that the incident has just happened. Now will we know if that person is running an old photo as today's photo? Or is the person passing the photo of one place as of another place?

Metadata is extra information of data. For example, if we imagine chapters in a book as information, then verifying more information from a reference or original source is metadata, such as the reference data about pin codes: Data genetics that we read in the previous session can be metadata.

If we could read the metadata of that photo, that might be a way, wouldn't it? Let's see how we can read it.

Notice the photo below.



Figure 2.7: An image to find out metadata

If we right-click on this image (pressing the right button of the mouse) the following menu will appear.

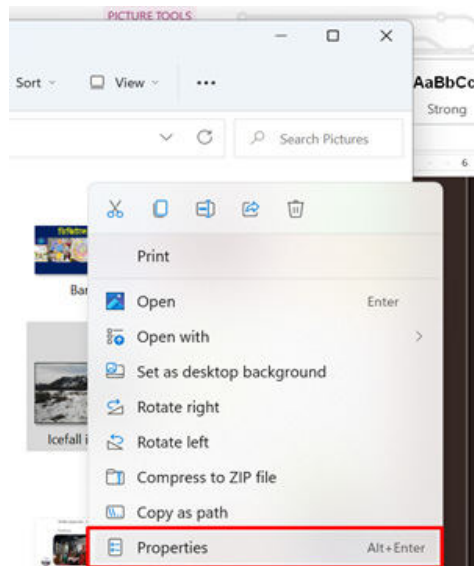


Figure 2.8: Menu seen after right clicking the photo

Now we have to click on the 'Properties' option. We can see the following information.

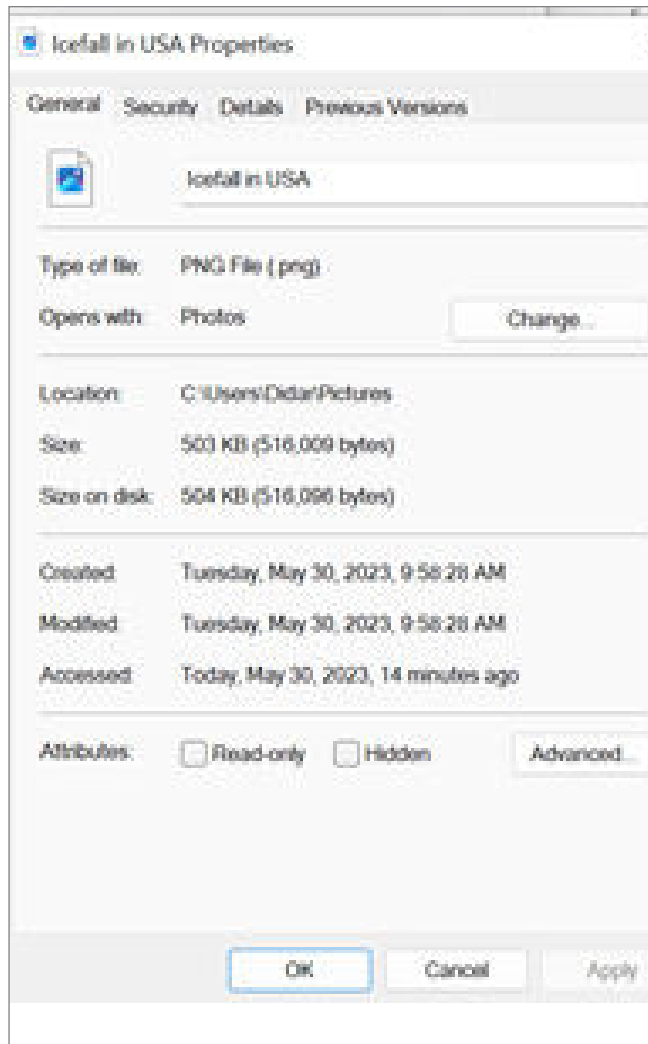


Figure 2.9: The window after clicking 'Properties'

Now let's think about a situation someone shows this picture and says it's from 2000, is it possible to verify its authenticity based on the above information? Show your reasons below.

	Yes		No

If we go to the 'Details' menu, we can learn some more information. They are given below.

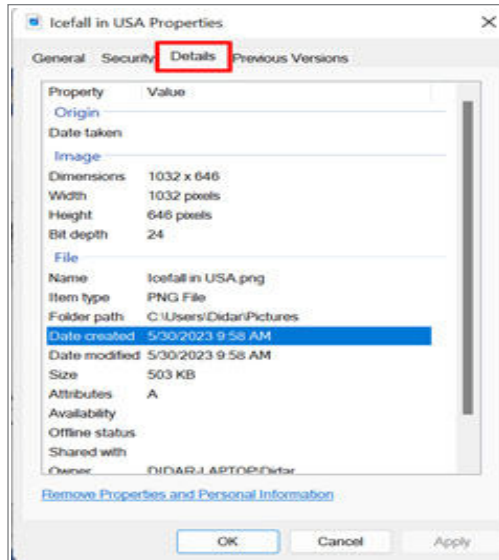


Figure 2.10: What we can see on Detail menu

Again, if it is allowed to store information about where the photo was taken, it can be seen later during the analysis of the photo's metadata. An example of this is given below.

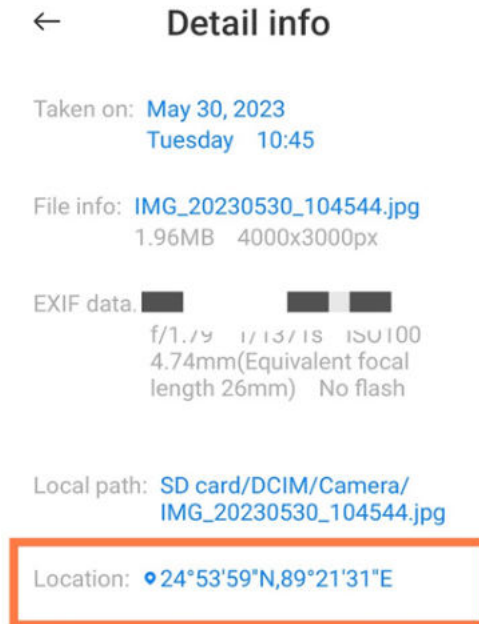


Figure 2.11: Information on the place of photograph taken

So someone may show us a picture and say that it is a picture of Teknaf. If we do not find the information of Tetulia in its metadata, we will know that this is a lie.

The above image is taken from a mobile phone. In other words, the metadata can also be seen on mobile phones.

Now we will do some spying with the help of our teacher. One of us will play an evil man here. He will show us a picture and make some claims about the date, what camera was used, and where it was taken. We will analyze the metadata and write in the following table which claims are true and which claims are false.

Claim 1:	
	<input type="checkbox"/> True <input type="checkbox"/> False
Claim 2:	
	<input type="checkbox"/> True <input type="checkbox"/> False
Claim 3:	
	<input type="checkbox"/> True <input type="checkbox"/> False

We will now create a small wall magazine on how to identify fake images for family members. The magazine can be hung in a place in the kitchen or dining room where everyone can see it. We ourselves will choose the story of the wall magazine. An example would be a picture on the mobile phone of a member of our family. The picture claims that an accident took place somewhere in the area. Now, we will show which metadata to verify in the first, second, and third or the last step. It would be even better if we could add a rhyme or slogan to make people aware. We will use the following table for the draft.

Session-4: Social Media Watchdogs

We have been introduced to the different media of digital communication in the previous grades. The digital media that have created huge impact in the 21st century in social media. Surely many of us are familiar with various digital social media, aren't we? There is no problem if we are not familiar with them. We will get to know them on time.

Let us first write down the names of some of the digital social media that we know and the activities we do using those media. In doing this, we can take the help of our friend sitting beside us if we want.

Name of Digital Social Media	What We Do There
1.	
2.	
3.	
4.	

We can see that we mainly communicate with different people using digital social media. Along with that, we do several other tasks that do not cost us any money but consume a lot of our time. We usually use various digital social media on our mobile phones. In many cases, we are having various problems with our eyes due to continuously looking at the small screen of the mobile phone for a long time. In addition, due to paying extra attention to digital social media, we may have trouble concentrating on other tasks.

Now the question is: How should we use social media? How much time should we actually spend on digital social media? Is there any time during the day when we will not use these digital social media? How does the excessive use of these media affect us? Let's discuss these topics in pairs and then we will organize a presentation together. Choose any one of the following topics for your speech–

Topics for speech –

1. How much time we should spent on digital social media
2. At what time of the day we should use digital social media
3. Disadvantages of the overuse of digital social media

So, we have learned about the dangers of excessive use of social media. But we have to be aware of it without fearing it. Like other technologies, it is rapidly changing our social structure. Since the pace of these changes is faster than the normal evolution of social norms and laws of the land, we are still learning how to keep pace with it.

At this stage, we will organize a programme on extempore speech. The following can be taken as topics for the speeches or we may have topics of choice beyond these.

Speech Topics:

1. How long we should use digital social media;
2. At what time of day we should not use digital social media;
3. Security risk of social media

Venue and Date of the Programme

We have learned about the risks of overusing social media. But we shouldn't be afraid of it; rather, we have to be conscious about its use. It was actually made with good intentions. But like any other technology, it has changed our social structure very rapidly. Since the pace of change is faster than the natural evolution of social norms and country laws, we are still learning how to keep pace with it.

Immediately after coming home from school, Apu takes his mother's mobile phone. Then, after requesting many times, his mother is able to make him eat some food, and then she tells him to take rest. But he doesn't obey. He rather spends his resting time lying down with his mother's mobile phone, watching cartoons, movies, commenting on his mother's social media, etc. Even after his mother explains a lot to him, he does not listen to her but rather becomes angry with her. Moreover, even in school, he cannot concentrate on lessons in class. When everyone is engaged in chit-chat, he thinks about the comments made by others on his mother's social media. He gets angry if his classmates jokingly say something. His change has been noticed by teachers over the past few days.

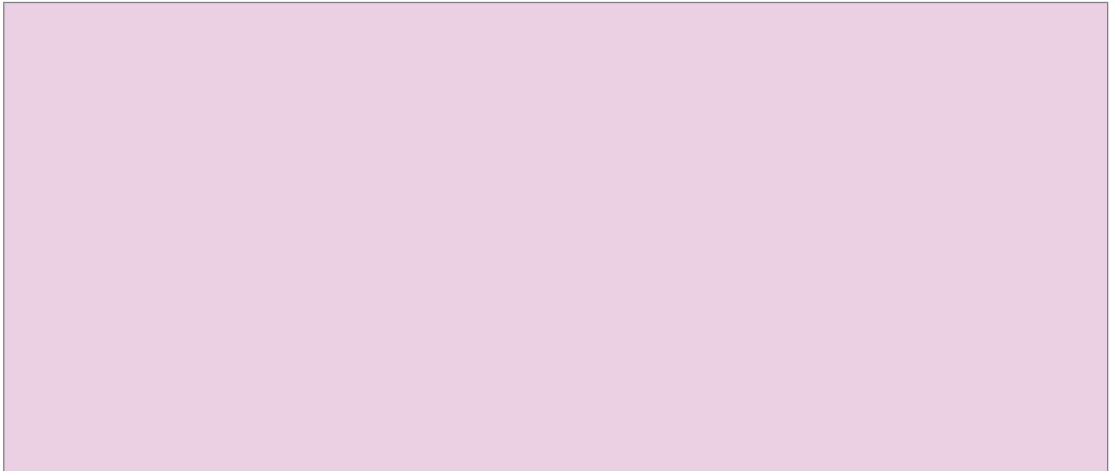
What problems can be seen in Apu's behaviour in the above incident? What could be the reason for this type of behaviour change?

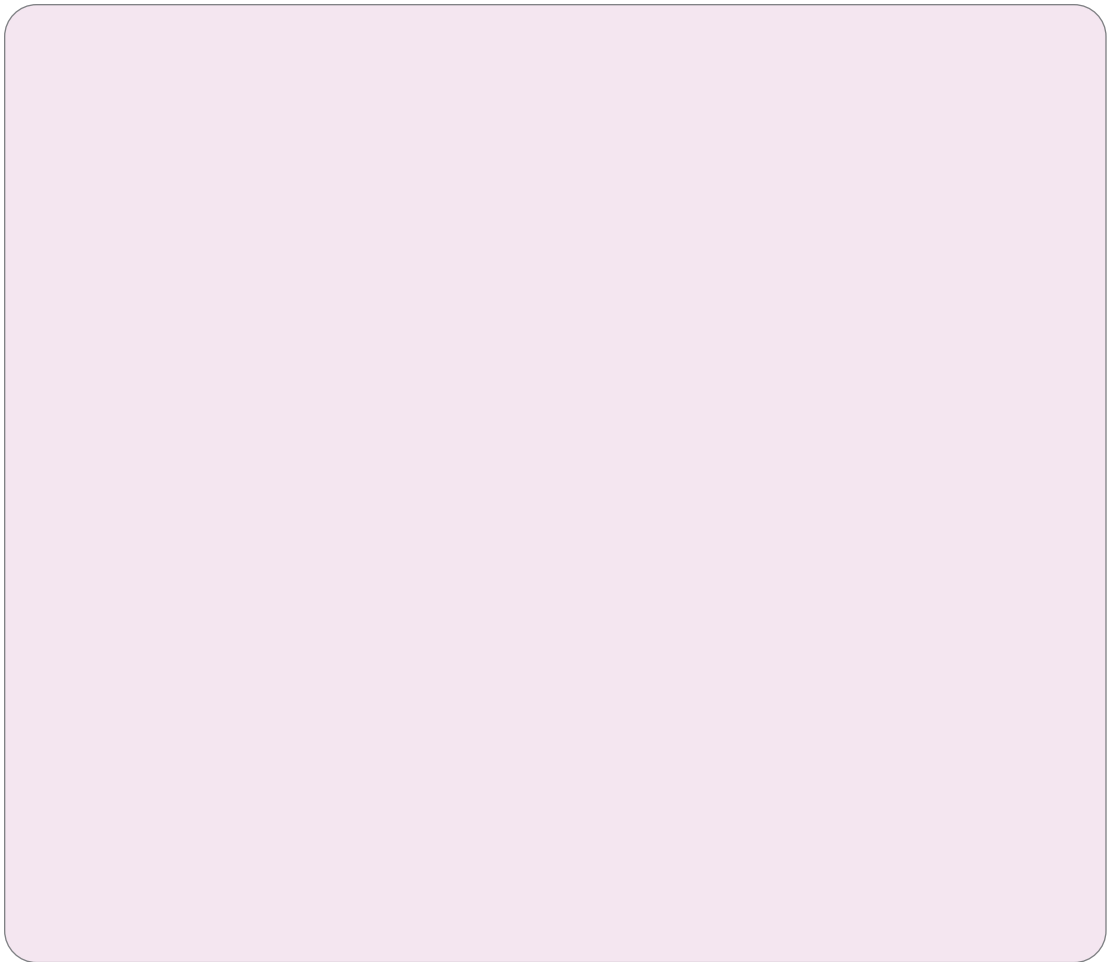
We also need to be aware of our mental health besides being aware of time. At the very beginning, many people will find it uncomfortable to talk about mental health. But

we are all friends in class. We are great observers for each other's mental well-being. So, we will openly discuss the following questions and write down what we should do about them.

1. Should students of our age have an account of their own on social media?
2. How much time can I spend a day with my parents' phone?
3. What can I do with my parents' phone?
4. What advice might we have for someone our age who spends too much time on social media?

Considering the above questions, let's note down some of the rules for us in the empty box below.





Session -5: Relentless Observers over Security of Personal Information

We have already learned about data risks, the security of mobile phones, the detection of fake digital data, and the balanced use of digital social media. The issue that is totally linked to all this is the security of personal information. We all know about passports. When a Bangladeshi citizen wants to go out of the country, he must have a passport. To get a passport, some information must to be submitted in a form first. This form contains a number of information that is confidential to us. In the previous grade, we learned what personal confidential information is and how to protect it. If everyone knows this information, then fraudsters can misuse it. We'll now identify those parts.

On the next pages, we can see the first two pages of that form. Now we will mark around those areas which contain personal confidential information.

৮।* বৈবাহিক অবস্থা (✓) চিহ্ন দিন : অবিবাহিত বিবাহিত বিপত্নীক / বিধবা তালাকপ্রাপ্ত
 Marital Status Unmarried Married Widower/Widow Divorced
 Put (✓) in appropriate box

৯।* পেশা : _____
 Profession

অফিসিয়াল পাসপোর্টের ক্ষেত্রে : (In case of Official Passport)
 অফিসের নাম : _____ অবসর গ্রহণের তারিখ : _____
 Name of the Office Date of Retirement

১০।* জন্মস্থান (দেশ ও জেলা) : _____ দেশের নাম _____ জেলার নাম _____
 Place of Birth Country District

১১।* জন্ম তারিখ : _____ দিন _____ মাস _____ বছর
 Date of Birth Day Month Year

১২।* লিঙ্গ (✓) চিহ্ন দিন : পুরুষ মহিলা অন্যান্য
 Gender (✓) in appropriate box Male Female Others

১৩।* জন্ম সনদপত্র নং : _____
 Birth Identification Number
 Or অথবা
 জাতীয় পরিচয়পত্রের নং : _____
 National Identification Number

১৪। টিআইএন (যদি থাকে) : _____
 Tax Identification Number (if available)

১৫।* উচ্চতা : _____ সেমি: Or _____ ইঞ্চি ১৬।* ধর্ম : _____
 Height cm অথবা inch Religion

১৭।* বাংলাদেশী নাগরিকত্বের সূত্র : জন্মসূত্রে বংশসূত্রে অভিবাসন দেশীয়করণ সূত্রে
 (টিক (✓) চিহ্ন দিন) by birth by descent Migration Naturalization
 Type of Citizenship বৈবাহিকসূত্রে অন্যান্য, উল্লেখ করুন
 Put (✓) in appropriate box by marriage Others, please specify _____

১৮। যেত নাগরিক হলে নাগরিকত্ব প্রদানকারী দেশের নাম : _____ পাসপোর্ট নং _____
 Name of the other country in case of dual citizenship Passport No.

১৯।* বর্তমান ঠিকানা : (বাংলাদেশে আবেদনের ক্ষেত্রে প্রযোজ্য) (Applicable only when applying in Bangladesh)
 Present Address
 গ্রাম / বাসা _____ রাস্তা/ব্লক/সেক্টর _____
 Village/House Road/Block /Sector
 থানা _____ ডাকঘর _____
 Police Station Post Office
 জেলা _____ পোস্টকোড _____
 District Post Code
 ফোন নম্বর _____ ই-মেইল ঠিকানা _____
 Contact Number e-mail Address

স্থায়ী ঠিকানা ও বর্তমান ঠিকানা একই হলে টিক (✓) চিহ্ন দিন
 Put (✓) if Permanent Address is same as Present Address

২০।* স্থায়ী ঠিকানা : _____
 Permanent Address
 গ্রাম/বাসা _____ রাস্তা/ব্লক/সেক্টর _____
 Village/House Road/Block /Sector
 থানা _____ ডাকঘর _____
 Police Station Post Office
 জেলা _____ পোস্টকোড _____
 District Post Code
 ফোন নম্বর _____ ই-মেইল ঠিকানা _____
 Contact Number e-mail Address

পাতা-২

Figure 2.13: Second page of passport application form

Now let's think about a situation. Do we want our personal information to be spread online? Of course not. No personal information about our family can be allowed to spread in this way. So, we're going to be very conscious of this.

How are these leaked online? When we visit different websites or apps, we leave traces of our presence there. Somewhere we may log in, somewhere we may make a comment, and somewhere we may send a message or digital data to a friend. Sometimes we talk about something in groups and think no one knows what we are talking about. This is a very wrong idea. No matter what we do digitally, it's always accounted for. Because the cost of keeping this account is very low. Not only that, many times the law of the country requires to save the history of users' digital activities on a website or app in case any accident occurs, the guilty persons can be identified by investigation.

The history of our presence and activities in the digital world is called digital footprint. We always have to remember that we will not do anything through digital media that will make us go to the police station or feel embarrassed when we grow up. Because the digital footprint is never erased.

In the previous grade, we opened our accounts in Kishore Batayon. Now we will go to Kishore Batayon and complete a course on digital literacy (we will complete the course from home).



Figure 2.14: Homepage of Kishore Batayon

If we click on the Life Skills menu on Kishore Batayon's home page, we'll see the page below.

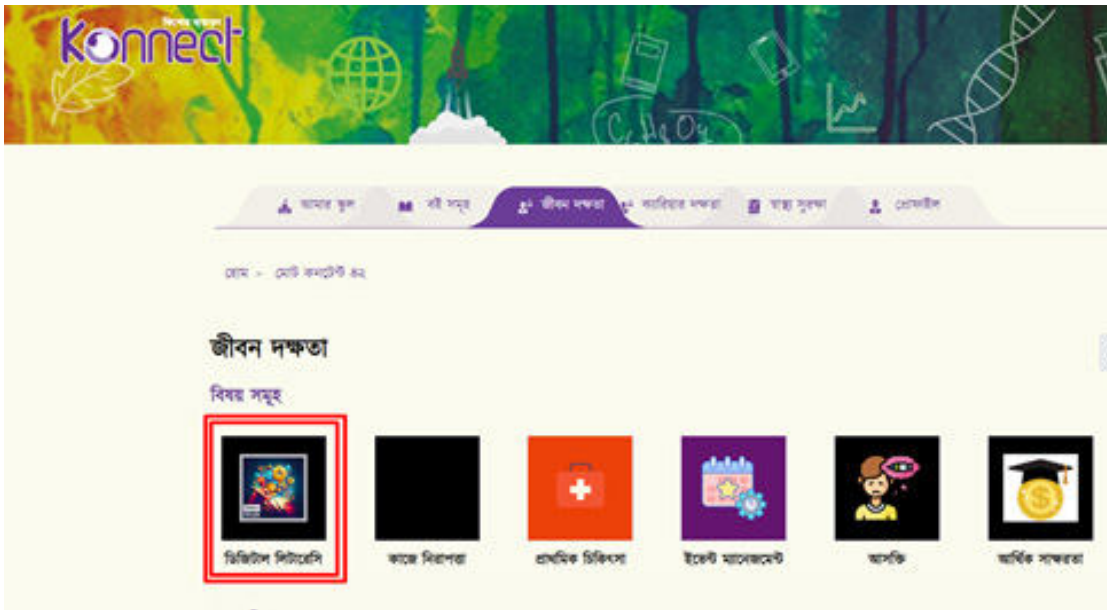


Figure 2.15: What we see after selecting life skills menu

Now clicking on 'digital literacy', we will go to that page's 'Digital Literacy Course for the Secondary Level Students'.



Figure 2.16: Digital Literacy Course for Secondary Level Students' on Kishore Batayon

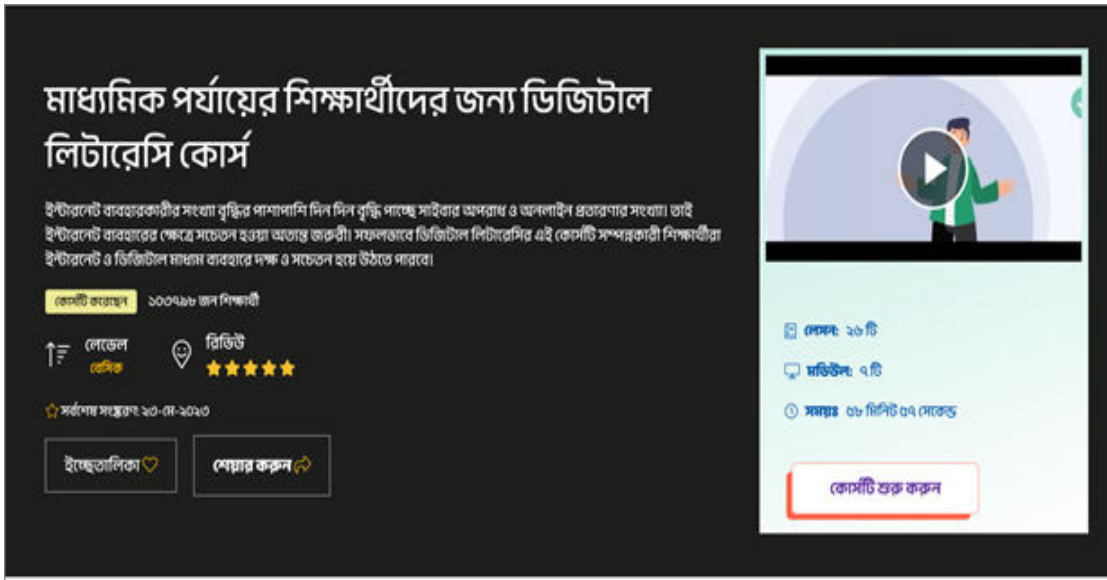


Figure 2.17: This page is shown after clicking the 'Digital Literacy Course for the Secondary level Students'

Do we see any signs of digital footprint here? In one place, it shows how many students have done this course. This means that those who have taken this course have left traces of their presence.

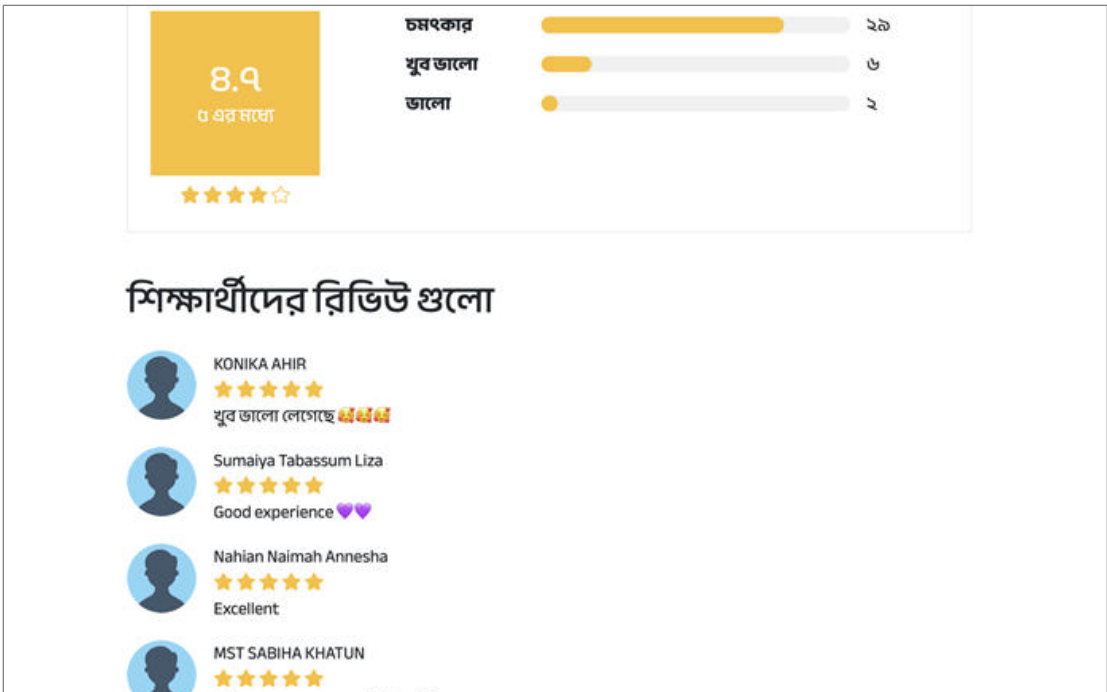


Figure 2.18: Students' reviews about 'Digital Literacy Course for Secondary Level Students'

It appears that some participants commented on how they felt about doing this course. These comments are part of the users' digital footprint. Many times, many users make irrelevant or rude comments on various websites. When others see them later on, the commenters get ashamed. We will never do that. It's something that everyone can see in digital life online. So, we are not going to do anything that we or our family will be in trouble with.

Session -6: Living a Safe and Balanced Digital Life

We have learned and practised a lot about digital living so far. At this stage we will all create a play together.

There will be a story behind this play. The main character in that story will be one of us. The story will be like this

That friend of ours recently have opened an account on digital social media. While he spends most of his time gossiping with his friends, one day a stranger starts talking to him on digital social media. The man says he is an officer of the local Office of the Directorate Secondary Education. First of all, he helps our friend with his studies and develops a friendly relationship. Then one day he tells our friend that a special government scholarship has been introduced. If he wants to be considered for a scholarship, he will have to submit a national identity card and birth certificate. Then one day, suddenly it comes to light that a case has been filed against his father at the police station. It is written in the case file that someone took a loan from a local bank using his father's national identity card and embezzled the money. At this point, the story will take a different turn. The rest of us will form a team of detectives. Then we will find out how the information was stolen by assessing his digital footprint and how using that information, the fake identity card was created. Finally, we will arrange for his father's name to be dropped from the case by filing a counter-GD online.

not all of us are going to write different plays in class. There will be three teams from Grade Eight. Each team will write a drama script. Each team's work will be divided into who will direct the play, who will write, who will act, etc.

First, let's write down the names of our team and team members in the table below.

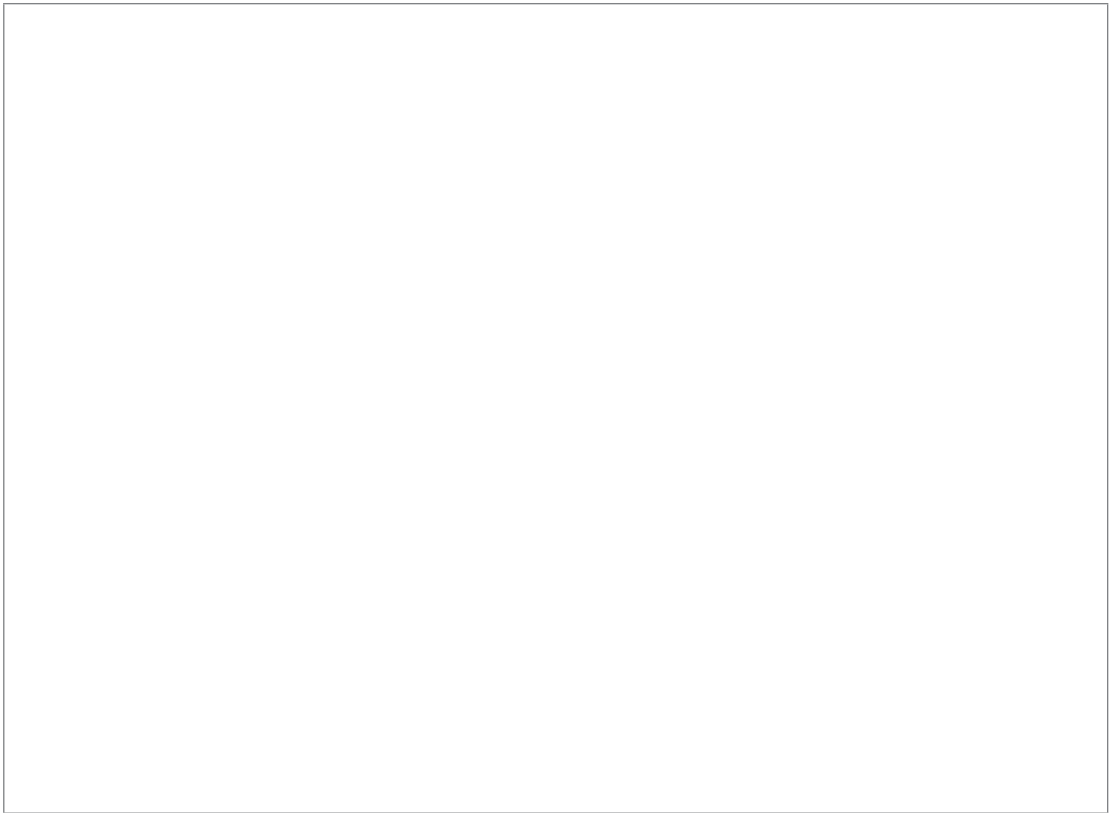
Name of Team
Name of Members

Then we will decide what characters will be in our play. Let's write it down in the following box.

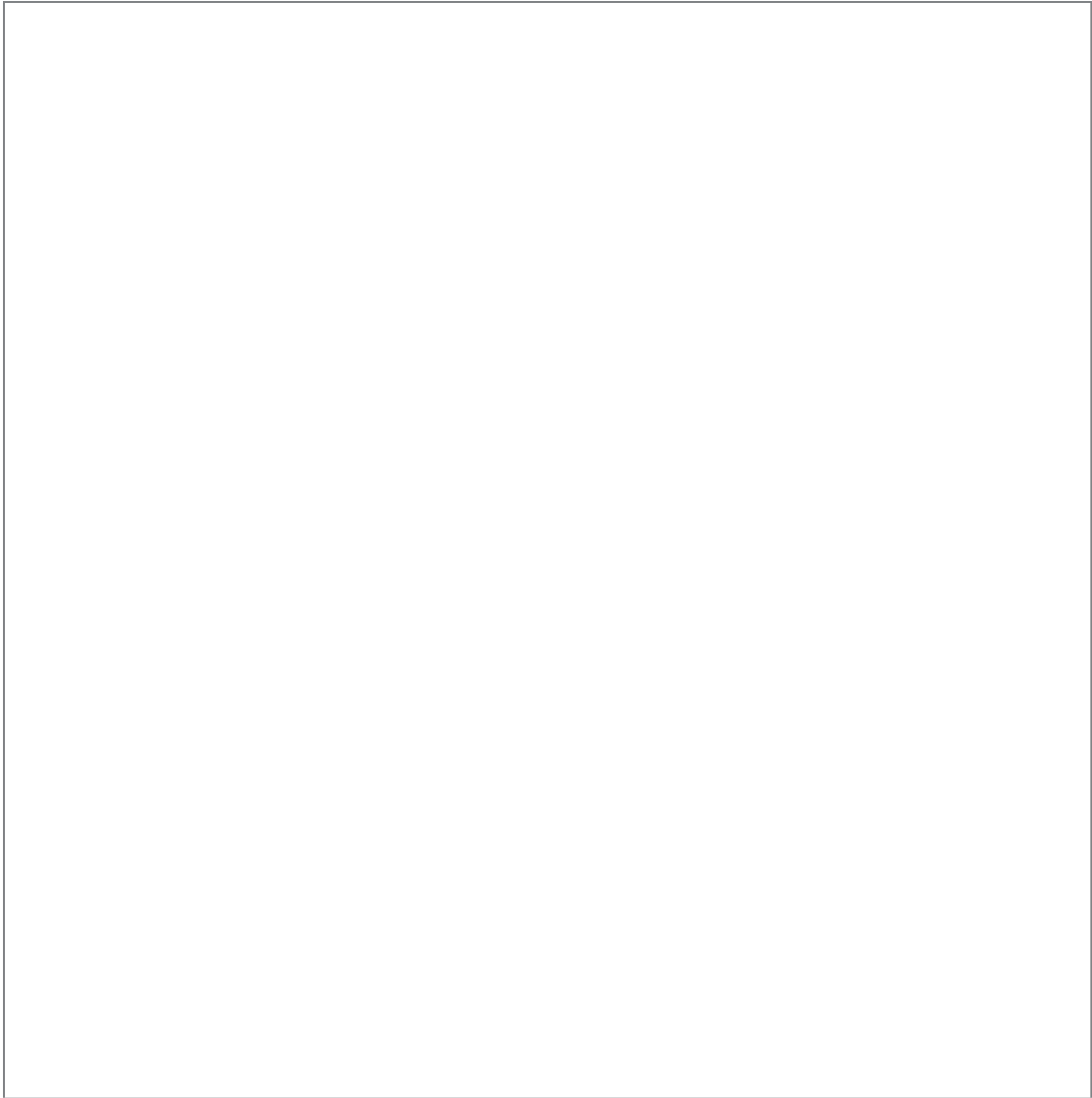


Now we will write down the scenes one by one. If we need additional paper, we will use our own exercise book's pages.

Scene 1:



Scene 2:



After this, we will organize an exhibition for the students with all the plays from all the groups. We can stage this play at our annual cultural festival or programme.

We have learned a lot in this experience that will not only help us for the rest of our lives, but if we can teach our family members the safe and balanced use of digital technology, our social responsibility will also be fulfilled. We will never be afraid of technology; rather, we will use it for ourselves. Technology will never control us. On the contrary we will move forward with the help of technology. What can be better than this?

Learning Experience-3



Let's Take the Advantages of Civic Services and E-commerce

We can easily use digital technology to avail any government service more conveniently than before. Now, we do not need to spend a lot of time going to the office or elsewhere to get any service. As we are using digital technology to facilitate civic services, similarly we can take services using digital technology to buy and sell things. We will discuss the steps we can take to improve civic services and e-commerce services based on our experience. We will also present a plan for it.

Session-1: Classification of Civic Services

Ahana, a student in Grade Eight, wants to download a soft copy of the science book on her mother's mobile. Downloading it easily from the NCTB website, she can now study the science lessons any time. The service Ahana received is called Civic Service. She got the civic service from the NCTB website.



Figure-3.1: NCTB web portal

We get civic services from government institutions or local organizations. However, we can also provide services at the institutional or individual level for the convenience and welfare of the general public.

Let us mention more services like the one Ahana got in downloading NCTB book in the following sticky notes:

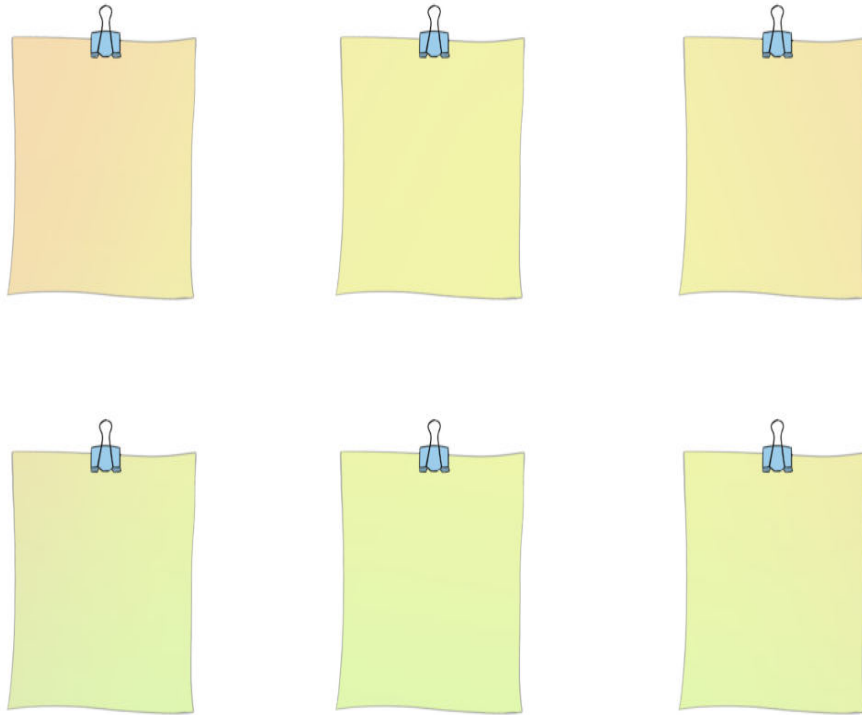


Figure-3.2: Names of civic services

The types of civic services vary according to the organization. We get different types of services from different organizations. By analyzing the above sticky notes, we can categorize civic services. For example:

1. Educational Services
2. Health Services
3. Agricultural Services
4. Law and Judiciary Services
5. Social Security Services
6. Citizen Safety Services
7. Land Services, etc.

Besides the mentioned categories, what are the other services that we can identify?



Table 3.1: Types of civic services

In the table 3.1 and figure 3.2, we have identified various types of civic services. We can organize different civic services into different categories accordingly. With this, we can find out the service we can get from different organizations

Civic Service	Service Provider Organization
Birth Registration Certificate	City Corporation/Municipality/Union Parishad

Table 3.2: Different types of civic services and service providers

We need to go through a process to get civic services mentioned in the table 3.2. Currently, the use of digital technology is highly prospective for accessing civic services. By utilizing digital technology, citizens can avail themselves of various services such as gathering educational information, receiving certificates from government offices, making passport application and visa processing, tax return submissions, banking, and more. Civic services are closely associated with time, travel, and expenses. At present, a citizen can get all these civic services by means of digital media, which have greatly reduced the time, travel and cost needed for getting these services. Some examples of civic services include Kishore Batayon (Students' Portal), digital centres, national

information portals, e-files, e-shops, e-payments, national helpline 333, e-learning, Shikhhok Batayon (Teachers' Portal), e-mutation, Uttoradhikar Bangla, digital land record room, MyGov app, digital service design lab, iLab, and innovation lab etc. To make civic services easy, mobile apps have also been developed.

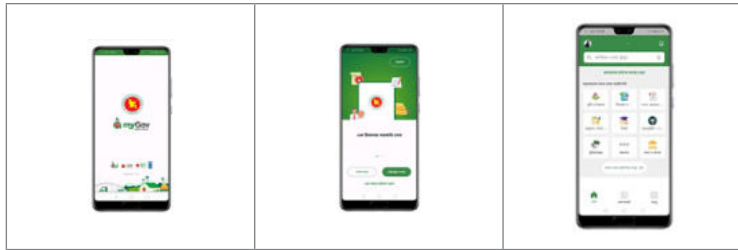


Figure 3.3: Government civic services mobile app

We can easily start getting any civic service using digital means. After applying for a service, we can find out its current status and receive automated messages to know when we will receive the service.

Session-2: Classification of E-commerce

The use of digital platforms for business and trade is increasing day by day. We use the term 'e-commerce' to describe online buying and selling that uses the internet to simplify life. In other words, e-commerce or electronic commerce is a business model where goods and services are exchanged through the Internet or online platforms.

As large organizations provide services through e-commerce, small businesses or individual services can now be found online as well. Many people are selling their products through social media platforms. Let's write some examples in the following table if we or someone we know have experience shopping through e-commerce:

Product Name	Product Type
Books	Education

Table 3.3: E-commerce product categories

All the products listed above are purchased through digital mediums from business-people. This type of buying and selling is a form of e-commerce (from business-people to customers). Let's read the following three events individually to know the other types of e-commerce.

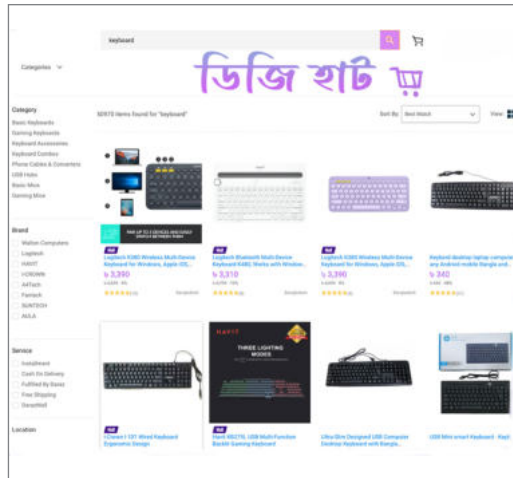


Figure 3.4: Online shopping

Event 1

Dipu's father, Mr Khairul sells boys' clothing at a modern shopping centre. He used to buy products at wholesale price from Chawk Bazaar and sell them at a slightly higher price to make profit. However, due to the increase in transportation costs, now he orders products online and receives them through parcels sent by wholesale vendors from Chawk Bazaar at a low cost. As a result, taking the advantage of e-commerce Mr Khairul can sell products at the same profit margin, just like before.



Figure 3.5: Purchasing wholesale products through online

Event 2

Sujon has advertised through social media that if anyone wants to sell used electronic items within the city of Dhaka, they can contact him. Almost every day, someone notifies Sujon and he collects usable items through parcel services. The collected items are repaired to some extent and made resaleable.

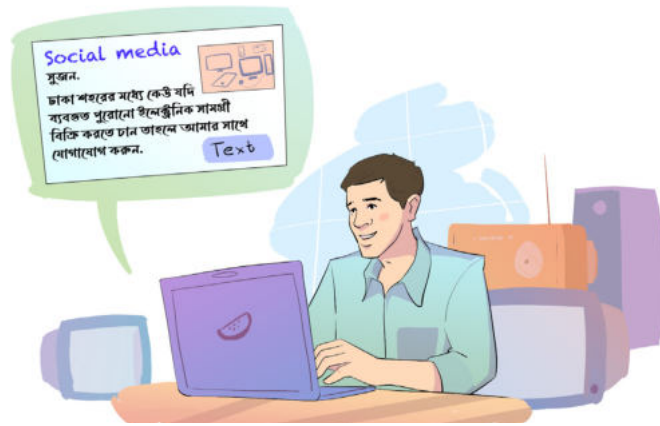


Figure 3.6: Buying and selling through social media

Event 3

Aparupa, mother of Tamal bought a refrigerator for her house. However, after using it for a few days, she realized that she needed a large refrigerator. So, Tamal posted from his mother's social media ID to sell it at a lower price than the purchased price and a person bought it. Within a few days, Aparupa purchased a good-quality refrigerator according to her need from another person at a lower price using social media.



Figure 3.7: Buying product online

From the above discussions and events, we understand that e-commerce is primarily based on communication between entrepreneurs and buyers or consumers. Let's

write the names of the types or categories of e-commerce in the following four cells incorporating the information from the top and right side. For everyone's convenience, the first column has been filled in:

	Businessman	Consumer
Businessman		Businessman to Consumer
Consumer		

Table 3.4: Classification of e-commerce

We get four classifications of e-commerce by filling in the above table. This classification is based on communication and the exchange of goods. Let's write the names and descriptions of the four types of e-commerce in the following table...

Serial	Classification of e-commerce	Description
01.		
02.	Businessman to Consumer	When a businessman collects goods from a consumer and sells them to another party.
03.		
04.		

Table 3.5: Various types of E-commerce

E-commerce initiatives are taken based on the demand of the buyers. Initiating an e-commerce venture according to one's desire will not be successful without considering the demand. Therefore, it is important to consider the demand and make a plan accordingly. Assessing the target group and context before starting any initiative is essential. In our upcoming session, we will see how to determine demand and verify the terms and conditions before initiating citizen or e-commerce ventures.

Session-3: Prerequisites for Civic and E-commerce Service Initiatives

Service initiative has to be started considering two aspects: 'for whom' and 'what their needs are'. When we say 'for whom' and 'what their needs are,' we understand them as 'target group' and 'context.' We certainly remember that in the previous class, we

considered this matter and made a gift. Now, in the case of providing our service, we will also consider the 'target group' and 'context.' Since we plan to provide a service based on this experience, it would be good to choose our service's target group on a small scale. We can consider those as the target group who are around us. Let's identify the individuals in the picture below and create a list of the target group.



Figure 3.8: People of various classes in my area

If it is possible to provide services for others outside this picture, we can also consider them. Now let's write the names of our target groups...

Identify the specific area-wise service needs for the target groups mentioned above at the individual level...

Target Groups	Service Needed	Types of Service
Students	Notebooks, Pens, Pencils	e-commerce

Table 3.6: Classification of e-commerce

At present, the social media platform has become a powerful medium for citizens and e-commerce services. Each organization maintains its own page for communication at any time. Be it a government or non-government organization, or even at a personal level, services are provided to consumers through social media. The least amount of TVC (Time, Visit, and Cost) needed to provide service to a person is taken into account. That is why every organization keeps this aspect in special consideration in their service planning. Not only this, efforts are made from the beginning to make the service easier considering the experience of the customers or service recipients.



Figure 3.9: Providing service through social media

Now we will visit a social media page, group, or website of a school and a local government institution for exchanging information. Now, let's find out whether that school's page/group fulfills all the conditions for providing services digitally. Let's take help with the following questions .

Serial	Questions:	Yes	No
01.	Will any parent or student be able to access necessary information from this group/page even without going to the school?		

Serial	Questions:	Yes	No
02.	Can immediate communication be made for any question or inquiry?		
03.	Are all recent information, notices, or announcements related to education shared?		
04.	Are all recent work-related photos and information about the school provided?		
05.	Are all published notices shared for the information of students and parents?		
06.	Is everyone related to this school being benefited through this page/group?		
07.	Is this page/group being monitored and secured by responsible individuals in the school?		
08.	Does this page/group have any policies for usage or information dissemination?		

Table 3.7: Checklist for verifying the quality of service

Once we know the answers to the above questions, let's discuss the prerequisites and consider the issues we need to evaluate for providing services using digital media. We will present these in class.

Prerequisites for providing services through digital media

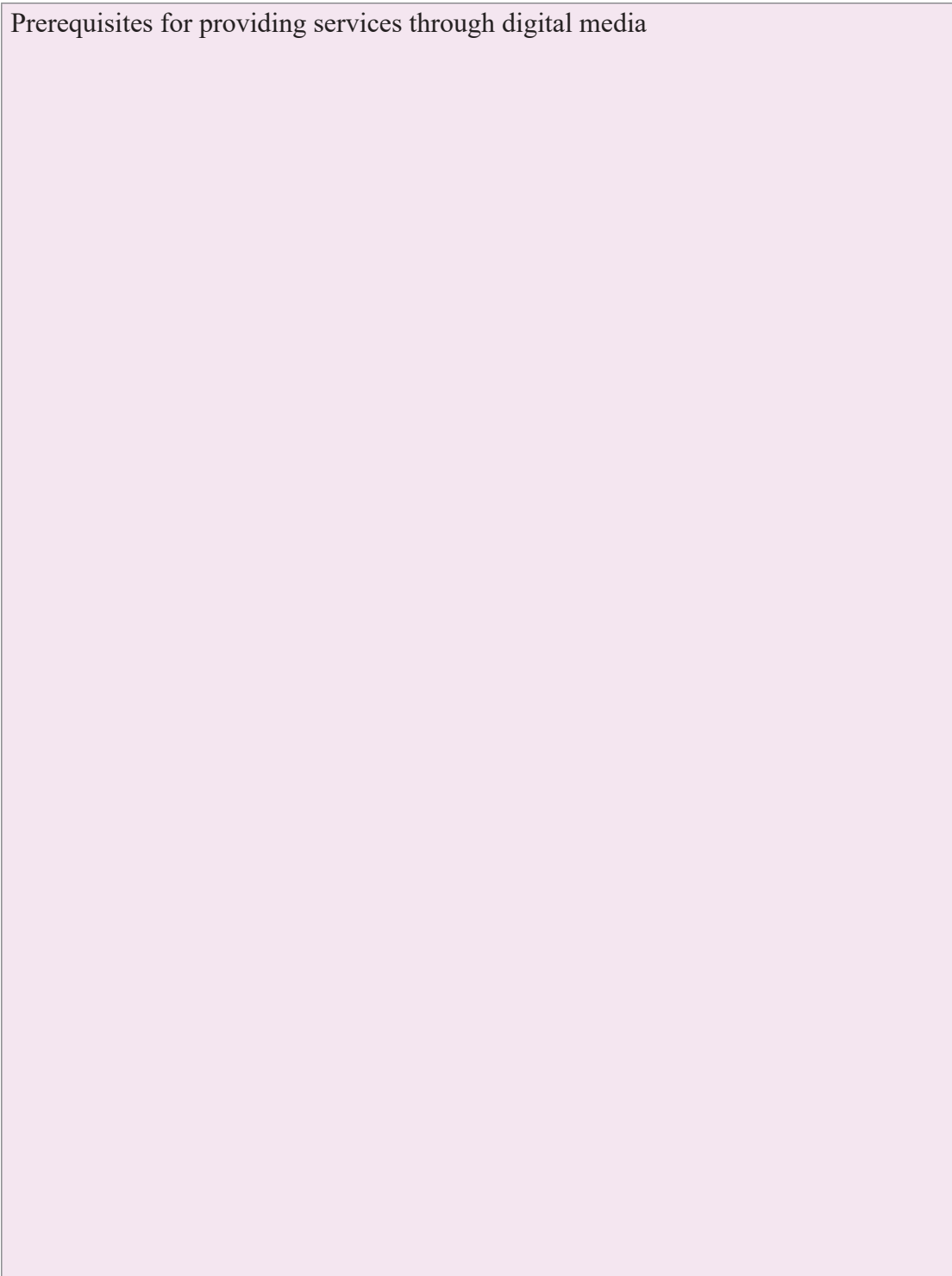


Table 3.8: Prerequisites for service provision

Sessions-4 and 5: Formulating a Plan for Service Delivery

Digital payment or financial transaction is another aspect of providing services digitally. Most financial transactions are done online or through mobile devices, especially in the field of e-commerce. For example, for any correction of information in our national identity card, we have to pay through mobile banking. Again online payment is needed after purchasing a service or product.

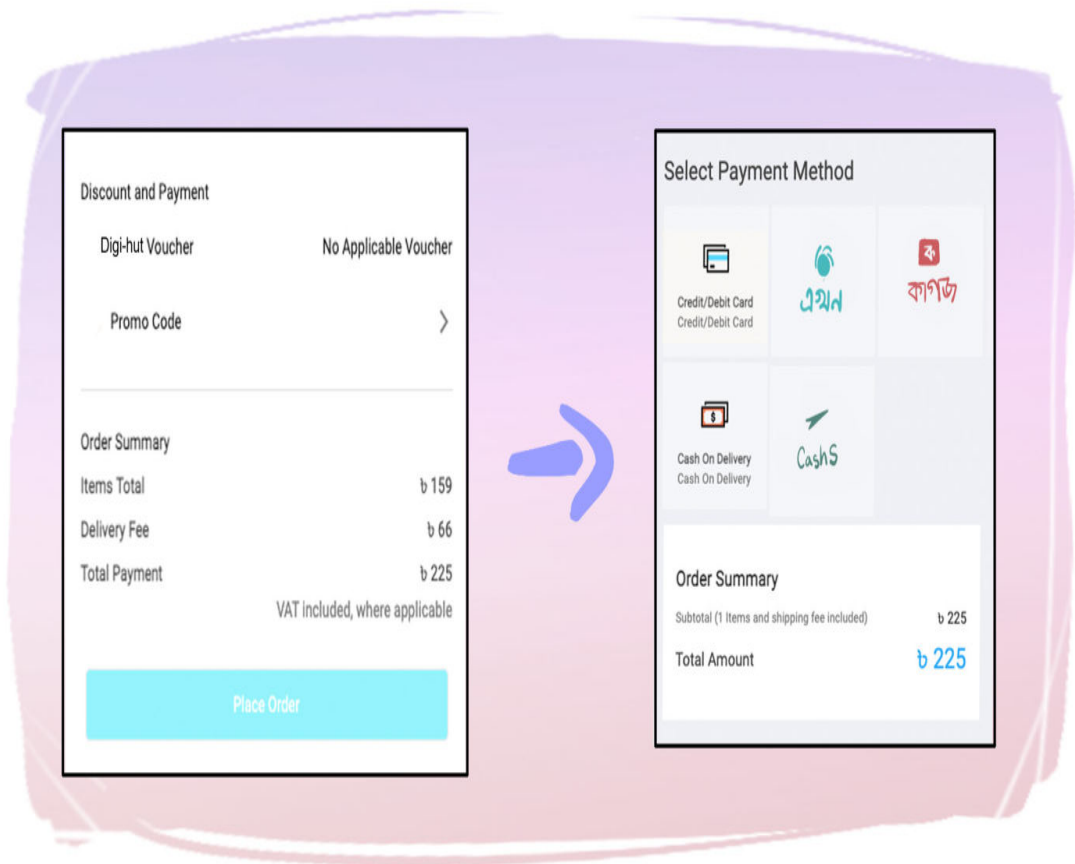


Figure 3.10: Online financial transactions in e-commerce

In many cases, we do direct financial transactions during the delivery of a service. So, we need a plan of financial transactions for any venture.

In the previous grade, we learned about the steps for receiving services through e-commerce. That means, we knew how to obtain services from an established e-commerce platform and exercised them through role-playing and scenario development. In the present experience, we will plan how to start an initiative as an entrepreneur.

ই-সেবাসমূহের তালিকা		
ক্রমিক	সেবার নাম	সেবার মাসিক মূল্য
১	অনলাইন ভিসা চেকিং	৪০.০০
২	অনলাইন পাসপোর্ট আবেদন	৪০.০০
৩	অনলাইন পাসপোর্ট আবেদন	২০০.০০
৪	পাসপোর্ট বি আবেদন	৪০.০০
৫	৪৮ ঘণ্টার ভিসা-সিঙ্ক	৪০.০০
৬	শ্রী বিজয় বিস ভাস	৫.০০
৭	অনলাইনে ভিসা আবেদন	৪০.০০
৮	ভিসা চেকিং	৪০.০০
৯	ভিসা	২০.০০
১০	আবেদন	২০.০০
১১	অনলাইন	২.০০

Figure 3.11: List of e-services

Among the youth in our area, there is a desire to go abroad for better employment opportunities. However, it is often observed that they are unable to find desired wages and suitable jobs abroad. In many cases, they are being deceived. Brother Khokon has taken the initiative to explore this issue for the youth in our area. He has started providing services for job information, job and visa applications, and visa checking. He does his job responsibly in exchange of a nominal charge. In this way, he has gained the trust of the youth in the locality. This is one kind of entrepreneurship. In this way, brother Khokon has created an opportunity for himself to generate income from the locality.

An entrepreneurship is the out come of the collaborative efforts of one or more individuals. Entrepreneurship involves the entire process, from conceptualising and initiating a venture to its establishment and effective management. Entrepreneurship implies having a strong determination and mental strength to establish and successfully managing a business in order to gain profit, keeping in mind the possibility of loss. Those who undertake this initiative are called entrepreneurs.

In this session, we have to make a plan by identifying the steps to be followed to take an e-commerce initiative. For this purpose, we will plan for civic services and e-commerce services through digital means. With the assistance of the teacher, every five students of our class will identify one initiative. Then we will write down the steps of planning for that initiative through digital media, considering the target group and

context. The following matters should be considered in the planning:

- Who are the target group?
- How much is the demand for the service?
- In which area will the service be provided?
- What services will be provided?
- What are their sources of the services?
- What will be the service fees or charges?
- What legal basis or documents for approval may be required?
- Which platform will be used as a digital medium?
- How can others learn about the initiative?
- How will the service be delivered?
- How will the financial transactions be conducted?
- Who can assist in this initiative?
- What are the means of fast and constant communication?

By considering the above issues, we will work collaboratively for the services identified in Table 3.6 of Session 3. With the help of our teacher, we will explore several websites and social media pages/groups that provide popular civic or e-commerce services, and analyze how the above matters are being implemented. Based on this insight, we will organize our plan.

In the field of e-commerce, it is essential to consider the personal and commercial use of intellectual property. Each initiative has its uniqueness, proprietary development, and creativity. Therefore, when considering an e-commerce initiative, we must observe whether there are any similarities with others' e-commerce initiatives, such as logos, products, advertisements, etc. In our previous grades, we learned about trademarks, registration, patents, copyrights, and similar concepts. When taking up an e-commerce initiative, we should ensure that our plan does not clash with someone else's intellectual property rights. Failing to do so may lead to legal risks.

Sessions-6 and 7: Planning the Presentation of the Proposal (Practical).

A plan to start civic or e-commerce initiatives have been undertaken. Now we will design a poster to present this initiative attractively. We will organize a fair with the prepared posters from each team. Earlier, we had developed creative contents for our presentation. Various software can be used for content presentation. Some software can be used for free, while others require purchase. Some software can be installed on computers, while others can be accessed online and downloaded materials can be

printed easily. The offline software options for poster design include:

Adobe Illustrator

Adobe InDesign

GIMP

Blender

Microsoft Power Point

Canva, etc.

Most of the software mentioned above need to be purchased before use. Some may offer free usage for a limited time or with limited features. It is illegal to use copyrighted software without permission. Before using it, it is essential to verify its legitimacy.

We have demonstrated here how to prepare a poster for the presentation of our plan using Adobe Illustrator. We will perform this task with the help of a teacher in the school lab. Those who do not have this opportunity can present the same design on poster paper in an attractive way.

Adobe Illustrator is a copyrighted software. After purchasing it at a specified price, it needs to be installed on a computer for use. Generally, the software can be used on a single computer. However, we can try the 'trial' version for a specific period without any cost. For this, we need the assistance of our teacher. We will perform the poster design work using any version of Illustrator. There is no need for a specific version or the latest version. If we need to use it professionally in the future, we will use the necessary software.

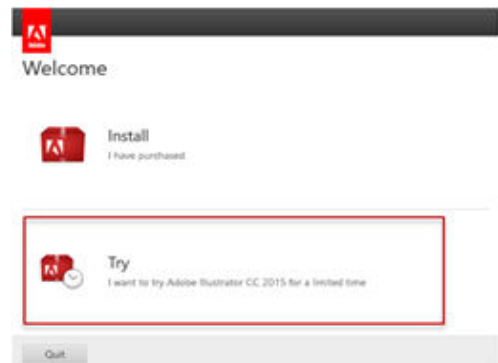


Image 3.12: Installation steps of Adobe Illustrator

To start Illustrator software on our computer, click on its icon from the 'start' menu. Once it is launched, we will see the following layout on our computer screen.

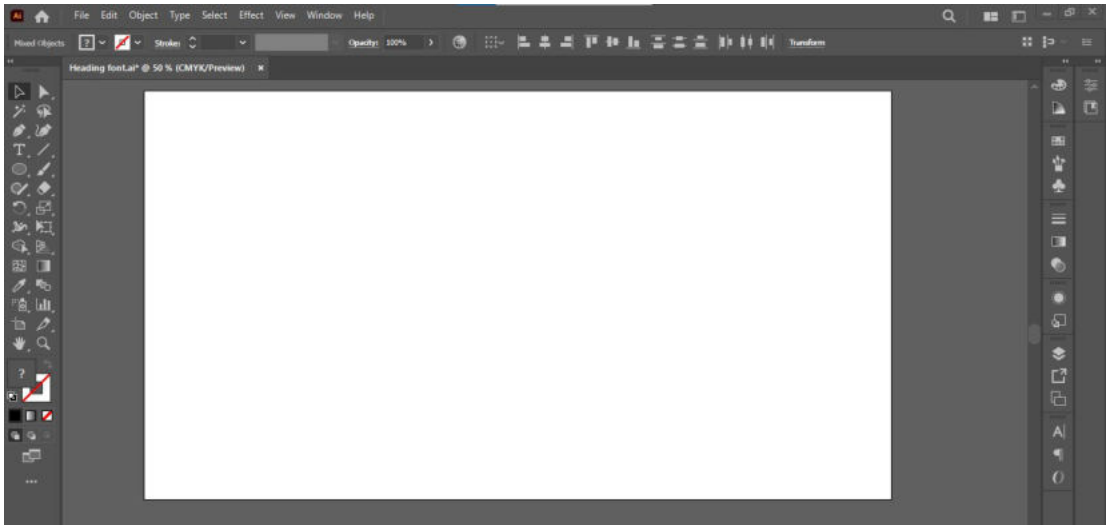


Figure 3.13: Adobe Illustrator's layout

Task 1: Introduction to Illustrator's Tools and Creating a New File

At the beginning of using the software, let's familiarize ourselves with these tools that we will be using more frequently in Illustrator.

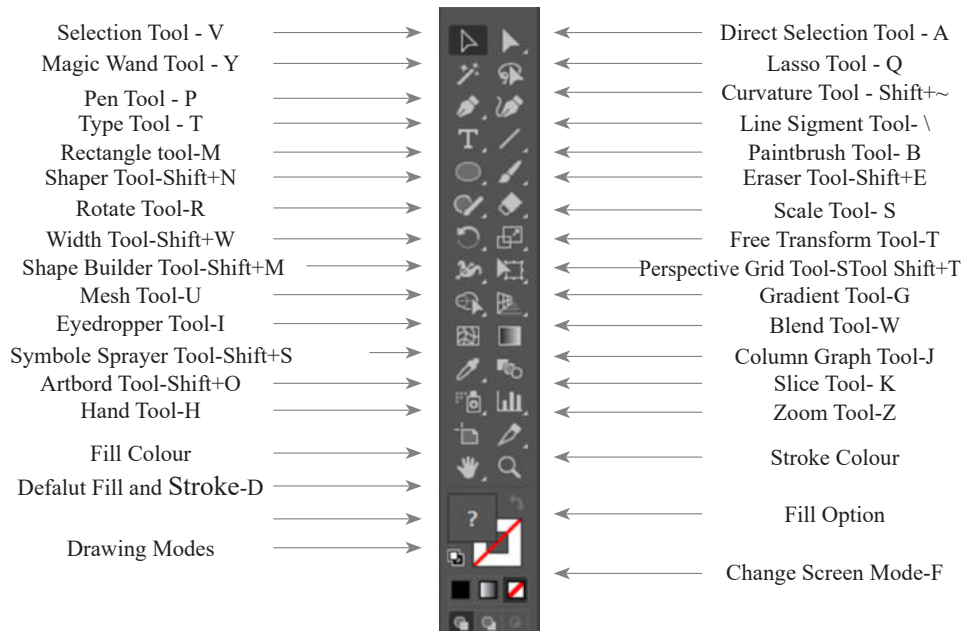


Figure 3.14: Adobe Illustrator's Tools

Selection Tool: This tool is used to select objects in an image. We can drag the mouse to move the object conveniently from one place to another.

Direct Selection tool: It allows us to directly select and move objects. It can also be used for drawing.

Pen Tool: It is used to create any type of object or shape, including straight and curved lines.

Type Tool: With this tool, we can write and edit text within a text box.

Rectangle Tool: It is used to draw rectangles. In addition, using the dropdown menu, we can create various shapes such as circles, stars, etc.

Paintbrush Tool: This tool is used for painting, drawing lines, and creating images.

Pencil Tool: It is used to draw freehand, similar to a pencil.

Gradient Tool: It is used to create objects with multiple colours blended and create gradient effects.

Mesh Tool: With this tool, shading can be added to any area.

Eyedropper Tool: It is used to pick the colour from one part of an object and apply it elsewhere.

Blend Tool: This tool is used to blend colour and shape between multiple objects.

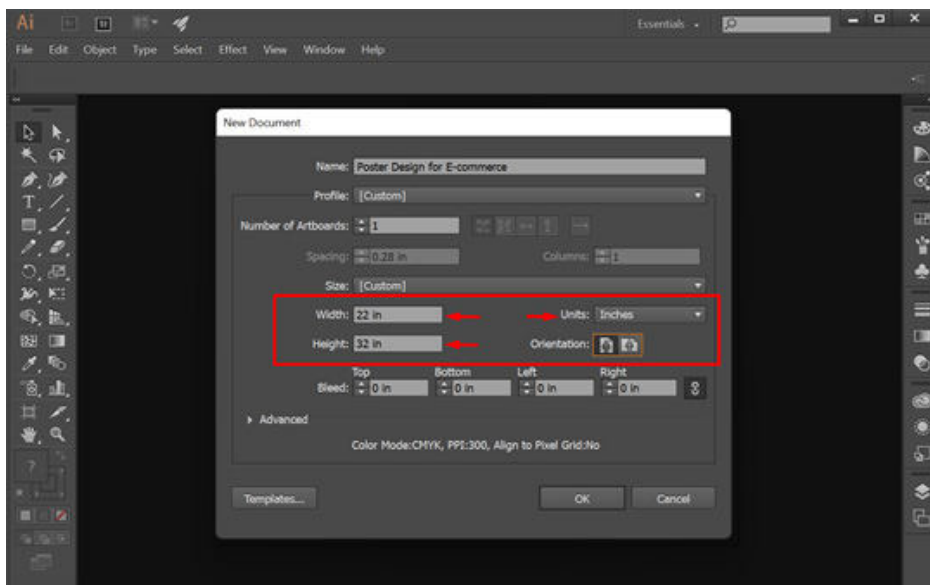


Figure 3.15: Creating a new file in Adobe Illustrator

From the File menu, click on New option and save a new file with a name according to the settings below.

Task 2: Changing the Interface Colour in Illustrator

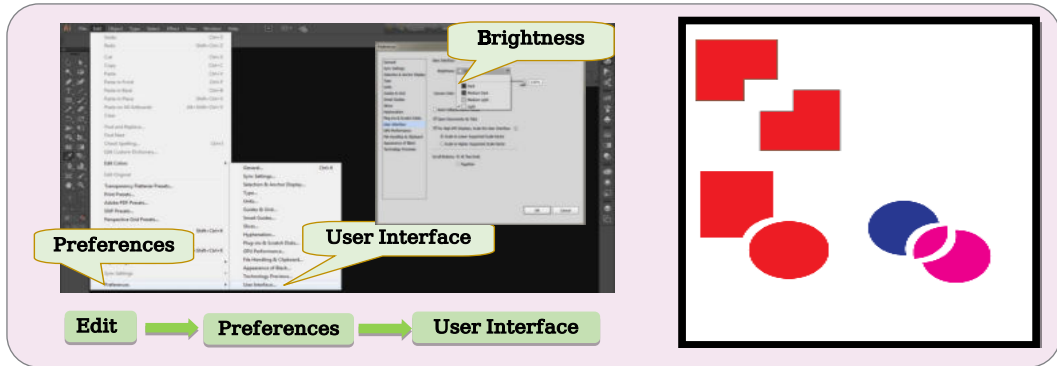
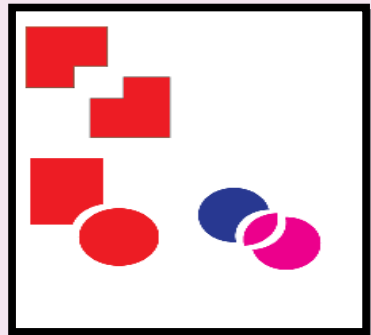


Fig. 3.16: Steps for changing the interface in Adobe Illustrator

Fig.- 3.17: Exploration of various shapes



- In the 'Preferences' dialogue box, select a colour from the 'Brightness' dropdown and click OK.

Task 3: Drawing various shapes, rotating, and using the Reflect tool in Illustrator

Drawing various shapes in Illustrator

- First, select the Rectangle Shape Tool and draw two rectangles (one rectangle touching the other).
- Then, go to the Window menu and select Pathfinder. Select both rectangles. Practise the options available in the Pathfinder shape mode. Perform the following task using option number four.

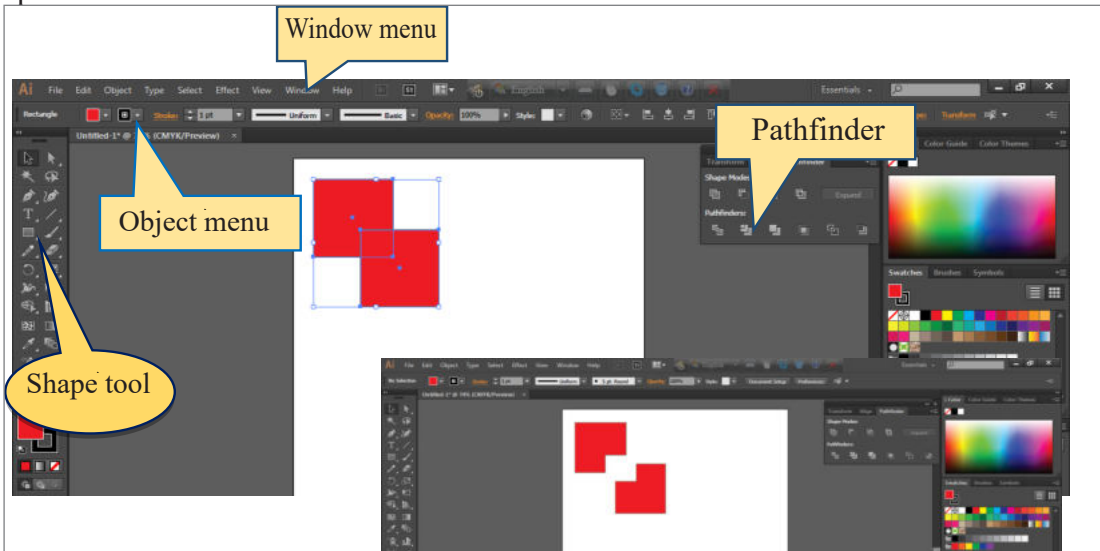


Figure 3.18: Steps for adding shapes in Adobe Illustrator

- If we ungroup two shapes from the object menu, they will appear as shown in the image.
- Then, let's attempt to create different shapes using the Rounded Rectangle Tool and Ellipse Tool.
- Practise the options available in the Pathfinder located below.
- Let's try to create something similar to the image on the right or something else.

Task 4: Rotating shapes using the Rotate tool in Illustrator

- Draw a star shape by using the Star Tool.
- From the Object menu, go to Transform and select Rotate.
- Choose the desired degree of rotation.
- Click Copy. This will create a copy of the rotated shape with the same amount of rotation.

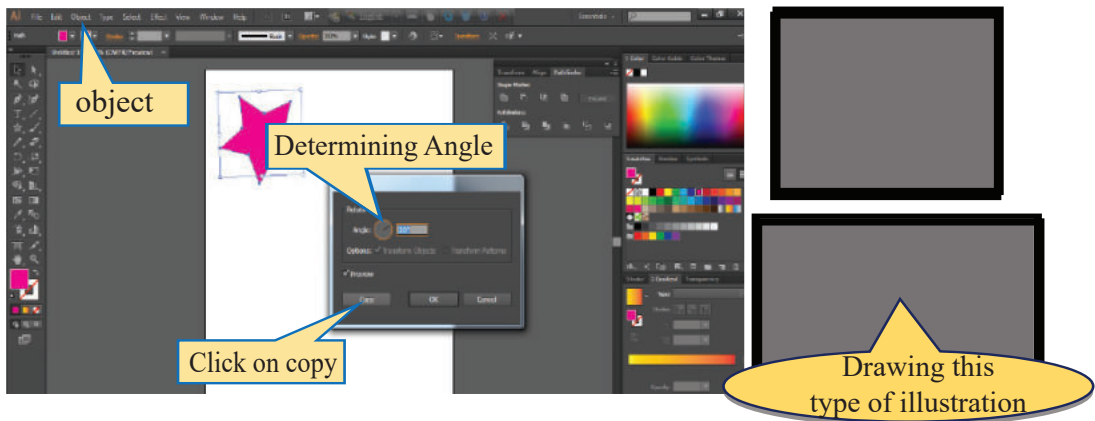


Figure 3.19: Steps for adding shapes in Adobe Illustrator

Task 5: Using the Reflect tool in Illustrator

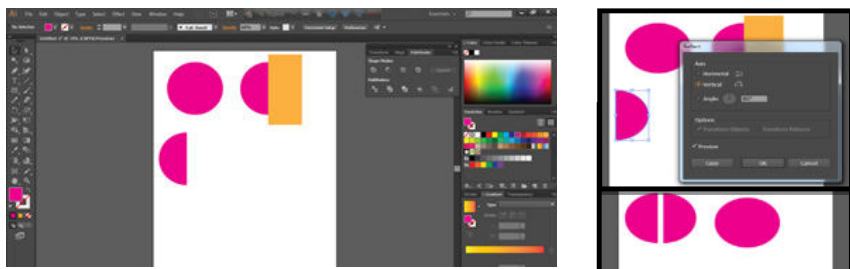


Fig. 3.20: Steps for adding shapes in Adobe Illustrator

- First, Let's create a circle using the Ellipse tool. Copy the circle and draw a rectangle in the middle and cut it using the Pathfinder tool to cut it.
- Go to the Object menu, select Transform, then choose Reflect. Keep in mind the three options: horizontal, vertical, and angle.
- Select Vertical and set the angle to 90 degrees. Click on Copy.
- It will create an object as shown in the image.
- Now, you will get a complete circular shape after combining the two parts.

Task 6: Saving and Printing in Illustrator

- Click on the File menu;

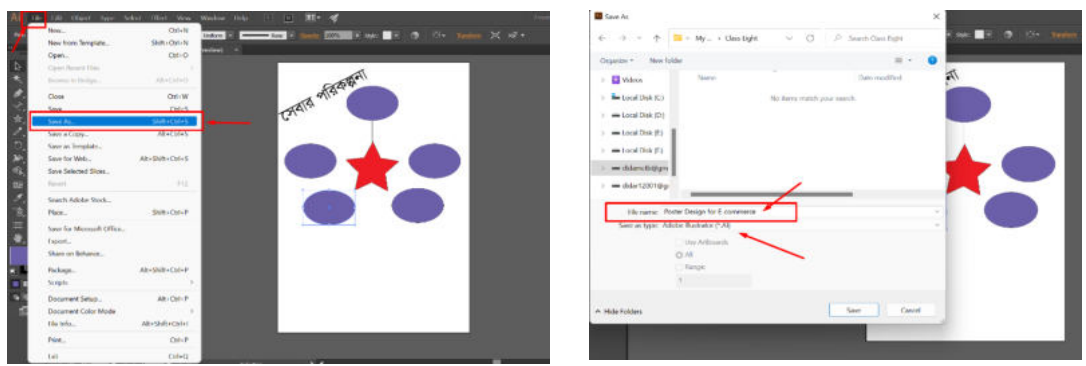
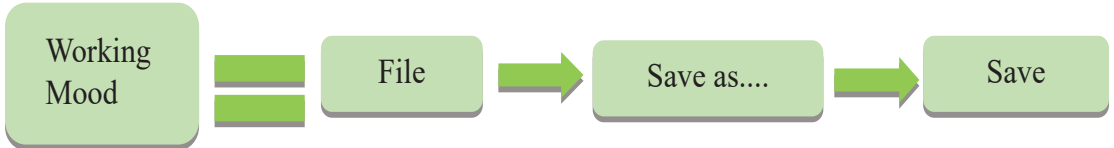
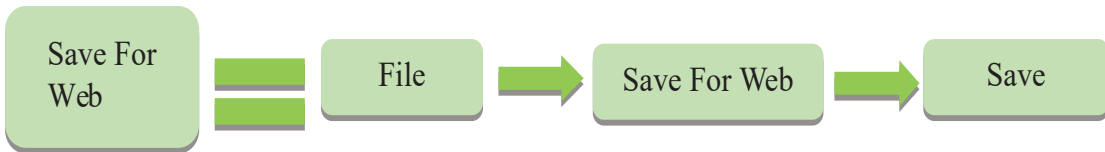


Figure 3.21: Saving a file in Adobe Illustrator

- Click on Save As;
- Write the file name in the dialogue box;
- Click Save;



- Before clicking on Save in the Save As dialogue box, write the file name;
- Now click on Save for Web to save the file as an image.



- Before clicking on Save in the 'Save for web' dialogue box, select JPEG below the name.

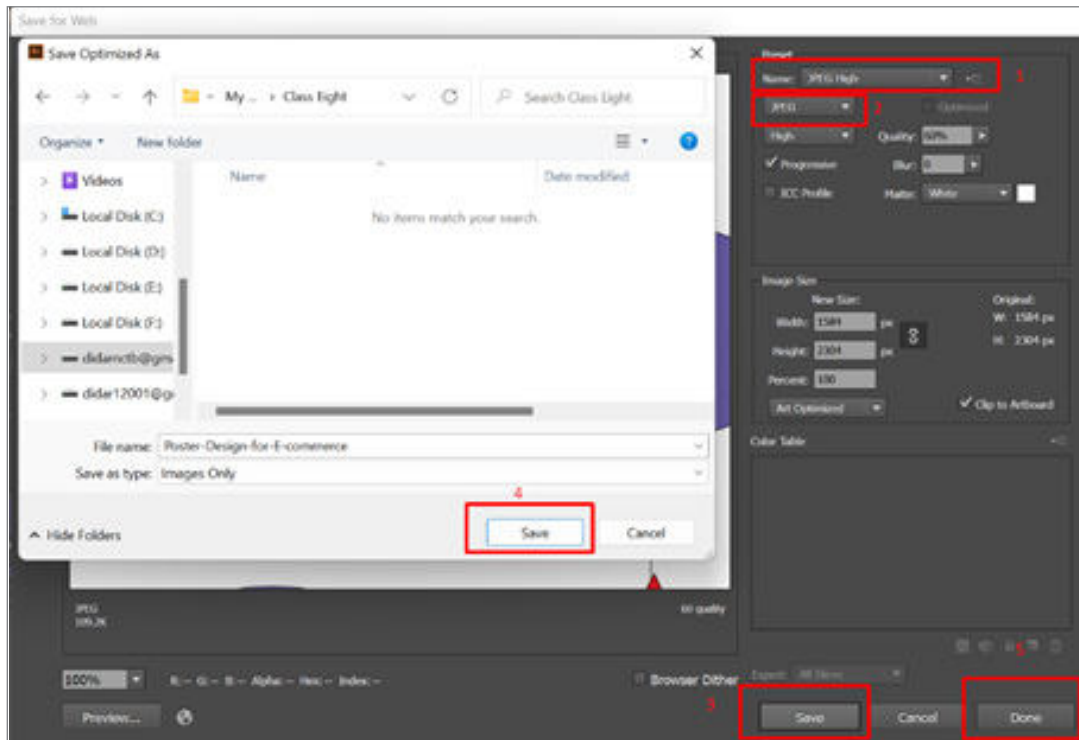


Figure 3.22: Saving an image file in Adobe Illustrator

- To print, click on File > Print > Done.

Session-8: Designing our Planning Poster (Practical)

We will create the design of the planning poster using any graphic design software. Free software like Canva and similar ones are available online, where templates or designs are provided, and we just need to add information and images. We will use a convenient software to present our planning poster. If it is not possible to present the poster using software, we can create an attractive design on paper to present our planning. With the help of the teacher, we will systematically complete our work in the computer lab or classroom.

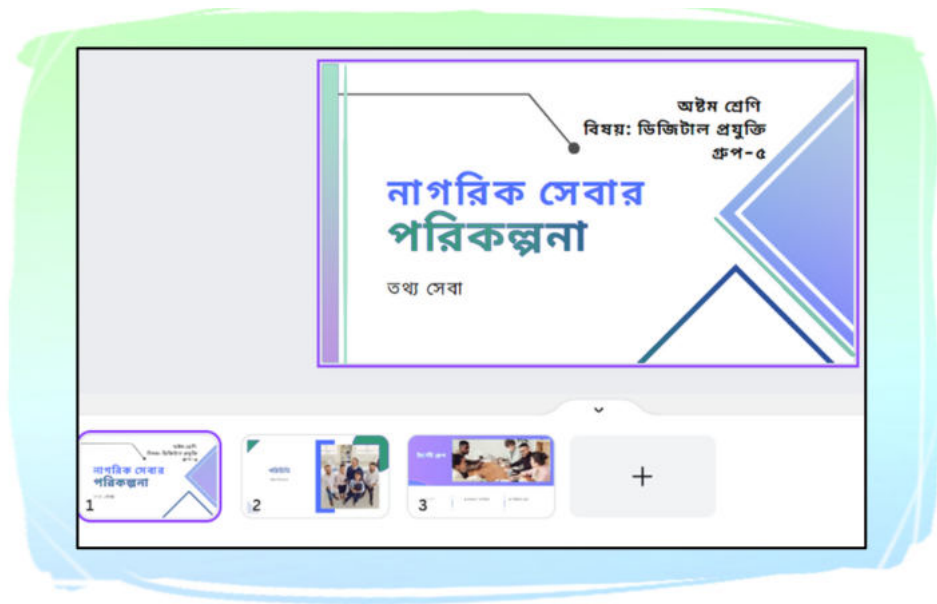




Figure 3.23: Graphics work in online-based software

To maintain the ownership rights of the intellectual work of all teams, we can use any symbol of the following table based on the purpose of our graphics presentation software. These symbols mean that anyone can use our presentation for non-commercial purposes subject to certain conditions. There are descriptions of two types of permission presented by two symbols below:

License Name	Symbol	Type of Use	What Can Be Done
Attribution (BY)		Commercial and Non-commercial	Copy; Can be modified according to personal needs; Redistribution; Giving licence to others.
Attribution-Noncommercial (BY-NC)		Non-commercial only	Copy; Can be modified according to personal needs; Redistribution; Giving licence to others.

[Task to be done outside the classroom]



Figure 3.24: Team presentation for service planning

Once all the teams' work is complete, each team will present their poster. Each team can present their work on printed posters or digitally. For this, appropriate precautions and arrangements must be made in the classroom or multimedia classroom or lab. With the assistance of the teacher, members of the management committee, the school headmaster, other teachers, parents (if possible), and other individuals should be present during the team's presentation of their planning. Everyone should actively participate in the team's work. Each team should describe each step and answer any questions from the guests/evaluators. The presentation of each team should be unique considering the context of their own area.

Learning Experience 4

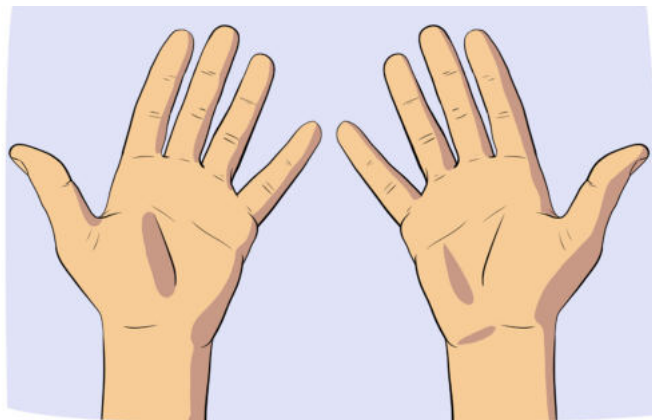


Seeking Solutions: The Unique Power of Programming

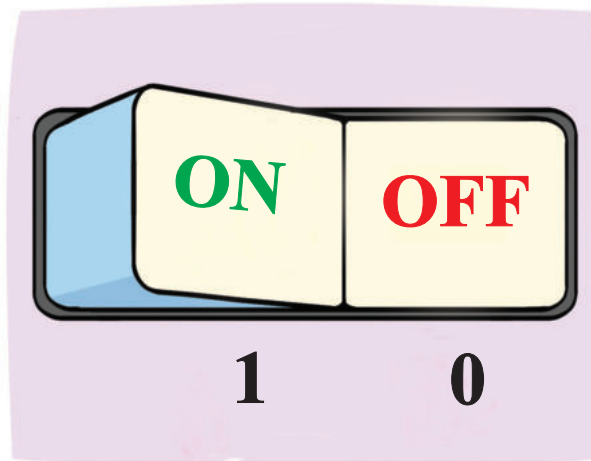
We learned to create a pseudo code in the seventh grade to solve a real problem. By looking at the pseudo code, we can get an idea of the solution. However, if we want to instruct the computer itself to solve the problem by understanding those instructions, we need to design a programme. So, from this learning experience we will see how we can design programmes using a programming language in arrangement with logic. Then we will select a real-life problem and design a programme to solve it. During this programme design, errors and risks may occur. We will also try to find solutions to those during this experience.

Session 1 and 2: Combining Logic with Different Inputs in a Machine

In the seventh grade, we learned that computers understand only binary numbers, i.e., they cannot understand any other digit or number except 0 and 1. Well, when we count numbers, how many digits can we count initially? We can count a total of 10 digits, from 0 to 9. All other numbers are expressed using these 0 to 9 digits. Why do we represent all numbers using these 10 digits? When humans started counting, they started counting using the decimal system because of the 10 fingers of their hands.



That means if we had more fingers than ten in our hands, our digits would have changed. Now let's think about computers for a moment. Computers use the binary number system which consists of only 0 and 1. So why is that?



In computers or any other electronic devices, we think of the device as either being turned on or off. In other words, we have two options.

Device off = 0

Device on = 1

That's why 0 and 1 are the two special numbers used in the binary system.

Whatever information is stored in a computer, is kept as binary numbers. Additionally, whatever calculations the computer performs, such as addition, subtraction, multiplication, and division, are all done using binary numbers.

Now the computer wants to represent any number using 0 and 1. However, we are accustomed to writing any number using the digits 0 to 9. So, when we suddenly see a number like 0111000110, we don't understand its meaning. However, it is possible to convert decimals to binary and binary to decimals very easily. We will learn about binary numbers and its different mathematical operations in details from the Mathematics book of Grade 8.

Earlier, we learned about input and output while learning about flow charts in Grade VII. In the Grade VII, we saw an example of using a robot to put out a fire. Our robot initially detected the fire using a camera. This was the input. Then the robot poured water, which was the output. In other words, for one input, we got one output. We can write this as follows:

Fire detected → Pour water

This means that pouring water depends on the detection of fire. If fire is detected,

the robot will pour water. If fire is not detected, the robot will not pour water
Whenever an event is negative, we can express it with Logical NOT.

Logical NOT is denoted by the \neg symbol.

Then we can also write for the robot,

$$\neg \text{ Fire detected} \rightarrow \neg \text{ Pour water}$$

That is, if fire is not detected, the robot will not pour water.

Again, we can represent it through variables if we want.

If we write,

a = fire detected

b = pour water

Then we can write,

$$a \rightarrow b$$

$$\neg a \rightarrow \neg b$$

When an input or output occurs, we can denote it by 1. Again, when no input or output occurs, it can be expressed as 0.

Thus, the various consequences of input and output can be expressed in a table using 1 and 0. This table always tells us the truth, so it is called the Truth Table. Consider an input c (a switch) and an output d (a lamp) –

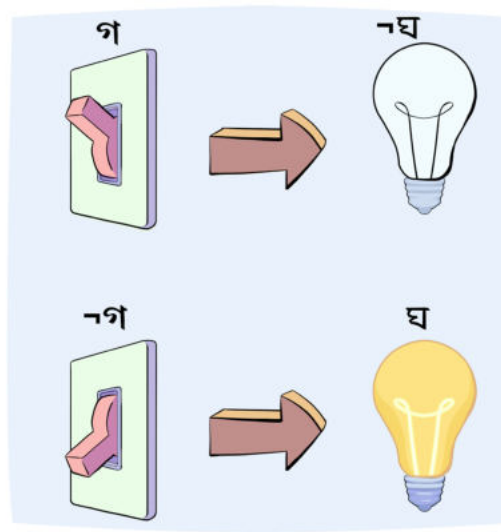
$$c \rightarrow \neg d$$

$$\neg c \rightarrow d$$

That is, input and output are behaving oppositely. Turning on the switch will turn off the lamp, and turning off the switch will turn on the lamp. For such an event, fill out the truth table below:

Input C	Output D
1	0
0	1

This is a basic truth table for logical NOT.



Now let's consider the example of detecting fire and pouring water using a robot.

If,

a = Fire Detected

b = Pour Water

Then,

$a \rightarrow b$

$\neg a \rightarrow \neg b$

In this case, let's complete the truth table in the following format:

Input a	Output b

However, what if we have two inputs a and b , on which the output c depends? Let's assume:

a = 1st Input (First switch)

b = 2nd Input (Second switch)

c = Output (A bulb)

If we want the bulb to turn on only when both switches are activated, then we use Logical AND, represented by the symbol \wedge . In this case, the event will occur as follows:

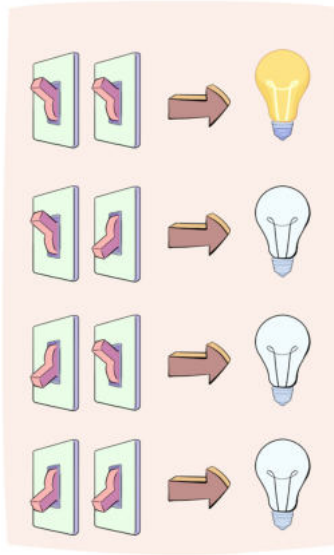
$a \wedge b \rightarrow c$

$a \wedge \neg b \rightarrow \neg c$

$$\neg a \wedge b \rightarrow \neg c$$

$$\neg a \wedge \neg b \rightarrow \neg c$$

Notice that if an input is not active, the output cannot be active either.



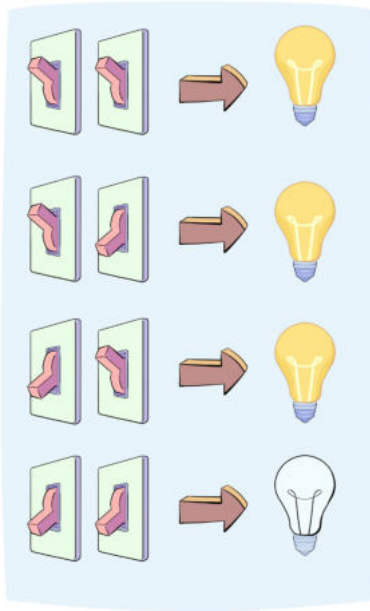
Similarly, complete the truth table below for this event:

Input a	Input b	Output c = a ^ b

Again, suppose we want to have two switches, but at least one switch should be enough for the bulb to turn on. In other words, if either of the two inputs is active, we will get an output. This is known as Logical OR, represented by the symbol \vee . In such a case, the event will occur as follows:

- a | b → c
- a | ¬b → c
- ¬a | b → c
- ¬a | ¬b → ¬c

Note that only when both inputs are inactive, the output cannot be active. Apart from that, the output is always active.



Similarly, complete the truth table for this event below:

Input a	Input b	Output c = a b

When we are working with two inputs, we always have a total of 4 possible events. But why is that happening? Actually, for each input, we have two possible values. We will get an input value of either 0 or 1.

Total number of possible events for some inputs = (total input) ^ total possible value

then we have a total possible event for 2 inputs = $2^2 = 4$

Similarly, if we have 3 inputs, total possible events = $2^3 = 8$

Session-3: Introduction to Programme Design

When we want to give instructions to a computer, we have to write the instructions in a language so that the computer can understand. We learned to write pseudo code in the seventh grade. Through the pseudo code, we created a set of instructions that a robot could follow to put out a fire. But if we give the pseudo code to the computer or robot directly, it will not be able to understand it. As we already know, any electronic device including computers, can only understand 0 and 1. But it would be difficult for us to write our instructions with only 0 and 1. So, how do we communicate with the computer? There are some languages in which, if we write instructions following the rules of that language, the computer can easily understand those instructions by converting them into binary or hexadecimal numbers. These languages are called programming languages. People use Bangla, English, French, Latin, Spanish, and other languages to communicate with each other. Similarly, there are various programming languages. For example- C, C++, Python, Java, etc.



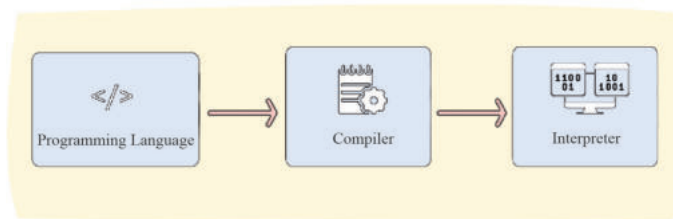
If we learn any programming language like any of these, we can give the necessary instructions to the computer through that language. On our computer, we will first write the instructions in a specific programming language with an application or software.

There is a conversion mechanism in the computer that converts those instructions into machine code.

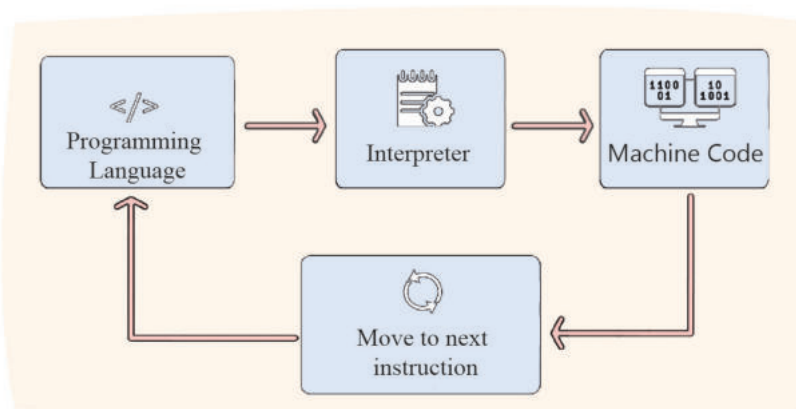
What is machine code? It is essentially the binary code created by combining 0s and 1s, which our computer can understand. As a result of this conversion, our instructions can be understood by the computer, and it can execute the given instructions to perform a task.

The conversion mechanism of the programming language in the computer can be of two types:

a) If we provide multiple instructions in a specific conversion mechanism and all the instructions are correct, then all the instructions will be converted into machine code together. This conversion mechanism is called **Compilation**, and the software performing the conversion is called a **Compiler**. However, if the compiler encounters any error in the instructions, it won't be able to perform the conversion. The conversion process will only take place if all the instructions are error-free.



b) In some conversion systems, no matter how many instructions we give, not all will be converted together. One instruction at a time will continue to be converted. This conversion system is called **Interpret**. The one performing the conversion is called an **Interpreter**. The interpreter converts the instructions one by one. If an error is found in any instruction, it will stop at that instruction.



Now, let's put tick marks on the correct options below—

Description of Programming Language	Conversion system	
	Compiler	Interpreter
In the C programming language, all the instructions will be converted together.		
In the Python programming language, all the instructions will be converted one by one.		

Among all these diverse programming languages, which one should we learn? We should start learning any one programming language first because the basic structure of all programming languages is similar. Only the rules for writing instructions differ slightly. For example, in the C programming language, we need to put a semicolon (;) after each instruction (statement); but in Python, this is not necessary. Despite these minor differences, there is nothing to worry about. Once you have learned one programming language, it will be much easier for you to learn other programming languages. In this book, we will start with Python. If you want, after learning Python, you can easily learn other programming languages as well.

The Journey of Python Begins

Python is a very interesting programming language, to learn easily.

To write instructions in the Python language, we need to complete some tasks first:

1. First, we need to download the Python application and install it on our computer. Go to this link - <https://www.python.org/downloads/>

Then, download the latest version from there.

2. After the application is downloaded, install it. During installation, we will see a window like the image below-

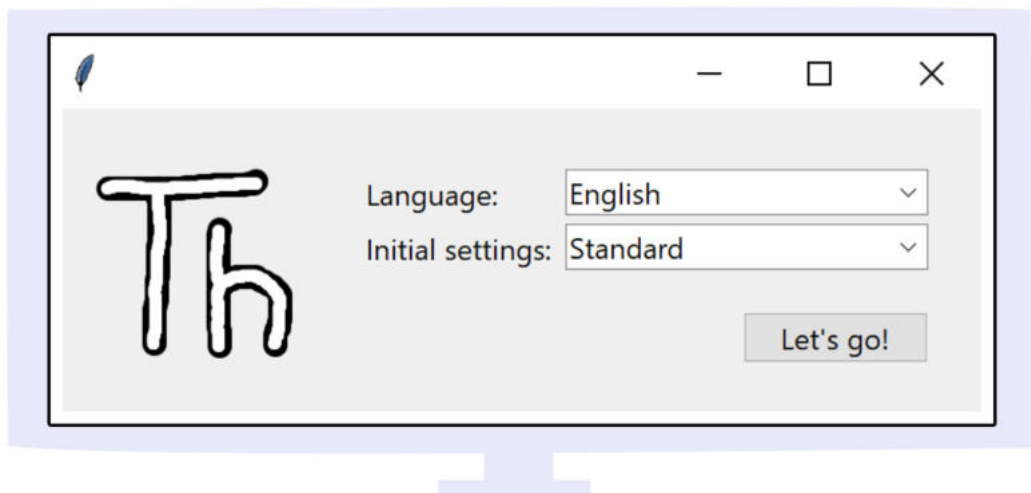


We will click on the options below the Install window to put tick marks. Then, click on the Install Now option. If installation permission is requested, allow it too.

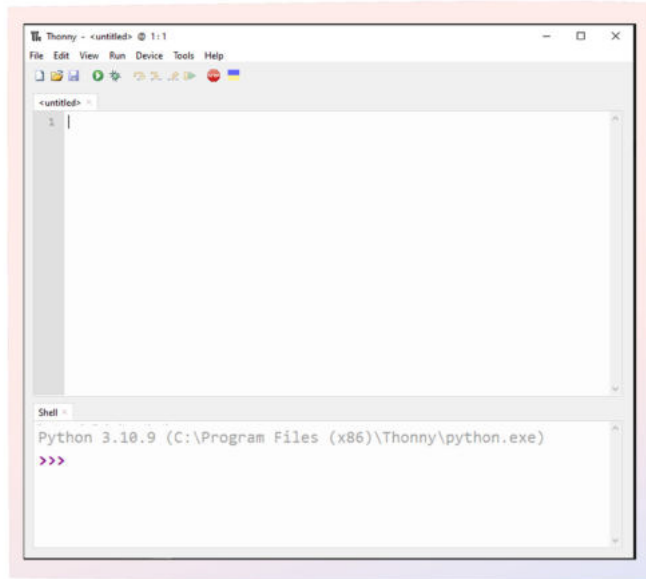
3. Then a message will show that our setup is successful.
4. Python is added to our computer. But we need another software application where we will write our instructions and explain them to the computer. So, go to this link - <https://thonny.org/>

Download 'Thonny' software from this link and install it.

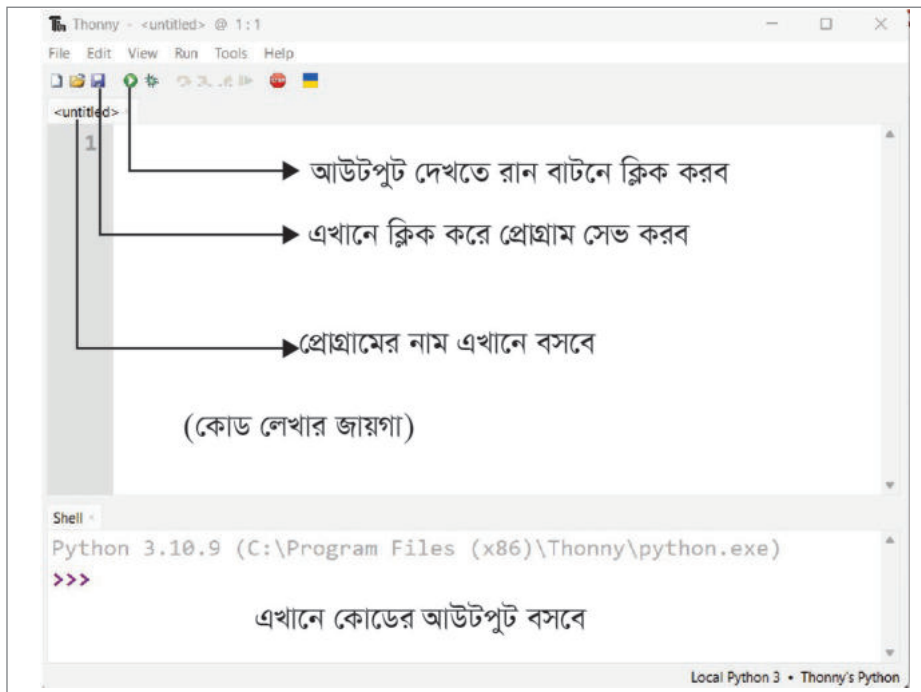
5. Then launch the Thonny software. You will see a window like the following image-



When you click on the 'Let's go!' button, you will see a window as shown below .

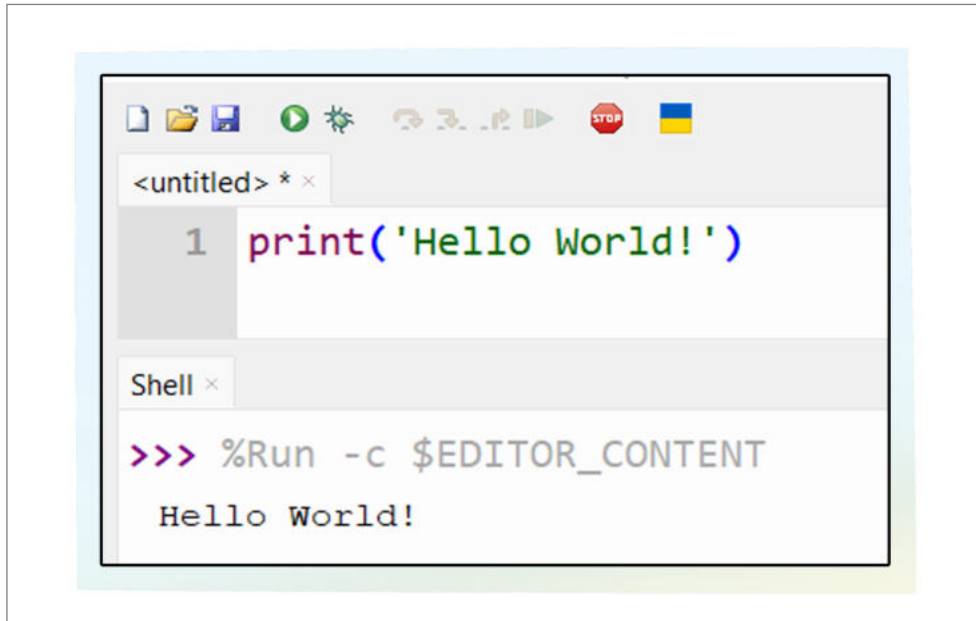


6. Let's understand some important parts of this window:



7. Now let's do a task. We will write a programme that will print 'Hello World!' as the output. To print something as an output, we need to use the print () function. We will write the text we want to print inside the print () function with ' ' (Single Quotation). So, to print Hello World! print('Hello World!')

Then if we click the Run button, 'Hello World!' will appear as the output.



8. Now we will click on the Save button and give the programme a name to save the file. The file name will be displayed above the programme.



Isn't it easy to display text? Just like we printed English text, you can also print Bangla text.

For example, try running the following Bangla line and see what you get:

Print ('আমি এখন পাইথন শিখছি')

Can you also display various texts like this?

In the following table below, fill in what programme to write to display any text:

Text to display	Programme to write
Print your name in both English and Bangla	
I love Bangladesh	
আমি অষ্টম শ্রেণিতে পড়ি	
Programming is quite interesting to learn	

Session -4 & 5: Variable is a lot of fun

In the previous session, we learned how to print any text easily. In our programme, we can use the print () function at any time to accomplish this task.

If we need to store any information within the programme, we can use a variable. A variable is like a box where we can store a specific piece of data. The meaning of the word variable is 'changeable'. It means that we can store one piece of information in the variable on one line and then change that information on another line. We all have a specific name, don't we? By using this name, everyone can identify us. Similarly, we can give each variable a specific name that we can recognize and use in the whole programme. For example, if we want to create a variable named "number" and store the value 7 in it, we would write:

```
number = 7
```

However, we have to take care of some aspects while naming the variable –

1. Firstly, the name of the variable should always be a single word. That is, we cannot write the name of the variable with multiple words. However, if desired, the variable names can be named as one word by excluding the spaces between the two words. Alternatively, the variable can be named with an underscore (_) between the two words without the space between them.

Correct naming of variable	Incorrect naming of variable
MyVariable	My Variable
this_variable_is_cool	this variable is cool

2. The first character of a variable name must be a letter between a-z or A-Z or an underscore (_). It cannot be a number (0-9) or any other symbol like * or -. However, after the first character, we can use numbers (0-9) or a-z, or A-Z, or underscore (_). But we cannot use other symbols like @, \$, %, or ^ to name a variable.

Correct naming of variable	Incorrect naming of variable
z!yan	z!yan
a	8a
_variable	\$variable
My_namE	@My_name

3. Python is a case-sensitive programming language. So, if you use the same letters in lowercase and uppercase, Python will consider them as different variables. For example, My_variable and my_variable will be treated as two different variables.

Now, let's identify which names of the variables in the following table are correct and which ones are incorrect:

Name of Variable:	Incorrect/Correct
Bd_cap1tal	
8class_Section_C	
d1gital_T3chn0logY	
Ch@tta0gram	
tiiiieeeer	
Robotics learning	

Also, to assign a value to a variable, we use the equal (=) sign. This is called value assignment. Let's say we have a variable named 'count'.

If we want to assign the value 5 to it, we would write in the programme:

```
count = 5
```

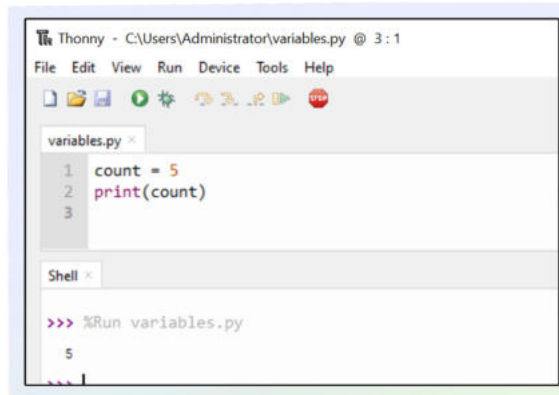
Then, if we want to print this value, we would write:

```
print(count)
```

So, if we run the following programme after writing:

```
count = 5
print(count)
```

We would get the following output-



```
Thonny - C:\Users\Administrator\variables.py @ 3 : 1
File Edit View Run Device Tools Help
variables.py x
1 count = 5
2 print(count)
3
Shell x
>>> %Run variables.py
5
>>>
```

That is, the value of the 'count' variable is printed. Again, it is possible to change the value of a variable multiple times throughout the programme. When a new value is assigned to the variable, the previous value is deleted and the last assigned value is stored. If we run the following programme, what will be the output?

```
value_now = 1
print(value_now)
value_now= 2
print(value_now)
value_now=3
print(value_now)
```


Write the output of this programme in the box below-

Note that we have printed the same variable 'value-now' repeatedly in the above programme. However, each time the variable held a different value, so we obtained different outputs after each print.

Again, we don't always store the same type of information or data in variables. Based on the type of information to be stored, there are several types of data or Data Type-

a) int: We can store whole numbers in variables. In English, whole numbers are called 'integer numbers'. Therefore, when we store a whole number in a variable, its data type is called int. Here's an example:

```
a = 5
```

b) float: We can store decimal numbers or fractions in variables. Such numbers are called 'floating numbers' in English. Therefore, if fractional or decimal numbers are stored in a variable, its data type is called float. Here float is short for floating. One such example is-

```
a=5.09
```

c) str: If we want to store any text or character-based information in a variable, we call it a string. This type of information is included in the 'str' data type. Here, 'str' is the abbreviation for string.

We enclose the text we want to store in a variable within ' ' (single quotation) marks.

Let's see such an example below:

```
a = 'c'
```

```
b = 'This is a string variable'
```

d) bool: If we want to store True or False as information in a variable, we use the boolean data type. This type of information is called a 'bool' data type. Here, bool is the abbreviation for boolean. In the bool data type, we can only store two values: True or False.

Let's see such an example below:

```
a = True
```

We have learned about four datatypes in Python: int, float, str, and bool.

These are the four main data types in Python. Besides these, there are some other data types that we can learn about when needed to write programmes. Whatever information we store in a variable, is stored in the computer's memory. So, when we use a variable somewhere in the programme, the value in the variable stored in the computer's memory will be used.

The interesting part is that we can easily determine the data type of a variable using the 'type ()' function. If we place a variable inside the 'type ()' function and print it, we will get the data type of that variable. For example, if we run the following programme:

```
my_variable = 23.07
print(my_variable)
print(type(my_variable))
```

We will get the following output:

```
23.07
<class 'float'>
```

That means we understand that the information stored in the variable named my_variable is 23.07, and it is included in the float datatype.

Now let's try to determine at home the data types of the following variables:

Programme:	Data Type
Ab = True	
my_value = 'Variable have some data types'	
f = 23	
status_is = 'False'	
number_now = 12.789	
section = 'b'	

Session-6: Let's Start Taking Input

In the previous session, we started assigning values to variables. Now, if we want to take input from the user of our programme, what do we do? It's very easy to do using the 'input ()' function.

If we write it like this –

```
my_input = input()
```

Then my_input variable will take an input from us. However, the input() function will consider whatever input we provide as a string data type, regardless of whether it's a number, letter, or anything else.

Let's do a task; take an input in a variable and print it. Writing such a programme is very simple. Let's write a programme like the following and run it:

```
my_input = input()
print(my_input)
print(type(my_input))
```

What will be the output of this programme? Whatever input you provide will be printed as the output. But notice that even if you provide an integer or a fraction as input, 'str' will be printed as the data type. That means whatever data you input, the input () function will receive it as a string. But if you want the input to be stored as an integer or a float data type instead of a string, you need to convert the data to that specific data type. This is called Type Casting.

It's easy to convert int, float, str and bool among the four main data types.

Data type	To write to convert that data type
int	int()
float	float()
str	str()
bool	bool()

When we are taking input as data, we can directly convert the input() function to the

'int' data type using the following programme:

```
my_input = int(input())
print(my_input)
print(type(my_input))
```

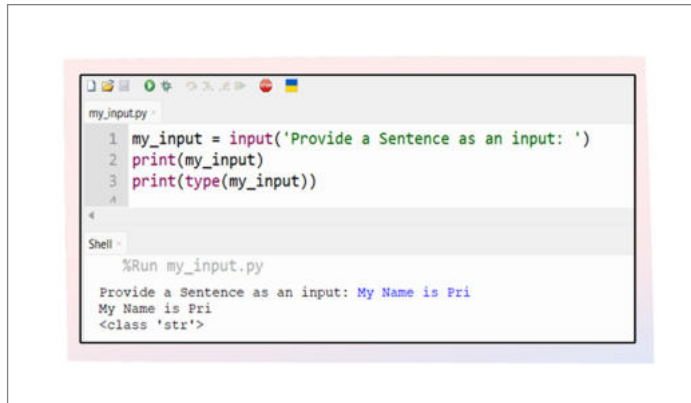
After running the programme, observe that due to the presence of `int(input())`, the `my_input` variable is converted to the 'int' data type. Can you write a programme to convert the `my_input` variable to the 'float' data type in the same way? Write a programme in the space below:

Again, we can provide a specific command or instruction when we want to take input from the user. For that, we can write that command inside the `input ()` function. For example, we may write:

```
my_input = input('Provide a Sentence as an input:')
print(my_input)
print(type(my_input))
```

Then after running the programme, it will first display an input command to us – Provide a Sentence as input:

After that, when we insert our input, it will print that input and display its data type as str.



```

my_input.py
1 my_input = input('Provide a Sentence as an input: ')
2 print(my_input)
3 print(type(my_input))
4
Shell
%Run my_input.py
Provide a Sentence as an input: My Name is Pri
My Name is Pri
<class 'str'>

```

Furthermore, if we want to print additional words or sentences before or after printing the input data, we can do so. For this, we will write the word or sentence that we want to print inside ' ' in the print() function. Then, we will write our variable with a comma.

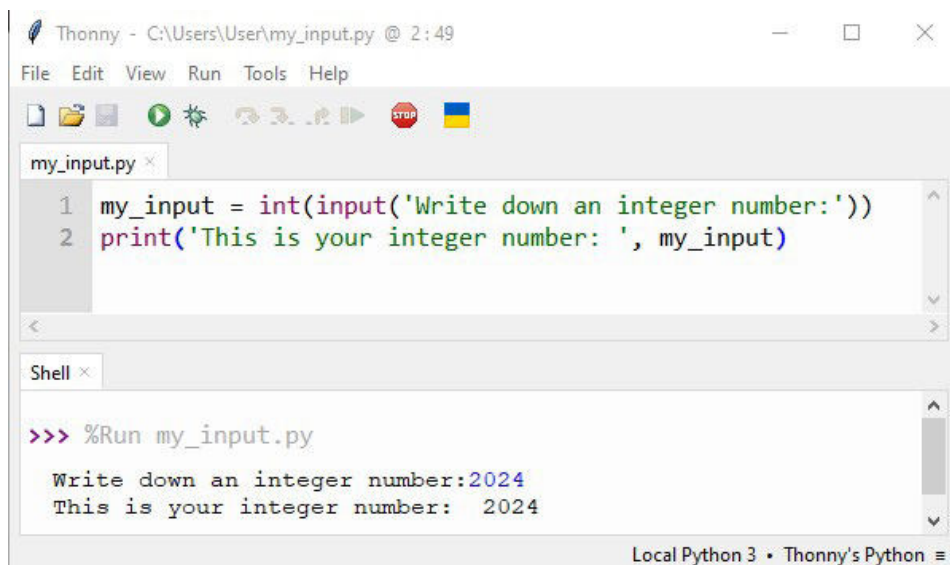
For example, if we write the following programme:

```

my_input = int(input('Write down an integer number:'))
print('This is your integer number: ', my_input)

```

Then we will get the following output:



```

Thonny - C:\Users\User\my_input.py @ 2:49
File Edit View Run Tools Help
my_input.py x
1 my_input = int(input('Write down an integer number:'))
2 print('This is your integer number: ', my_input)
Shell x
>>> %Run my_input.py
Write down an integer number:2024
This is your integer number: 2024
Local Python 3 • Thonny's Python

```

Notice here, when we are printing the text in the print () function, we put it inside ' ' or single quotes. And when we print a variable, we write the name of the variable directly without enclosing it in single quotes.

Now, let's try to write the following programme:

Problem: Design a programme that will take an integer variable as input first. Then, it will take another variable as input in decimal format. After that, it will print both numbers and their respective data types.

Hint: Make sure to perform type casting to 'int' and 'float' for the two inputs.

Solution:

Session -7: Perform addition, subtraction, multiplication, division, and modulus with input of two numbers

In the previous session, we learned how to take input using the input () function. We can now take two numbers as input and perform arithmetic operations on them. In this case, we can easily use the following operators:

Operator	Action
+	This is the addition operator. By using this operator, we can find the sum of the two variables on either side of the operator.
-	This is the subtraction operator. By using this operator, we can find the difference between the two variables on either side of the operator.
*	This is the multiplication operator. Using this operator, we can find the product of two variables that are on the two sides of the operator.
/	This is the division operator. Using this operator, we can divide the variable on the left side of the operator by the variable on the right side and obtain the quotient.
%	This is the modulo operator. Using this operator, we can find the remainder when dividing the variable on the left side of the operator by the variable on the right side.

If we want to take two input numbers and print their sum, it will be easier for us to create the pseudocode first and then design a programme following the steps of the pseudocode. The pseudocode for finding the sum of two input numbers is as follows:

```
a=take first input
b=take second input
c=a+b
print number c
```

We have previously seen how to input an integer. We also learned how to print a variable. Let us now see how we can design a programme to take two integer numbers as input and print their sum-

```

num1 = int(input('Enter the first integer:'))
num2 = int(input('Enter the second integer:'))
result = num1 + num2
print('The sum of', num1, 'and', num2, 'is', result)

```

Do you understand the lines of the programme?

```
num1 = int(input('Enter the first integer:'))
```

In this line, we have taken an input using the input() function. In the input function, we have given a command that we want an integer or whole number as input. The input function takes everything as input as a string, doesn't it? So we have used the int() function to convert the input to an integer by type casting. After receiving this integer input, we have stored it inside the variable num1. Similarly, in the next line, we have written

```
num2 = int(input('Enter the second integer:'))
```

Similarly, we have taken the second integer input and stored it in the variable num2. After that, we will add the two numbers and store the result in another variable called the result. For this, we have written the following in the next line:

```
result = num1 + num2.
```

Finally, we have printed the sum of the two numbers by writing:

```
print('The sum of', num1, "and", num2, "is", result)
```

How easy and fun is this programme to calculate summations!

If you run the above programme, you can input two numbers of your choice and then calculate the sum of those numbers. In the image below, we can see an example of finding the sum by entering two numbers:

The screenshot shows a Thonny Python IDE window titled 'Thonny - C:\Users\User\my_input.py @ 4:52'. The main editor area displays the following Python code:

```

1 num1 = int(input('Enter the first integer:'))
2 num2 = int(input('Enter the second integer:'))
3 result = num1 + num2
4 print('The sum of', num1, 'and', num2, 'is', result)

```

Below the code editor is a 'Shell' window showing the program's execution:

```

Enter the first integer:112
Enter the second integer:28
The sum of 112 and 28 is 140
>>>

```

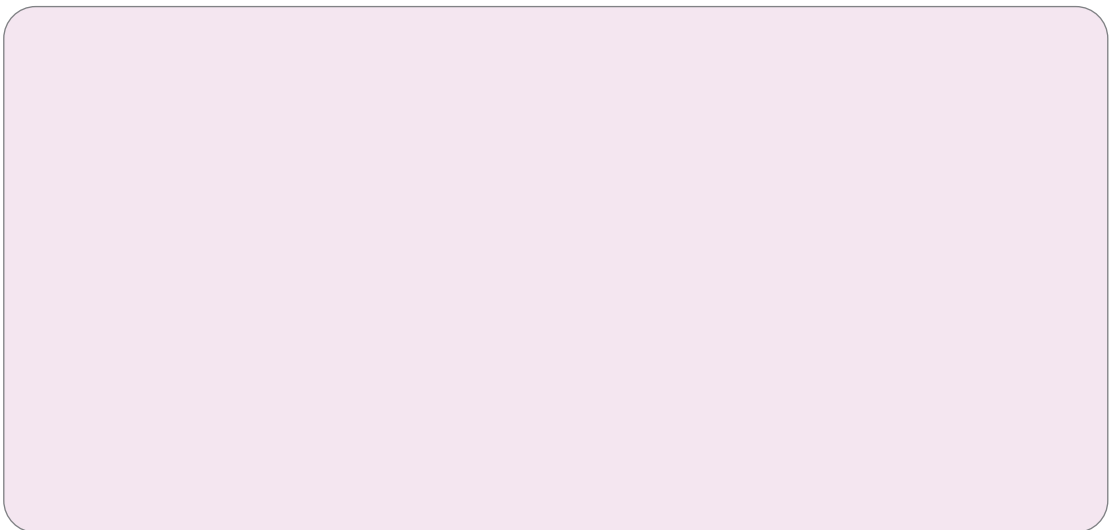
The status bar at the bottom indicates 'Local Python 3 • Thonny's Python 3'.

Can you design a programme in a similar way to multiply numbers?

First, write the pseudocode below to take two input numbers and print their product.



Now, design a programme below following your created pseudocode and run it.



In this way we can design a programme to take two input numbers and easily calculate their sum, difference, product, quotient, and remainder.

Homework Activity

There are many problems around us which can be solved by doing mathematical operations on certain numbers. For example, we can convert the unit of temperature from Celsius to Fahrenheit. We can buy 5 products and calculate their total price, etc. Now let's find out three problems which requires mathematical calculations to solve. Let's write such problems in the following box:

1.

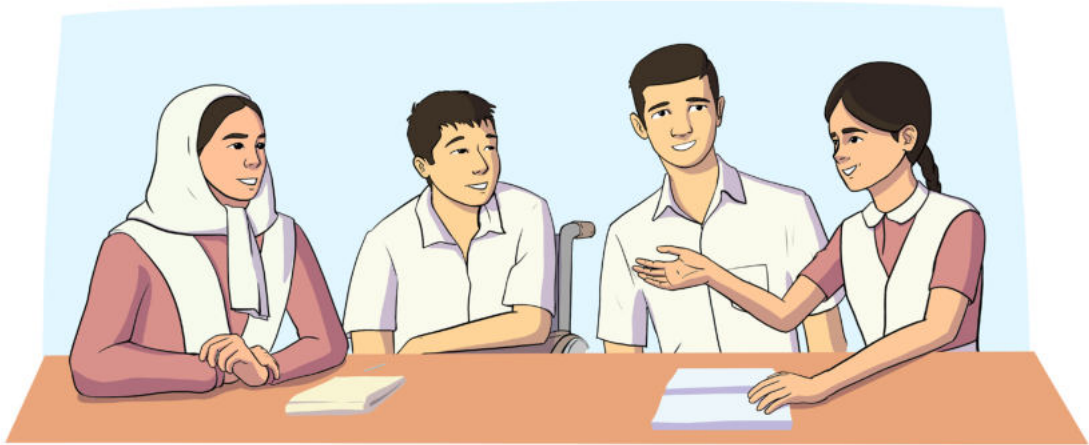
2.

3.

Session 8 & 9: Programme Design for Solving Problems

Now our teacher will divide us into several groups. There will be five to six students in every group. We will discuss with other groups the three problems that we have already identified. Previously we have learned how a programme can be designed depending on different conditions and how the output can be got from there.

Therefore, discussing among ourselves, we will fix a problem for which we will design the programme.



Before designing the programme, we will make a pseudocode to solve the problem-

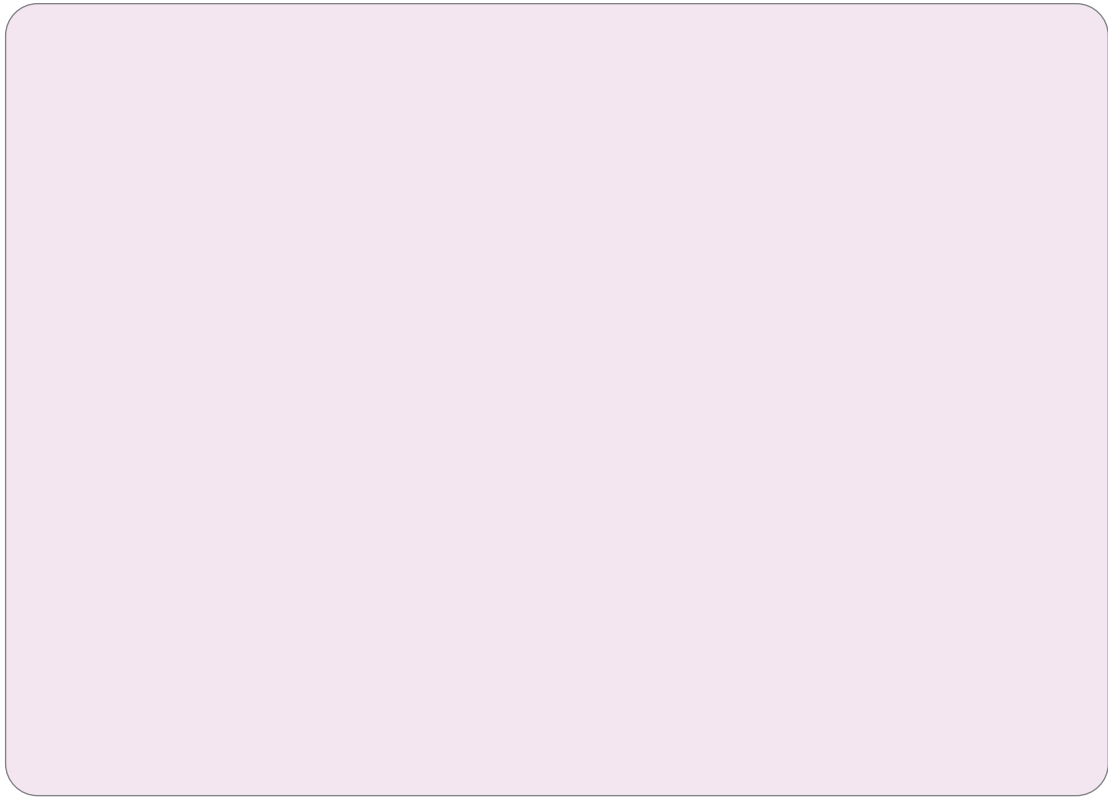
The specific real-life problem for our team
The list of input that should be taken in the programme-
What mathematical operations should be done?

The pseudocode developed by us

At this stage, we will design a Python programme according to the pseudocode. Of course, we have to use mathematical operations `input()`, `print()` in our programme.

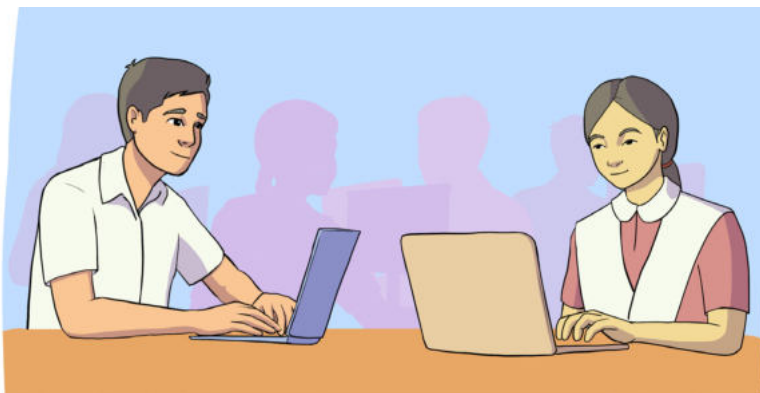


Let's write down our Python programme in the box below.



Session-10: Identifying Risks and Solutions for Different Wrong Inputs

If we give wrong inputs in the programme made by us, we will not get the correct output or result. These are the risks of error in our programme. So, during designing a programme, we have to be careful about how we can identify different risks and provide solutions.



Therefore, we have to give different inputs in our programme and find out the problems that arise.

Let's give four or five different inputs in our programme and give some wrong inputs also. In this way, we will find out the problems they create.

Serial No.	Wrong input	Effects on programme

Now a work plan is needed so that we can remove our probable errors and make our programme error-free. So, let's discuss together how we can remove the probable errors and avoid the risks.

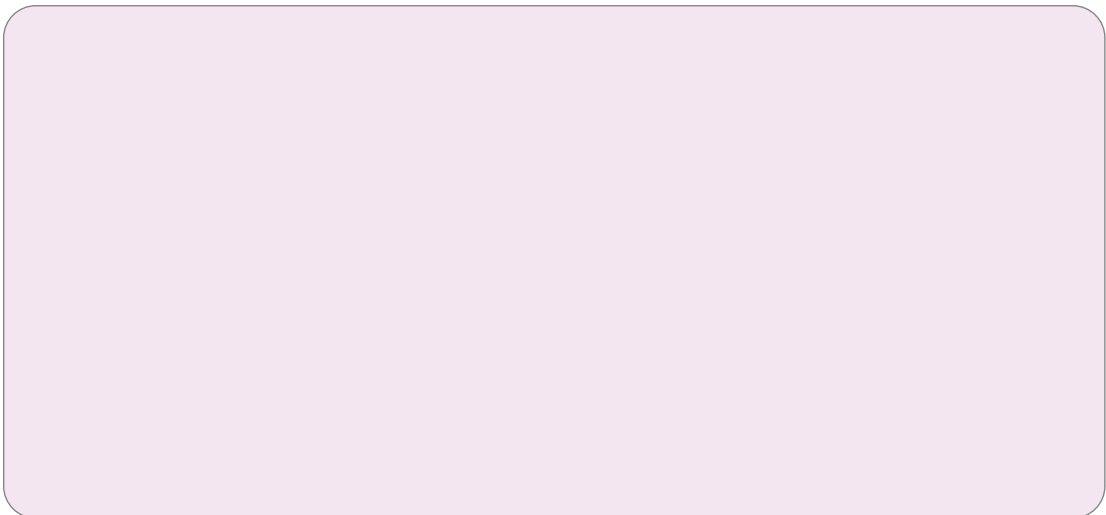


Let's write down the main parts of our work plan-

Our work plan to identify the probable risks-

The changes that are needed to be adopted in the programme-

Now let's change our programme according to the work plan, run our new programme on computer and also write it down in the following table:



Session-11: Verifying Programmes of Other Teams

Now we will exchange our programme with that of other teams. Then we will verify whether the other team's programmes are able to solve the real problems fixed by that teams.

Moreover, we will prepare a brief report on it and write down in the following table:

The specific problem of the team whose programme we are verifying-
The designed programme of the team for solving the problem-
The list of different inputs used in this programme-
The outputs received from the programme at different stages-

Identify the errors in case of different inputs in the program

Advice from our team to solve the problem

When we complete the report, we will hand it over to that group and receive our own report from them.



During this learning experience, we have gained the idea of programme designing. We have also got an idea of programme designing using various inputs and mathematical operations to solve a problem. We have also worked to solve problems by giving different inputs for the probable outputs. We have also identified the probable risks and their solutions in those cases. Thus, we can solve different problems by using programming whenever needed.

Experience-5



Let's Get Connected to a Network

We know that the main function of a network is to exchange information from one place to another. A network may be either digital or non-digital. In grade seven, we knew about the two types of networks (wired and wireless). In this grade, we will know more about networks. Along with it, we will know how networks are used in our life. By the end of this experience, we will learn to connect to computer networks on our own

Session 1: Necessity of Networks

We see different networks around us. Every day we do different works by using different networks. But do we know the necessity of a network? Let's read this story and know it-

Rifat is a student in class eight. Today every one of his class has to prepare and print a presentation and submit it to their teacher in the computer lab class. Entering the lab class, everyone starts working with their computer. Switching on the computer, Rifat realises that the necessary software for making the presentation is not installed on his computer. Also, he can not get another computer to work on as every computer is engaged by other students. When Rifat informs his teacher of this problem, his teacher replies that Rifat can use the presentation software by being connected to the school cloud. Then, being connected to the school cloud, Rifat starts working on the presentation.

He cannot understand a few things in the presentation. Rifat's friend Sakib informs him that he has some videos which Rifat can watch to have a clear idea about the presentation. As all computers are connected to the same network, Rifat easily transfers those videos to his computer from Sakib's one. Then, by watching the videos, Rifat easily prepares his presentation. When everyone's presentation is ready, they print their presentations with the printer that is connected to the lab network and submit them to their teacher. That afternoon, Rifat's teacher informs him that his presentation has some errors. The teacher also suggests that Rifat should fix the errors and submit it again within the day. But, by this time, the computer lab has been closed and Rifat does not have any copy of his presentation.

So, he logs in to the school computer from home with the help of his teacher by remote login system (login from one computer to another that is far away) and collects his presentation file. Then, he edits and submits it to his teacher.

Now let's write down the advantages of a network that we have learned from Rofat's story:

Table 5.1

1.
2.
3.
4.
5.

Preparation for the next session: Let's find out the digital networks that are functioning around us and write them down in the following table.

Table 5.2

1.
2.
3.
4.
5.

Session -2: Data Communication

In the last session, we knew about a few kinds of networks. Now we will know how a network works. We know that the function of a network is to exchange information or establish communication. But how does this function work? Exchanging information through a network can be compared to the movement of vehicles or people on the roads. Let's know how.

We go to school almost every day, don't we? There are many roads from our residence to go to school. These roads connect many houses and institutions. That is to say, we can go from one house to another house, go to our school, market, and friend's house from our house by these roads. Different types of goods are transported by vehicles through these roads. If we compare this whole event to networking, we can easily understand how a network can exchange information or establish communication.

In the above description, the house, market, and school can be compared individually to one computer or device. We can imagine the vehicles as data or information and the roads as connecting wires. The roads may be of different conditions, such as, narrow or wide, dirt roads or paved ones. Similarly, the connecting wires can be of different kinds including copper cable, co-axial cable, fiber optic cable, etc. We know, communication through a network may be also wireless. This communication without wire can be compared to flying by aeroplane.

Take note that during data exchange through a network, the main data is usually divided into small segment units that are known as data packets. These packets are also called frame, block, datagram, segment, etc.

Now, while walking through roads, we must have observed that most of the roads are two-way. That is to say, vehicles can move on both sides of the road. But have we noticed that some roads do not allow vehicles to move on both sides? There are many roads that are one-way. That means vehicles can move only to one direction and no vehicle can enter from the opposite direction. On the other hand, sometimes some roads are temporarily made one-way by stopping vehicles from the other side. After some time, the previous side is blocked and the opposite side is opened for vehicle movement. Data movement or information transmission is like that to a greater extent.

If we look at the following picture, we can easily understand it-

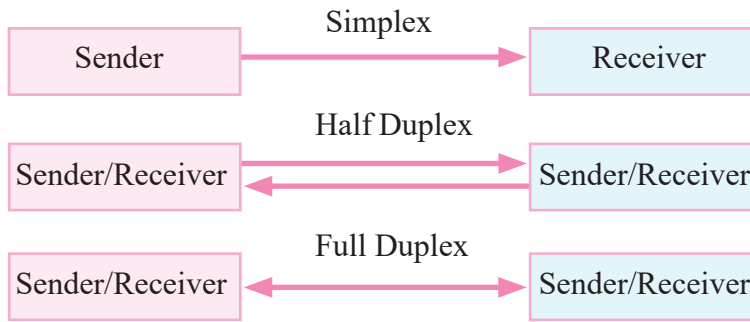


Figure 5.1: Data Transmission mode

Now let's see whether we can match what type of road is similar to with what type of data transmission in the following table.

Table 5.3

Data Transmission	Road Movement
<p>Simplex</p> <p>One sender can only send data but cannot receive it Or One receiver can only receive but cannot send data</p>	Two-way road
<p>Half Duplex/semi-duplex</p> <p>One side waits while the other side is sending data. When one side finishes sending data, the other side starts sending data.</p>	One-way road
<p>Full Duplex</p> <p>Both sides of the communication can send and receive data simultaneously.</p>	One-way road in different directions at different times

Now we can understand how data movement or data transmission works through a network. Let's find out whether we can identify the types of data transmission in the following table.

Table 5.4

Types of Communication	Types of Data Transmission
a) Conversation between two police officers through walkie-talkie	Half Duplex
b) Conversation between two friends over mobile phone	
c) Direct telecast from radio/TV station	
d) Directions given to a computer through keyboard	
e) Sending and receiving messages through messenger	

Session-3: Networks Around Us

Earlier we found out the digital network that around us. These networks can be divided according to their geographical locations. Let's know about these networks.

PAN (Personal Area Network)

For our necessity, we connect our computer to other devices and complete our task. For example, we connect the laptop with the printer. This connection is also a kind of network. Such a personal network is called Personal Area Network.

LAN (Local Area Network)

Generally, there are different devices in different rooms in our school. These devices including laptops, computers, printers, scanners, mobile phones, etc. create a combined network that is known as Local Area Network. Usually, such a network covers an area of 100 meters or less.

MAN (Metropolitan Area Network)

The computers or devices located at different places in the city where we live create a network that is known as Metropolitan Area Network. Generally, this network is made by connecting the local area networks. Such a network covers from 10 kilometers to 30 kilometers.

WAN (Wide Area Network)

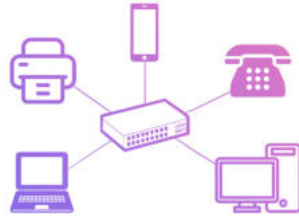
Wide Area Network is created by connecting different networks that are located over a wide geographical area. It may cover one region, a country, or many countries. For example, the internet is a wide area network covering the whole world.

We may note that networks may be either wired or wireless. Different types of wire, telephone lines, modems, radio waves, infrared, etc. are used to connect the networks.

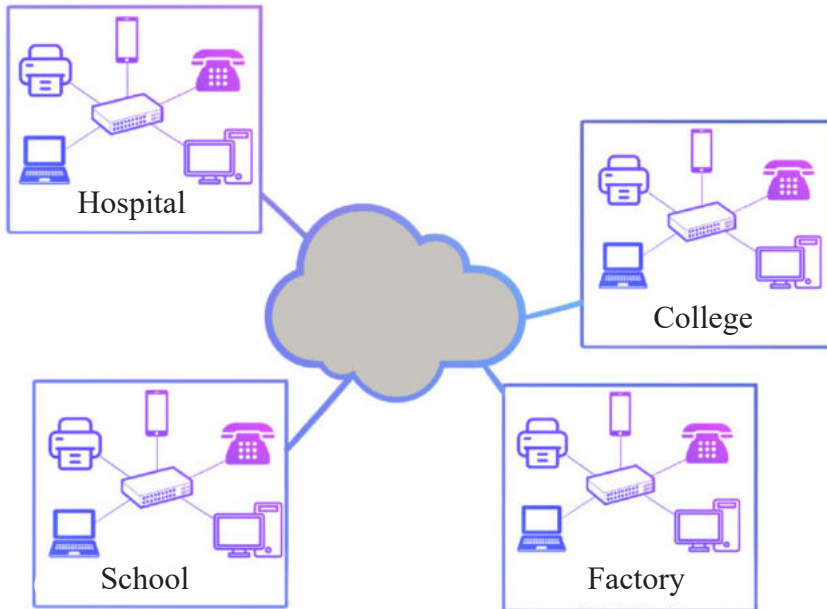
Now let's identify which type of network is working in each of the following pictures.



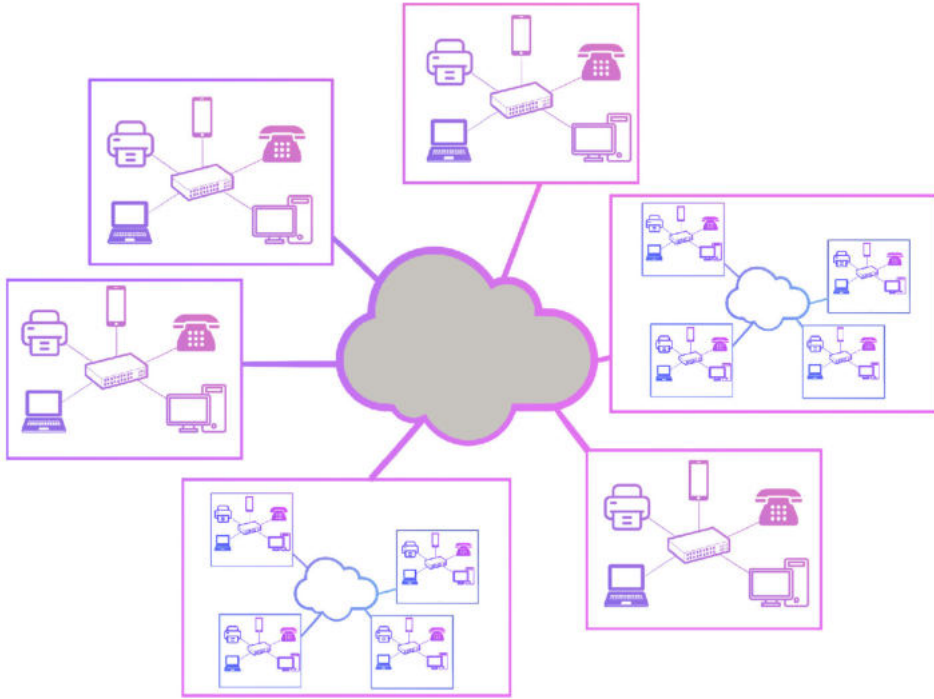
A. _____



B. _____



C. _____



D. _____

Figure 5.2: Different types of networks

Preparation for the next session: Do we know how data or information is transferred? We will think about how information is transferred through networks and write down those in the homework book.

Session-4: Network Capacity

We have learned about the movement of data through network; now we will learn about the capacity of network. Again, let's think about the movement on the road. When the road is wide, there will be many lanes on which many vehicles can run together. Everyone certainly wants to use such a road for quick movement. However, the width of the road is not the only thing to consider. If there is a traffic jam, everyone will want to avoid this road because, this road will not lead to the destination quickly.

Again, suppose the road is wide and does not have any traffic jam but the quality of the road is not good. We also want to avoid the road that is uneven and broken at different places because such roads can give jerks, damage the transported goods, and create

problems for travelers. Similarly, we have to take similar matters into consideration when we judge the capacity of any computer network. For example, the proportion of the number of vehicles that can go through one road at a time can be compared to the bandwidth of the network, i.e. the average of bits transmitted per second is comparable to the number of vehicles plying at a time on a road. Again a road with the highest capacity may not accomodate many vehicles for different reasons (for example, for keeping a safe distance between two vehicles). Similarly, whatever bandwidth, a network may have its network throughput is counted as its average capacity to transmit data per second (or as bits or bit/sec).



Bandwidth: Space for 24 vehicles



Throughput: 18 vehicles been kept maintaining safe distance

Figure 5.3: Comparison between bandwidth and throughput using the analogy of the road

Like bandwidth and throughput, some network-related terms with their meanings are given on the left side of Table 5.5. On its right side, there are description of some incidents describing vehicle movements. Let's try to find out, after reading the meanings of the terms on the left side, which of them matches with the events on the right side.

Table 5.5

In case of Networks	In case of Roads
<p>Bandwidth</p> <p>The highest amount of data on average that can transmit per second as bits.</p>	Traffic jam

In case of Networks	In case of Roads
<p>Throughput</p> <p>The real rate of data transmission through a network. For different reasons, this rate is lesser than the bandwidth.</p>	<p>When many vehicles in a row start moving from one side of the city, the time that the first vehicle takes to reach the other side of the city.</p>
<p>Delay</p> <p>Time needed to send data from one point to another (usually the first bite) on the network.</p>	<p>The highest number of vehicles that can go per minute through the road.</p>
<p>Latency</p> <p>Latency generally refers to the necessary time to send complete data from one point to another point.</p>	<p>The rate of vehicle movement per minute through the road</p>
<p>Network Congestion</p> <p>The presence of more data than its capacity. Consequently, data is lost and sometimes reaches late.</p>	<p>When many vehicles start moving in a row from one side of the city, the line that the last vehicle takes to reach the other side of the city.</p>

So, we have learned many things related to networks. Let's see how we can identify the bandwidth and throughput of a network.

Mathematical problem: A 10 kb file needs at least 02 seconds over a network to reach its destination. Because of delay for various reasons, it took 5 seconds for a 15 kb file to reach its destination. What are the bandwidth and throughput of the network?

We know that-

1 kilobyte = 1000 bytes

So, 10 kilobyte = $(10 \times 1000) = 10000$ bytes

Again, One byte = 8 bits

So, 10000 bytes = $(10000 \times 8) = 80000$ bits

That means, 10 kilobytes = 80000 bits

At least 2 seconds needed to send one file of 10 kilobytes

That means, a file of 80000 bits can be sent within 2 seconds.

So, a file of $80000/2 = 40000$ bits can be sent within 1 second

We know that-

The rate of the highest bit of data (bit/second) movement per second is called bandwidth.

That means, here bandwidth of network = 40000 bit/per second or bps

But in reality, one file of 15 kilobyte could be sent within 5 seconds on this network.

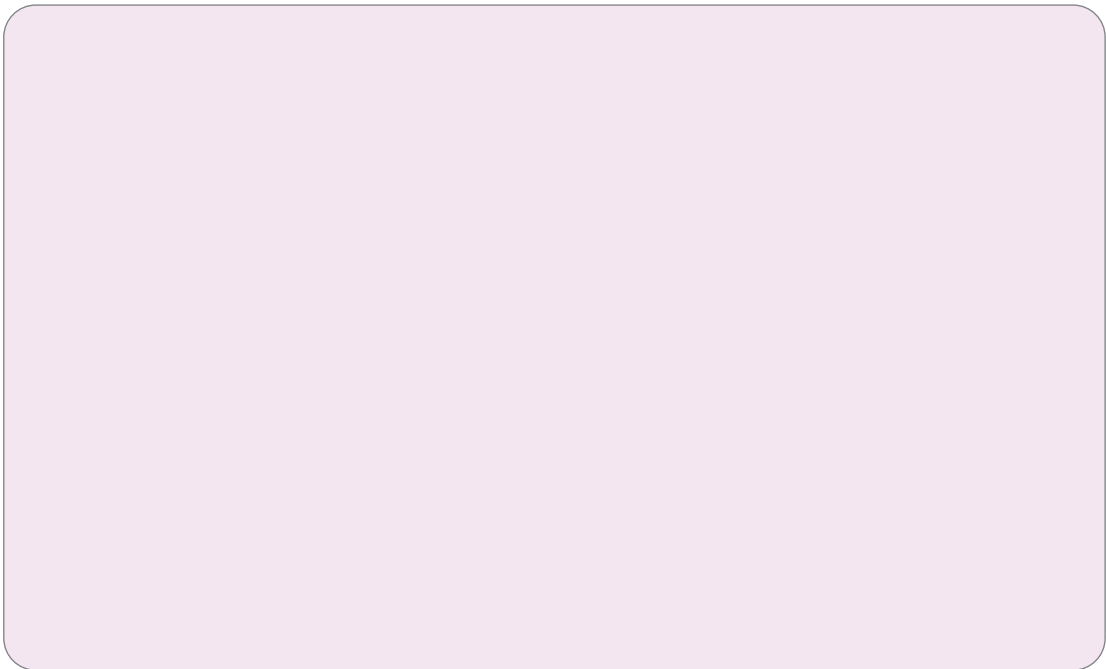
Here,

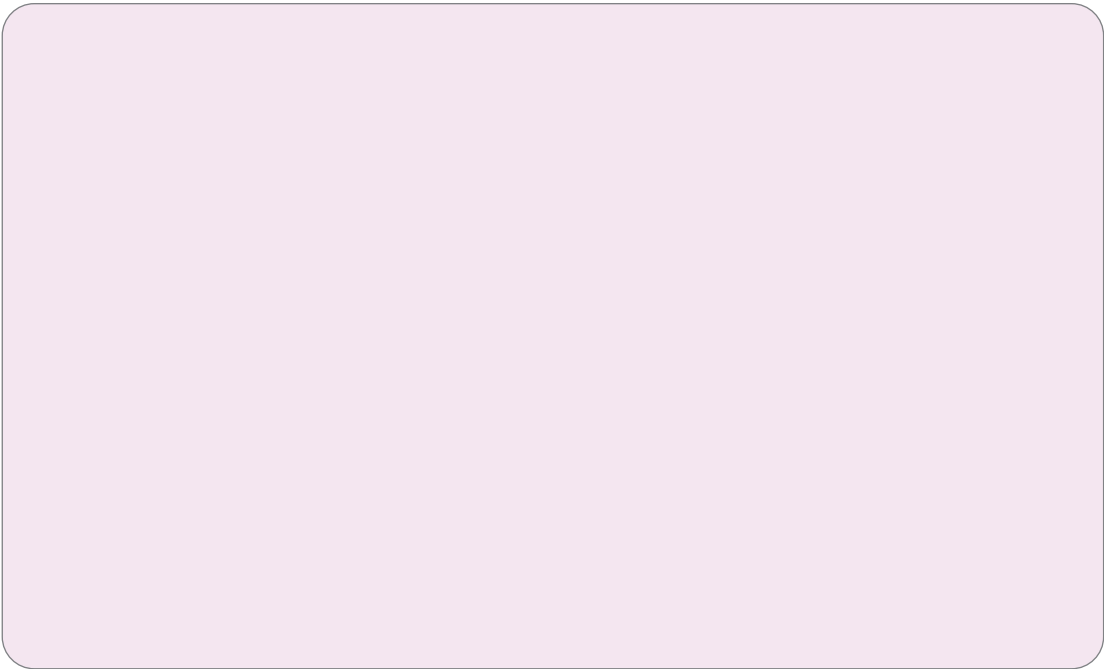
15 kilobyte = $(15 \times 1000) = 15000$ bytes = $(15000 \times 8) = 120000$ bits

So, throughput = $120000 \text{ bit}/5 \text{ second} = 24000 \text{ bit/second}$ or bps.

Let's solve the following mathematical problem in the same way by ourselves.

Mathematical Problem: Sending a video of 1 kilobyte takes at least 5seconds on a network. Due to congestion in network, one file of 10 kilobytes needed 1 minute to be sent through the network. What are the bandwidth and throughput of the network?





Session-5: Elements of a Network

In the earlier sessions, we learned many things about a network. Now, let's know the different elements of a network.

You must remember the postal communication system that you read in grade seven. There, we had the need for a post office to send a letter from Panchagarh to Cox's Bazar. The letter was to reach the district post office from the local post office in Panchagarh. From there, that letter went to my friend's house located in Cox's Bazar via divisional, central, and other post offices. Here each post office played the role of a router.

However, if we want to send a letter to our friend's house situated in our locality instead of far away, we need not use the post office to send the letter. Similarly, in the field of a computer network, we will not have any problem if we don't have a router for the devices under the same LAN. In this case, SWITCH or HUB is generally used. By using a SWITCH, if any sender connected with it sends a message, it will go only to the receiver. By using a HUB, a sender's message will go to all devices connected with the HUB.

So, a SWITCH is used to exchange messages on the same network but a Router is needed to exchange messages beyond the local network. A router forwards data packets from one network to another network. Sometimes, it is called 'Gateway'. It can be

mentioned that exchanging messages is possible by being connected directly to a router instead of a SWITCH.

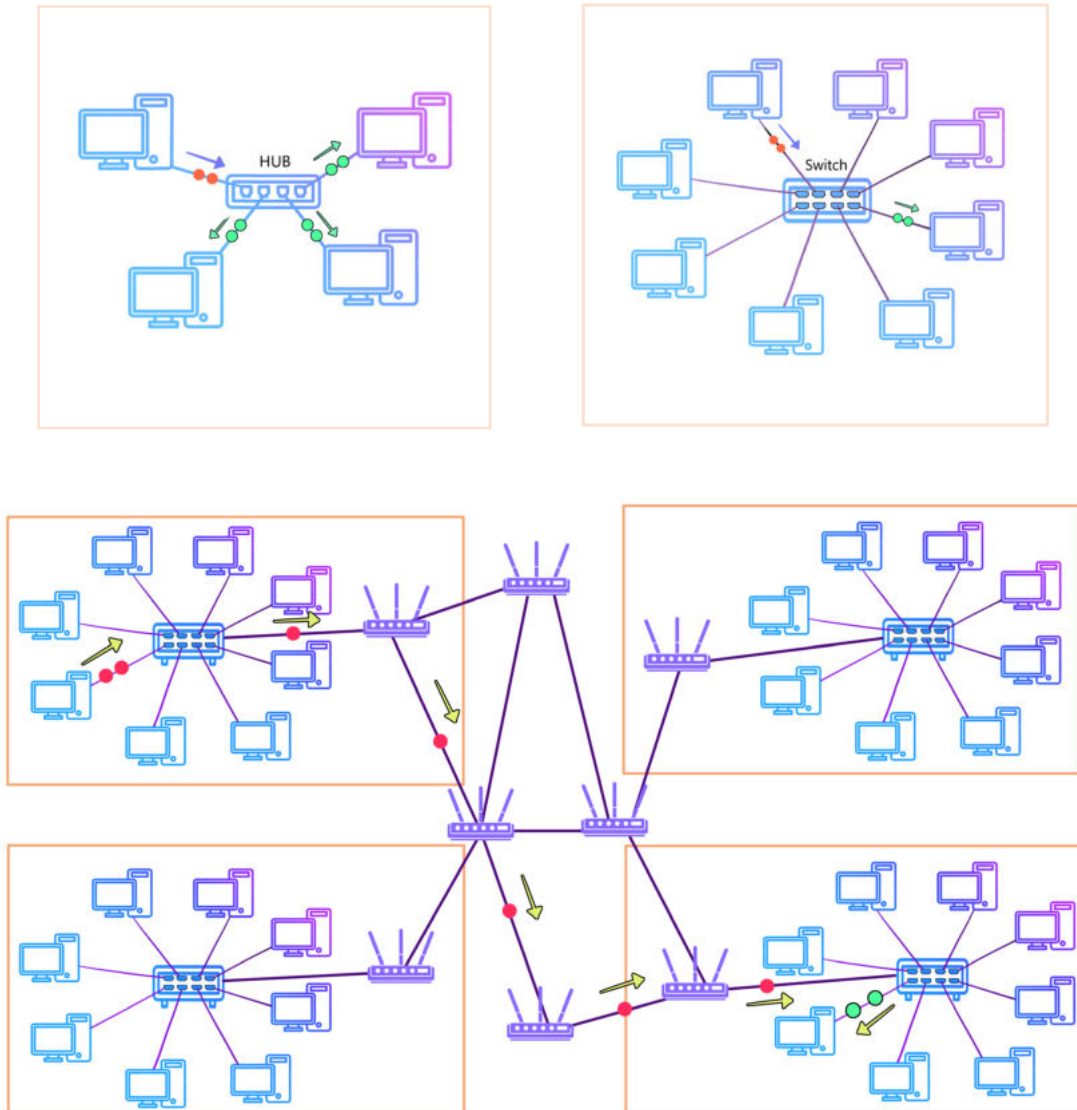


Figure 5.4: Exchange of message through HUB, SWITCH and ROUTER

Now the question is, how do the data packets that are transmitted through the network come into the computer? The postman comes to our house to deliver letters and in the same way, the data that comes through the network enters the computer by using an network interface card or NIC. It is also called a network adapter or interface controller.

NIC is needed to set up connections between computers or other devices on a network. Every NIC has a unique MAC address that is fixed by its manufacturer and this MAC is used to identify any device separately. We will know more about MAC address in the next session. To connect to the internet or network, we need another device which is called Modem. To connect to the internet, we usually use two types of signals: digital and analog. A computer can only understand the digital signal. But the wire or other medium through which the data is transmitted can understand the analog signal. A modem can turn the digital data (signal) from a computer into analog data and turn the analog data that is transmitted through the network into digital data. The name Modem comes from its two main elements: Modulator (MO) and Demodulator (DEM).

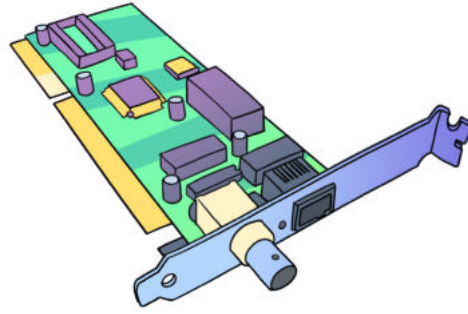


Figure 5.5 : Network Interface Card or NIC

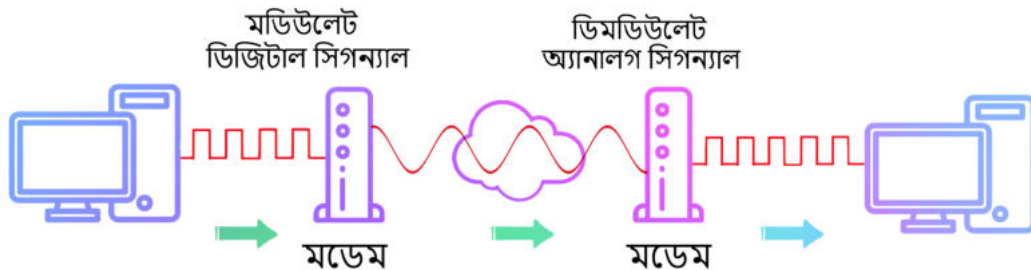


Figure 5.6: Modem (Modulator-Demodulator)

Repeater is used to turn a weak signal into a strong one on a network; Bridge is used to connect more than one part of a local area network; Access Point is used to set up network connection among the devices of many users through WiFi. Apart from these, there are many other network hardwares.

However a network does not have the hardware alone. The software for operating hardware elements, different computing devices connected to the network, related software and operating system, different service-provider software in a server computer, and firewall, which is used to prevent all kinds of non-permitted network connection or exchange of data, are also elements of a network.

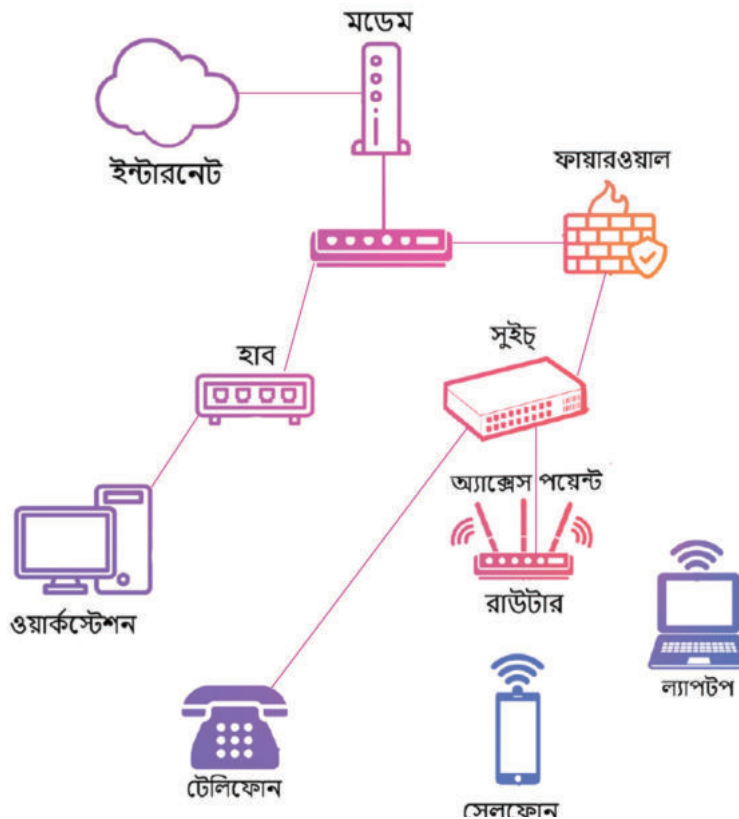


Figure 5.7: A network comprising different elements

On the other hand, a number of rules and regulations are fixed to operate the functions of the network properly. There are many traffic signals for vehicle movements on the roads and there are also rules that suggest specific roads for specific vehicles. Even there are suggestions for action if there is a traffic jam on roads. Similarly, there are rules and regulations for communication among different devices and for sending data packets on a network. These rules and regulations are called network protocol.

If our residence has an internet connection, sometimes we see that there is a single device called wireless router instead of many elements of the network. In this regard, router, switch, and wireless access points are given within the device. Along with these, a modem is also included in some devices. On the right side of the figure 5.8, there are four ports (LAN Port) together. This can be considered one switch consisting of four ports and on these ports, four different devices can be connected. The antennas will do the function of access points and they will provide wireless connection to the WiFi devices. A wire coming from the internet service provider (ISP) is connected to a port (WAN Port) on the left side.

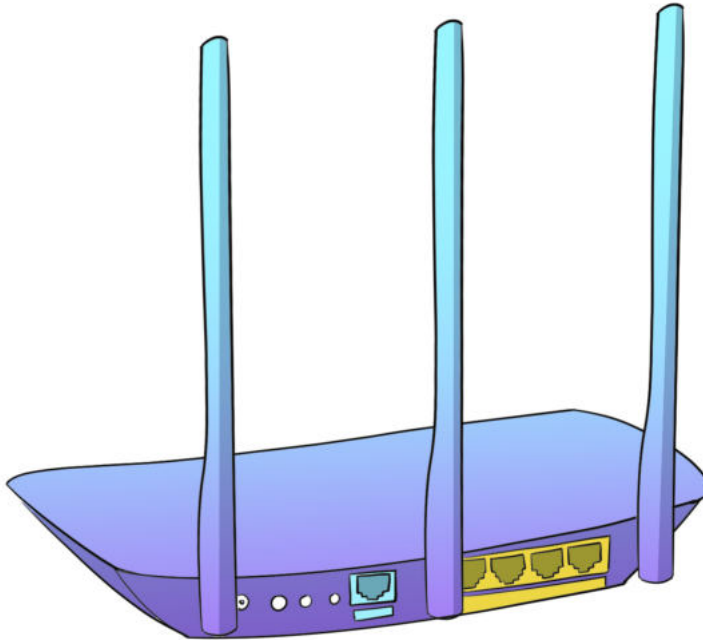


Figure 5.8 : Wireless Router

Session-6: Connecting to a Network

We have already learned that network is a collection of connected computers (devices) which can share different files, printers, internet etc. among them.

To complete this session we need another network which is made active by someone else. If the school doesn't have a network, we can complete this session by connecting to one of our relative's or someone else's network after taking their permission.

We will see the steps for Windows 11 in this session. To do the tasks, we have to enter Windows as administrator. Remember that the screen or window that will be shown here at every step may vary in other operating systems or versions. In that case, we have to find out the options by reading the directions on the screen.

Wired network:

In case of a wired network, we need, along with a device (PC, laptop, etc.), one RJ45 cable. RJ45 cable is one Ethernet cable with two connectors at both sides.

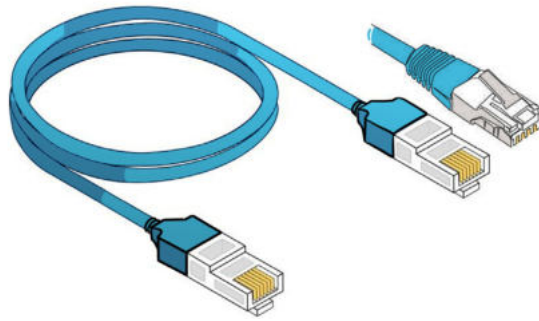


Figure 5.9: RJ45 Cables

Step-1: At first, we will check whether the device (PC, laptop) is switched on and all things are well-functioning.

Step-2: Now, we will insert one end of the RJ45 cable into the network port of the device (PC, laptop). The network port is designed in a way that we can easily connect the connector on the end of RJ45 cable by gently pressing it.

Step-3: We will connect the other end of the RJ45 cable to one of the LAN ports of the router. Since the network is active beforehand, cable coming from the ISP should be already connected to the Router's WAN port.

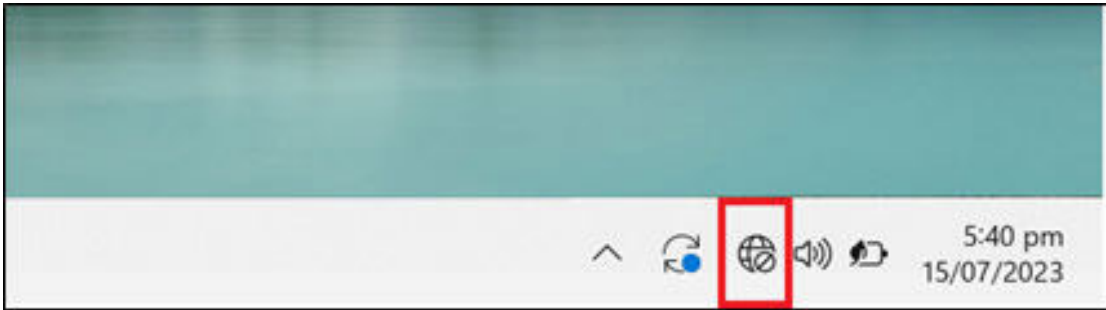
Note that in many places there may be other networking devices (such as switch, hub) instead of a router. In that case, RJ45 cable has to be connected to the LAN port of that device. Note that in many places, the device comes with an attached RJ45 cable. In this case, connect the supplied RJ45 cable to the PC or laptop.

In case of connecting to wireless (WiFi) network:

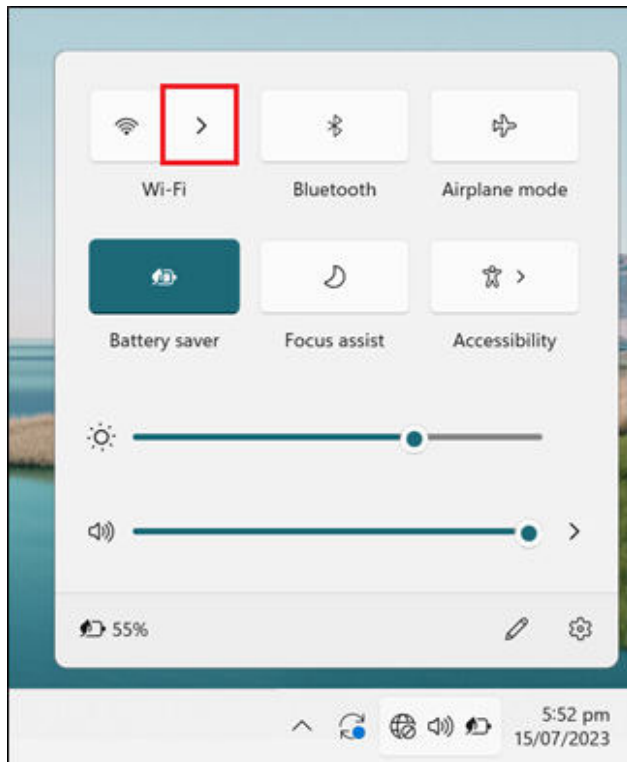
We can connect to the WiFi network by using the quick settings menu of Windows and following the steps below:

Step-1: Let's click on the internet icon which can be found on the extreme right corner of Windows taskbar along with sound, volume, battery icons.

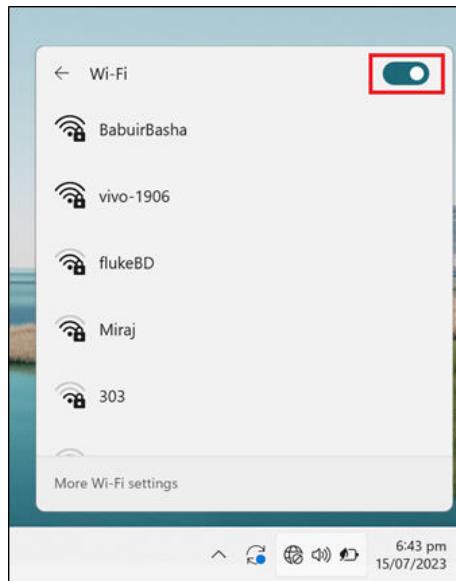
It should be mentioned that depending on the condition of the network, it can be like a globe, desktop, or WiFi icon.



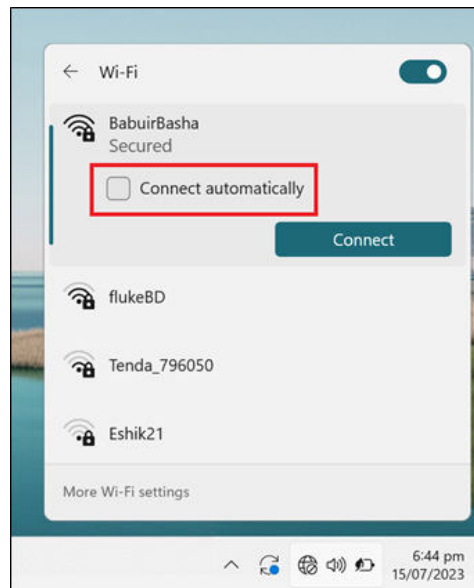
Step-2: After the pop-up menu appears, let's click on the right-pointing arrow, as shown in the picture below:



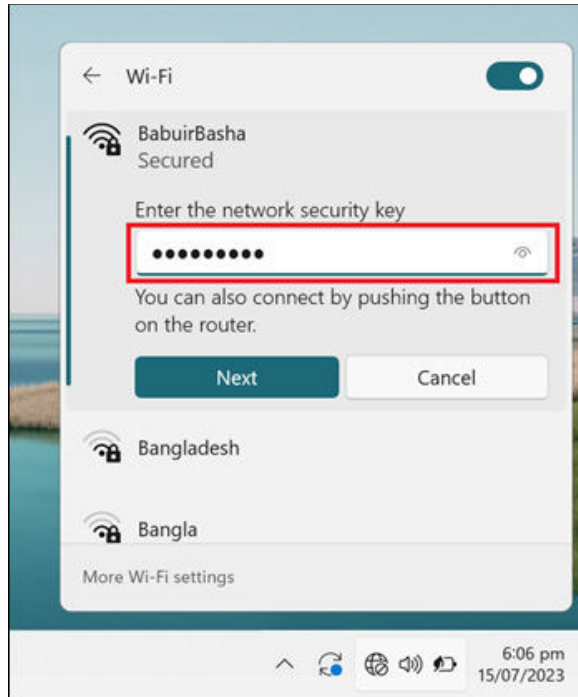
Step-3: After clicking on the arrow, if the WiFi button above is off for some reason, it will remain dim. Clicking on the WiFi button will show all available networks.



Step-4: We will click on the network to which we want to connect from the list. Afterwards, if we come inside the area of this network, we will click on connect automatically instead of following so many steps again to connect to that network. Finally, we will click on the Connect button.



Step-5: We need to know the password of a network to connect to it. Learning the password from the relevant person, let's type the Security Key in the box, as shown in the image/figure. Then, we will click on the Next button



Following the above steps, we can easily connect to the Wi-Fi network. when we successfully connect, we will see the word 'Connected' next to the network name.

We can do this through the 'Setting' option of the Windows. In that case we will have to press (windows + i) or clicking start button and selecting the 'Setting' option. From 'Setting' option, we will have to go to Network & Internet to complete the task.

We know that one of the major advantages of networking is the sharing of resources (eg files, internet) between connected devices. If the network we are connected to has a working internet connection, then by connecting to the network we can also use the internet.

Learning Experience-6



Digital Technology in the Asia Pacific Region

In grade seven, we learned how to communicate and how to write emails according to the rules. We also learned how technology is changing many things around us and how we can adopt the positive aspects of those changes. Now we will learn how to communicate by maintaining etiquette using digital technology, as well as make a policy reviewing the changes that have taken place due to the use of digital technology in the Asia Pacific region in communication as well as in social and cultural fields. Finally, we will also organize an online fair.

Session-1: Institutional Communication

In grade seven, we learned about formal and informal communication. Now we will discuss institutional communication. Institutional communication is a form of formal communication where we communicate with an organization or the senior officials of an organization in a formal manner. The elders of our family have always been making institutional communication in various ways. But do we know that we also make, or can do institutional communication? Let's find out what institutional communication we usually make or can do in our lives. After discussing with a friend sitting next to us, let's follow the example below and write down a few more examples of institutional communication in our own lives.

Institutional contact in my life.

1. Sending an email to the Headmaster of any other school to know the rules for admission to class 9 of that school
- 2.
- 3.
- 4.
- 5.
- 6.

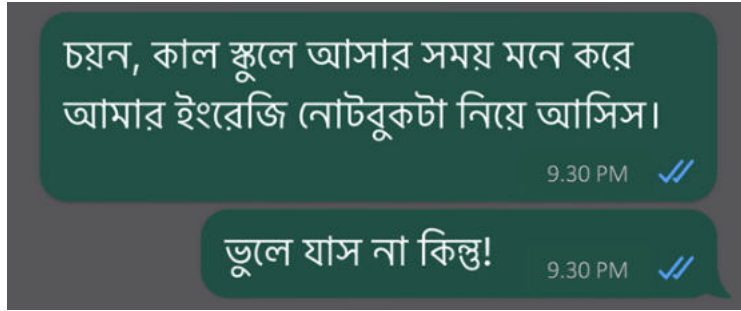
When we have done writing, let's join the rest of our friends and see who has written what. Let's look at the list below. Let's try to find out from the list below which are institutional communications and which are not.

Put a cross mark (X) on communications that are not institutional.

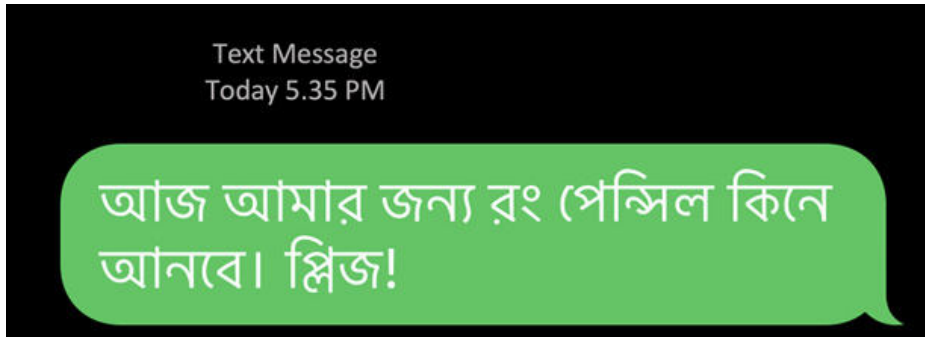
● Sending an email to a friend asking how his/her vacation is going
● Sending messages on social media asking for the schedule of the neighborhood library
● Calling a cousin in the university hall through social media to ask about the university
● Sending an email to the school Headmaster asking for leave
● Asking about a product by sending a message to an online page
● Calling an uncle abroad on social media and asking him about the rules of going abroad for study
● Writing a complaint in the complaint box of a company's website for not finding the necessary information there
● Sending a message to the teacher's phone asking for the schedule of the victory day program
● Calling the teacher on the phone and telling him/her about your illness.
● Posting something on your page on social media
● Commenting on a famous person's post on social media
● Calling on your father's office phone and telling him the results of your tests

So, we understand what institutional communications are. But do we know the difference between informal communication and this kind of communication? Now let's find out. Anik is an eighth grader. Throughout the day, he has sent a message to a friend on social media, texted his father on the phone, and sent an email to the library in his area. The three images below show emails and messages sent by Anik. Let's take a closer look at the images to see if we can find any difference between formal communication and informal communication -

Message sent to a friend -



Message sent to father on phone:



Message sent to the library-

To: library.abc@xyz.com

From: anik.ahmed@xyz.com

Subject: Request for extension of book return time

Sir,

I am Anik Ahmed, a member of your library. On July 10, I borrowed "Rabindra Rachnabali I" from the library to read at home. I am supposed to return the book on July 17, but I haven't finished reading it yet. Therefore, I'm asking for another week before I return the book.

I hope you would extend the time for returning the book.

Thanking you,

Anik Ahmed

Member No. 2106345

Let's write the differences that we have found out between institutional communication and informal communication in the following table:

Institutional Communication	Informal Communication
1. Have to be contacted according to the organization's schedule	1. Can be contacted at any time.
2.	2.
3.	3.
4.	4.
5.	5.

So, we found several differences between institutional communication and informal one. We have also learned about different types of communication and the differences between them in Bangla and English. Let's see if we can accurately identify which of the following cases apply to institutional communication. If we can identify correctly, we will learn about some other features of institutional communication.

Event	If applicable to Institutional Communication
1. To be contacted as per time schedule of the organization	Applicable
2. Clearly stating the reason for the communication	Applicable
3. Deciding in advance what to say or ask in communication	3.
4. Contacting any time of the day	4.

Event	If applicable to Institutional Communication
5. Determining the most acceptable medium of communication (For example: making a phone call, or sending a message or email)	5.
6. Not saying or writing anything that isn't very important	6.
7. Addressing the person being communicated with respect	7.
8. Calling or texting someone on the phone during holidays	8.
9. Using different types of symbols or emojis(😞 😊 🙌 🙏 😌 😊 ❤️) with messages	9.
10. Writing Bangla in English characters (For example –amar ekta shahajjo proyojon)	10.
11. Giving audio or video calls via social media to someone without permission or preplanning	11.

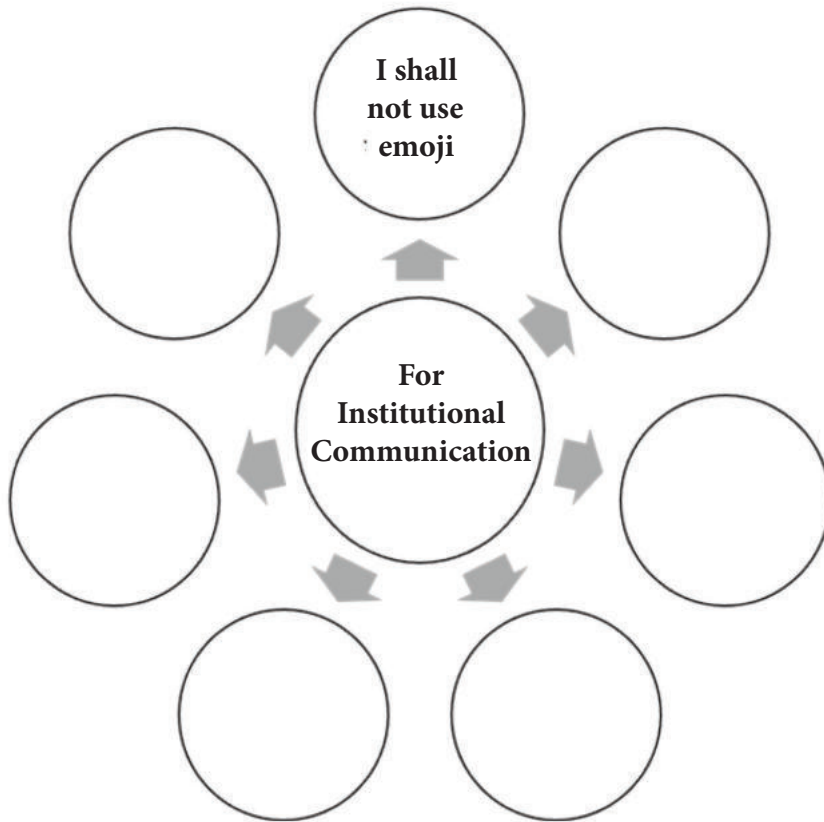
Preparation for the next session:

In the next session, we will learn about the etiquette to be followed in institutional communication at the international level. So, apart from the various rules of institutional communication learned from today's session, we will discuss the rules of international communication by thinking ourselves or with the help of some adults in preparation for the next session.

Session-2: Institutional communication at the international level

In the previous session, we learned about various types of institutional communication and differentiated between institutional and informal communication. In this session, we will discuss how to conduct institutional communication maintaining etiquette at the international level. But before that, let's check if we remember what we learned in the last session.

Let's fill in the following boxes by discussing with friends. Think of what we will do and will not do in terms of institutional communication-



Now we know the do's and don'ts of institutional communication, don't we? However, everything we learned in the last session applies to communication in our own country. But if we want to have institutional communication with someone outside our country, what will we do? We will follow the rules we came to know for institutional communication with someone from another country. At the same time, we have to keep in mind a few other things. Now let's learn about them.

Now we will read 4 emails where a student from Bangladesh contacted 4 head teachers of 4 schools in India, the UK, the USA, and Japan. Let's read the emails, and note the differences between them:

From: sarah.islam@mail.com
To: anim.biswas@mail.com
Subject: Request for admission in online cultural exchange program

Dear Sir,

I am Sarah Islam, a high school student from Bangladesh. I am writing to express my interest in joining the online cultural exchange program of your school and learn about the cultural diversity of India.

I look forward to attending this program.

Regards,
Sarah Islam
Student
ABC School
Bangladesh

From: sarah.islam@mail.com
To: john.smith@mail.com
Subject: Request for admission in online cultural exchange program

Dear Mr. John,

I am Sarah Islam, a high school student from Bangladesh. I am writing to express my interest in joining the online cultural exchange program of your school and learn about the cultural diversity of the United Kingdom.

I look forward to attending this program.

Regards,
Sarah Islam
Student
ABC School
Bangladesh

From: sarah.islam@mail.com
To: emily.johnson@mail.com
Subject: Request for admission in online cultural exchange program

Dear Dr. Johnson,
I am Sarah Islam, a high school student from Bangladesh. I am writing to express my interest in joining the online cultural exchange program of your school and learn about the cultural diversity of the United States of America.

I look forward to attending this program.

Regards,
Sarah Islam
Student
ABC School
Bangladesh

From: sarah.islam@mail.com
To: akira.hayashi@mail.com
Subject: Request for admission in online cultural exchange program

Dear Hayashi Sensei,
I am Sarah Islam, a high school student from Bangladesh. I am writing to express my interest in joining the online cultural exchange program of your school and learn about the cultural diversity of Japan.

I look forward to attending this program.

Regards,
Sarah Islam
Student
ABC School
Bangladesh

Mark the main differences between the emails and write them in the following table -

Email sent to India	Email sent to England	Email sent to America	Email sent to Japan

Now let us read the following story -

Rabeya is going to England to participate in an international debate competition on behalf of her school. To get a better understanding of some of the issues, she contacted one of the organizers of the debate competition on social media and sent a message, "Hi, I am Rabeya from Bangladesh. I need some information about the debate competition." After a while, she got the reply, "Hi, I am available to help you today at 2 pm CET. Call me at that time." Rabeya saw that it was 2 pm on her watch, so she immediately called the number. But the call was cut off from the other side. After a while, Rabeya got another message that read, "Please call me at 2 pm CET, not now." Rabeya didn't understand. When she showed the message to her elder sister, she explained that CET stands for Central European Time. Bangladesh time and Central European Time are not the same. So when it is 2 PM in Bangladesh, it is not 2 PM in Central European Time.

From the above story, we learned about a special etiquette or caution to maintain in institutional communication abroad. Let's write that in the following space –

Now let's review the situations in the table below. Here are some situations where international communication takes place. We need to find out what went wrong in international communication in these situations. Let's do the task –

Situation	What went wrong?
<p>Mr. Hassan has a business assignment that requires a meeting with a person in America. So, he called that person on his mobile phone. After talking for a minute, the phone got disconnected and Mr. Hasan noticed that all the money in his phone was gone.</p>	
<p>Kabita is going to study at a university in England. She called the international student adviser of the university at 10 am Bangladesh time to know more. She did not consider the England time.</p>	
<p>A student of class ten had tried for a scholarship in a foreign college for a long time. An email from a college today informed her that she was offered admission but did not receive a scholarship. She wrote in reply to that email "Why didn't I get the scholarship? I tried hard for the scholarship. I am very sad."</p>	
<p>A person ordered a product from abroad. Although it was supposed to reach him yesterday by courier, he has not received the product till today. So, he/she sent the following email to the courier service-</p> <p>To: parceldelivery123@mail.com From: abcdefg@mail.com Subject: Lost Pkg - Need Help ASAP</p> <p>Hi. Hope ur doing gr8. My pkg iz lost & I need help. I ordered this really imp thing & it was supposed 2 reach yestrdy. But guess what? It didn't. So, find it & send 2 me ASAP. Thanx 4 help. Bye.</p>	

Situation	What went wrong?
<p>To know the admission process of a foreign college, a student posted some questions along with his email address in the information-seeking section of that college's website and immediately got this email. -</p> <p>Thank you for your mail.</p> <p>Please visit http://www.ouruniversity.com/admissioninfo for admission related information and http://www.ouruniversity.com/scholarshipinfo for information about our different scholarships. You can also visit http://www.ouruniversity.com/ Contact us for any other query</p>	
<p>Please do not reply to this message. Replies to this message are routed to an unmonitored mailbox. if you have any other questions you may call us at 202-555-1212.</p> <p>Without reading the email properly, the student sent a return email to that email address asking for more information.</p>	

Preparation for the next session:

Today we have learned what rules we follow for institutional communication at the international level. Also, we have learned about the digital technology we use in communication and the ways we communicate through any digital medium. Now let's discuss with our family members, relatives, neighbours or neighbourhood friends to know in which areas, besides communication, we use digital technology. Then write them in the table below:

Areas where digital technology is used	
01.	05.
02.	06.
03.	07.
04.	08.

Session-3: Technology and Sociocultural Change

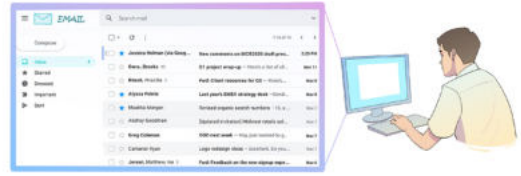
In the last 2 sessions, we learned about institutional communication, institutional communication at the international level, and the use of technology in communication. However, we don't use technology solely for communication. At present, we use technology in our personal, social, and cultural spheres. Today we will learn about the changes in our social and cultural spheres due to the influence of technology. We will learn about the changes caused by technology not only in our own society or country, but also in other countries in the Asia Pacific region.

Let's look at some pictures at the beginning and identify the differences between them (Past and Present)–

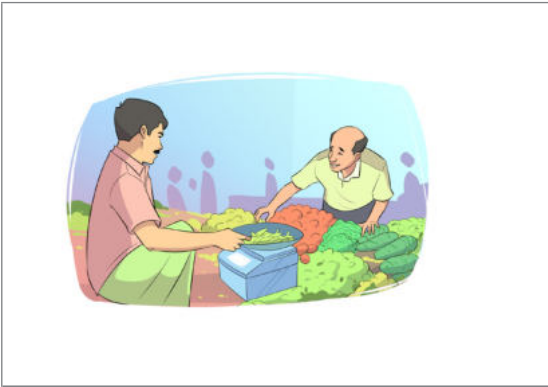
	
<p style="text-align: center;">Past</p>	<p style="text-align: center;">Present</p>
	
<p style="text-align: center;">Past</p>	<p style="text-align: center;">Present</p>



Past



Present



Past



Present



By looking at the pictures above, we can understand one thing; our life has become much easier with the latest inventions of digital technology. For example, in the past any necessary letter would take a long time to arrive. Sometimes it also happened that the admission letter to a foreign university reached after the admission period had passed. But at present, we get any important letter or news instantly through email. On the other hand, face-to-face communication or speaking between people has decreased despite the increase in human-to-human communication through social media. Apart from this, there have been many changes due to digital technology in many other areas. Some of these are positive and some are negative.

Now we will read about some cases related to the use of digital technology in our daily activities. We have to analyze by reading the events whether they have positive or negative impact in our life. Why are they positive and what is the remedy, if it is negative? Let's read the events and start analyzing –

Event	Analysis
We can easily get an idea about diseases by telling various symptoms online. Many people are now searching the internet and diagnosing themselves by informing the symptoms. Then they are taking medicine for that disease.	
Many students are gaining knowledge and skills in many other subjects besides their main subjects by attending various online courses.	
Using digital technology, many people are doing office or business work staying in distant countries or other cities or at home.	
It is now easy to communicate with friends, acquaintances, and even celebrities because of digital technology. Many people are commenting on the posts shared by many celebrities on social media these days.	

Preparation for the next session:

In today's session, we learned about various positive and negative changes due to the impacts of digital technology. In the next session, we will highlight the different social and cultural changes that have occurred in different countries of the Asia Pacific region due to the influence of digital technology. Our friends will form different groups and collect information about each country. Our teacher will help us in dividing the teams

and selecting the country. We may take the help of our family members, relatives, and neighbours to collect information. Also, we can collect information from the internet, TV news, books, magazines, newspapers, etc. The team that will be asked to collect information about a different country. They will gather information about the changes in the use of digital technology in the education system, medical system, food habits, transportation system, workplace, and daily life of that specific country.

Sessions-4 and 5: Creating Guidelines for the Online Fair

In the last session, each member of the team tried to bring out necessary information individually that we were supposed to bring as "Preparation for the Next Session", right? Now, let's discuss with all the team members and fill the following table with the collected information –

Name of Team:	Name of Country:
Areas	Changes under the influence of digital technology
Education	
Health	
Food	
Transportation system	
Workplace	

We will present what we have written in the table above at the online fair titled 'Socio-Cultural Changes in the Asia Pacific Region Caused by Technology'. Other teams will also present about the countries they have worked on. But before that, our task is to organize the online fair. We have to make some plans and guidelines for that fair.

We have to decide with the help of our teacher and all our friends in the class when and on which online platform the fair will be held. We need to decide who will participate

in the fair, that is, the names of each of our groups in our class. We also need to select the names and identities of those to whom we will present the fair and other things. Besides, we have to decide on some guidelines for participating in the fair so that all the work is done smoothly and nicely during the fair. Besides, we have to organize the programme schedule of the fair.

Then let's make the guidelines of the online fair together with the help of our teacher –



Once the guidelines are made, our job is to invite participants as per the list to participate in the fair by contacting them through appropriate channels. We will follow the Institutional Communications Policy for invitations.

Once the invitations are made, we will create digital content for our group presentations. We will ensure the participation of all team members in content creation.

Preparation for the next session:

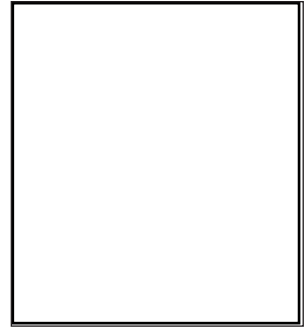
The next session will be our online fair. We will decide who will do what in the fair and prepare accordingly and attend the fair.

Session-6: Online Fair

We will organize the online fair on the planned date and time by following the guidelines we made in the last session for organizing online fairs. At the fair, each group will present their content.

Now we will fill in the following form and submit it to our teacher. Based on this, the teacher will sign our certificate on Continental Diversity of Asia Card.

Name:



Class:

School:

In the online fair titled....., she/he has been able to present accurate and important information about the country..... I wish him/her success in the future.

Teacher's signature and date

Headmaster's signature and date





রূপপুর পারমাণবিক বিদ্যুৎ কেন্দ্র: ‘শেখ হাসিনার উদ্যোগ, ঘরে ঘরে বিদ্যুৎ’

বিদ্যুৎ উৎপাদনে পারমাণবিক প্রযুক্তি সর্বাধিক নিরাপদ ও পরিবেশবান্ধব প্রযুক্তি। বিশ্বে মোট বিদ্যুৎ চাহিদার ১০ ভাগ আসে পারমাণবিক প্রযুক্তি খাত থেকে। বাংলাদেশও বিশ্বের অন্যান্য উন্নত দেশের মতো ক্রমবর্ধমান বিদ্যুৎ চাহিদা মেটানোর জন্য স্বল্প মূল্যে উৎপাদিত পরিবেশ বান্ধব এ প্রযুক্তির ব্যবহার করার প্রয়াসে পাবনা জেলার রূপপুরে দুই ইউনিট বিশিষ্ট পারমাণবিক বিদ্যুৎ কেন্দ্র তৈরি করছে। প্রতিটি ইউনিট প্রায় ১২০০ মেগাওয়াট বিদ্যুৎ উৎপন্ন করবে। ১৯৬১ সালে পাবনা জেলায় ৬৩২ একরের উপর এই পারমাণবিক বিদ্যুৎ কেন্দ্র গড়ে তোলার পরিকল্পনা নেওয়া হলেও তা স্থগিত হয়ে যায়। ১৯৭৪ সালে বঙ্গবন্ধু শেখ মুজিবুর রহমান পুনরায় প্রকল্পটি বাস্তবায়নের উদ্যোগ নেন। তারই ধারাবাহিকতায় বিভিন্ন পর্যায় অতিক্রম করে শেখ হাসিনা সরকারের উদ্যোগে ২০১৭ সালের নভেম্বরে প্রথম ইউনিট ও ২০১৮ সালে দ্বিতীয় ইউনিটের নির্মাণ কাজ শুরু হয় যা ২০২৩ বা ২০২৪ সাল থেকে বিদ্যুৎ উৎপাদনে সক্ষম হবে।

Academic Year 2024 Class Eight Digital Technology

তথ্য, সেবা ও সামাজিক সমস্যা প্রতিকারের জন্য '৩৩৩' কলসেন্টারে ফোন করুন

নারী ও শিশু নির্যাতনের ঘটনা ঘটলে প্রতিকার ও প্রতিরোধের জন্য ন্যাশনাল হেল্পলাইন সেন্টার
১০৯ নম্বর-এ (টোল ফ্রি, ২৪ ঘণ্টা সার্ভিস) ফোন করুন



Ministry of Education