

# Digital Technology

## Class Nine



NATIONAL CURRICULUM AND TEXTBOOK BOARD, BANGLADESH



জলবায়ু পরিবর্তনের বিরুপ প্রভাব মোকাবেলায় বিচক্ষণ নেতৃত্বের স্বীকৃতি হিসেবে পাওয়া  
জাতিসংঘের 'চ্যাম্পিয়ন্স অব দি আর্থ' পুরস্কার গ্রহণ করছেন মাননীয় প্রধানমন্ত্রী শেখ হাসিনা

জাতিসংঘের পরিবেশ বিষয়ক সর্বোচ্চ পুরস্কার 'চ্যাম্পিয়ন্স অব দি আর্থ' পদকে ভূষিত হন মাননীয় প্রধানমন্ত্রী শেখ হাসিনা। পরিবেশ আদলত আইন, পরিবেশ ও জীব-বৈচিত্র্য সংরক্ষণ ও উন্নয়নে সংবিধানে ১৮ক অনুচ্ছেদ সন্নিবেশ, বন্যপ্রাণী (সংরক্ষণ ও নিরাপত্তা) আইন, ইট প্রস্তুত ও ভাট্টা স্থাপন (নিয়ন্ত্রণ) আইন, বাংলাদেশ জীব-বৈচিত্র্য আইন প্রণয়ন এবং জলবায়ু পরিবর্তনজনিত তহবিল গঠন এমন বহু গুরুত্বপূর্ণ অবদানের স্বীকৃতি হিসেবে বাংলাদেশের প্রধানমন্ত্রীকে ২০১৫ সালের ২৭শে সেপ্টেম্বর আনুষ্ঠানিকভাবে এই পুরস্কার প্রদান করা হয়।

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to the National Curriculum 2022 for Class Nine from the academic year 2024**

# **Digital Technology**

**Class Nine**

**(Experimental Version)**

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## Preface

In this ever-changing world, the concept of livelihood is altering every moment. The advancement of technology, in accordance with knowledge and skill, has accelerated the pace of change. There is no alternative to adapting to this fast changing world. The reason is, the development of technology is at its zenith compared to any time in the human history. In the fourth industrial revolution era, the advancement of artificial intelligence has brought a drastic change in our employment and lifestyles and this will make the relationship among people more and more intimate. Varied 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 upcoming future.

Although a huge economic development has taken place throughout the world, the problems of climate change, air pollution, migrations and ethnic violence have become much more intense than before. The epidemics like COVID 19 has appeared and obstructed the normal lifestyle and economic growth of the world. Different challenges and opportunities have been added to our daily life.

Standing on the verge of these challenges and possibilities, implementation of sustainable and effective solutions is required for the transformation of our large population into a resource. It entails global citizens with knowledge, skill, values, vision, positive attitude, sensitivity, capability to adapt, humanity 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 pivotal instruments to attain the goals and there is no alternative to the modernization of our education system. Developing an effective and updated curriculum has become crucial for this modernization.

Developing and revising the curriculum is a regular and vital activity of National Curriculum and Textbook Board. The last revision of the curriculum was done in 2012. Since then, a lot of time has passed. The necessity of curriculum revision and development has emerged. For this purpose, various research and technical exercises were conducted under the supervision of NCTB during the year 2017 to 2019 to analyze the prevalent situation of education and assess the learning needs. Based on the researches and technical exercises, a competency-based incessant curriculum from K-12 has been developed to create a competent generation to survive in the new world situation.

In the light of the competency based curriculum, the textbooks have been prepared for all streams (General, Madrasah and Vocational) of learners for grade IX. The authentic experience driven contents of this textbook were developed in such a way that teaching learning becomes comprehensible and full of merriment. This will connect textbooks with various life related phenomenon and events that are constantly taking place around us. This is to be mentioned here that this textbook has already been refined through a logical evaluation by the writers and the subject specialists after collecting opinion from the teachers and students via an intern tryout. We hope that learning will be profound and life-long now.

Issues like gender, ethnicity, religion, caste, the disadvantaged and students with special needs have been taken into special consideration while developing the textbook. I would like to thank all who have put their best efforts in writing, editing, illustrating and publishing the textbook.

If any one finds any errors or inconsistencies in this experimental version and has any suggestions for improving its quality, we kindly ask them to let us know.

**Professor Md. Farhadul Islam**

Chairman

National Curriculum and Textbook Board, Bangladesh

Dear student,

Welcome to the new academic year. This year your learning will be totally different from that of the previous year. You have novelty in your studies through the new curriculum. Until the last academic year, your studies were limited to acquiring knowledge only. From this year you will learn how to apply that knowledge and gain skills through practical work. This year will be a year full of new experiences for you. This year you will learn, know, and understand many new things through various experiences.

You will acquire 10 qualifications in the field of digital technology through 6 fun learning experiences this year. You will prepare yourself for the digital future, learn about cyber risks, ensure the security of your own and your family's information through digital media, gain a clear understanding of transparency and accountability in various civic services, solve simple problems through programming, create a network between two computers to share resources, and present a report on the use of digital technology in the global south to obtain an international diversity certificate.

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.

You have to look at everything around you with the eyes of inquiry. You 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.



# Index

Preparation for the Digital Future

01 - 27

"Let us Know about Cyber Threats,  
and Ensure Information Security"

28 - 70

Transparency and Accountability in Civic Service

71 - 101

Programming for Problem Solving

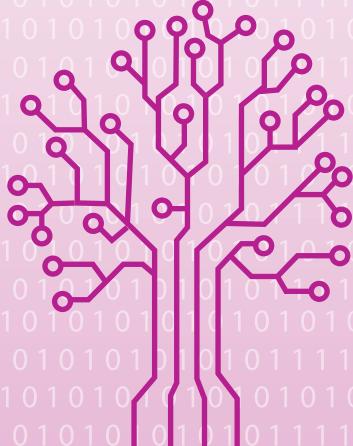
102 - 146

Let us build a Network

147 - 168

Digital Technology and Diversity

169- 181



## Learning Experience-1



# Preparation for the Digital Future

Our daily lives are constantly changing due to the advancement of technology. Life style, transactions, communication, profession, and entertainment mediums are all changing. It is not even possible to predict the changes that will occur in our lives five years from now. So, we must be prepared to embrace any changes in this ever-changing world. Our education and knowledge are not limited to textbooks; therefore, we need to gather information from the Internet and other sources to expand our knowledge. For this reason, the ability to effectively exchange accurate information is an important skill.

We will create a bulletin in our school by verifying validity through this experience. Additionally, we will create an online portfolio for ourselves, where we will regularly upload everything we have accomplished throughout the year, including various tasks and projects related to digital technology and other subjects. This will allow anyone from any part of the world to see and learn about the research and projects we have undertaken in a year.

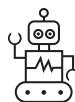
Now, let us begin our journey of creating the school bulletin!

### Session- 1: Search for Truth

Due to the easy accessibility of the Internet, we can easily search for any information within moments. However, the convenience of the Internet has allowed some bad people to spread false information, leading to confusion. When creating our school bulletin, each of us must try to find at least one accurate piece of data in contrast to the published incorrect information and write an essay or article about it.

To undertake this task, we first need to understand how misinformation can be propagated. By reading the following incidents, we will identify how misinformation is spread.

Sagar, after completing his studies, applied for jobs at several banks. He was preparing for job interviews. One day, he was reading a book on interview preparation sitting on a bus. Noticing him reading a book on jobs, a person sitting next to Sagar started a conversation and informed him that his elder brother worked at a prominent bank. If Sagar gave him some money, he would talk to his brother about Sagar's job. Sagar agreed and arranged the money. Within a week, the person gave a letter to Sagar. Upon opening the letter, Sagar saw that it was a job offer letter from the bank in his name, indicating that he had been hired for the job. The person also showed Sagar a website of a magazine where application numbers of employed candidates were listed; Sagar found his application number there. Sagar, pleased, gave the person more money. After going to the bank on the mentioned date in the letter, Sagar found that the job offer letter he had received was fake.

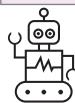


Let us think for a moment, how did the crook on the bus manage to present a believable fake offer letter and website?

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Possible answers will be given in the next session, and we can match them with our answers.

Jyoti was in the ninth grade. One day, when Jyoti had returned home from school, her mother told him that all students of the ninth and tenth grades would be provided with laptops by the government. She had seen a news report on YouTube where the process for applying for a laptop was explained. Jyoti watched the news and understood that it was from a reputable television channel in Bangladesh. Without any doubt, she completed the application form, including personal information, and emailed it. A day later, someone called Jyoti's mother, claiming that if they sent some money through mobile banking for courier charges, they would send the laptop. Jyoti's mother sent the money over the phone. However, later, they found out that the mobile number was blocked, and Jyoti realized that she had become a victim of a scam.



Let us think for a moment, how did the crook manipulate that YouTube news report?

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Palash's father received an image in his social media inbox, which a friend had sent him. The photo was actually an image from a nationally recognized magazine. The magazine's logo and card were visible, indicating that it had been published in that magazine the day. The message in the photo was about an inappropriate picture in a textbook for the ninth grade. The photo of the textbook page was included in the message. Palash was in the ninth grade, and naturally, his father became upset after receiving the news. He shared the message from his social media account, and many of his acquaintances also shared it. A week later, during a parent-teacher meeting at Palash's school, Palash's father proposed to the head teacher to discuss the matter. The principal informed that the news was actually false and distorted.



Let us think for a moment, how was that newspaper news manipulated or faked?

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In the mentioned three scenarios, what could Sagar, Jyoti, and Jyoti's mother and Palash's father would do, in your opinion?



1. It would have been appropriate for Sagar to tell that person, "Please send me the link to the website you're showing on your mobile." Just by seeing the URL or address of the website, Sagar could have realized that it was a fake website. If he had seen the paper of the job offer letter, the logo, the envelope, and the incorrect address, Sagar would have understood that it was fake. Furthermore, the job offer letter should have arrived via email or mail to Sagar's address, by hand of any individual.
2. Offering money to anyone out of the desire to secure a job is a crime in any job process. Sagar shouldn't have done this.

Let us write what could be done for rest of the two scenarios-



In these three situations, we have found out through different methods how information gets distorted.

There are some organizations in Bangladesh that analyze such misleading information and help to uncover accurate information.



If we search on search engines (Google, Bing, Yahoo) with these three keywords 'Fact Check Bangladesh,' we will find the names of some websites that verify or fact-check false information.

We will read several pieces of verified news from any two websites and, as a class, everyone will answer one by one how those news articles have been distorted.



Image- 1.1: Everyone in the classroom will collectively read news and find out how information is being biased from that news.

**Preparation for the upcoming session:** If there is internet access at home, we will explore more news articles from these websites and note down other ways through which news or information can be manipulated.

## Session-2 : Differences in Reality

Today, we will try to understand another topic, which is the reality and the media's (mass media and social media) perception of reality. We constantly receive various information and entertainment elements through mass media and social media. This information and entertainment shape a certain mindset or perception towards specific subjects. Sometimes this perception may be slightly different from actual reality or the absolute truth. We can write a report or an article about this topic in our school bulletin.



Image- 1.2: We can use voice command to combine our homework easily

Before going to today's main topic, let us discuss the subject again from the previous session. We have brought a list from home. We will organize our home tasks using a new method called 'Voice Command'. That means we will speak out each point from our list, and the computer will write it down following our utterances. Some of us might know how to do this. Those who know can help others who do not. Even if someone does not know, there is no problem. We can do the task by following the instructions below.

To do this task, we will need a laptop and an internet connection.

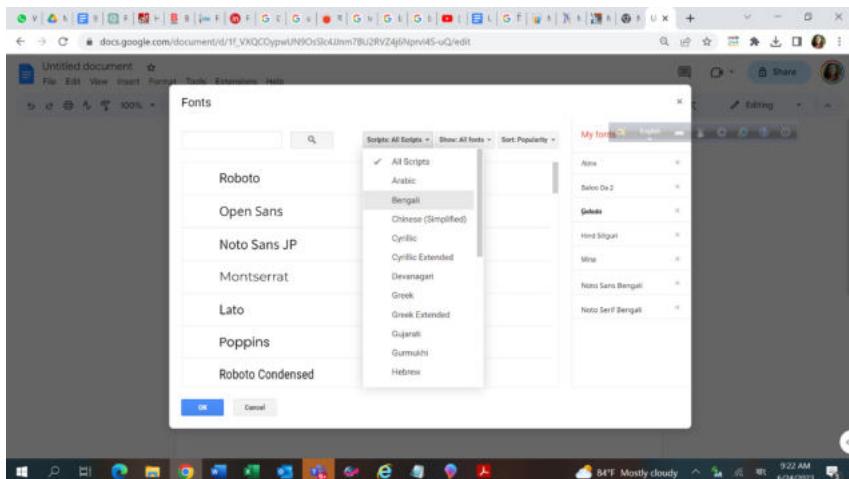


Image- 1.3: Using the teacher's email address, we will open a Docs file and select the Bengali font

1. We will open a 'Docs' file from Google Drive.
2. We will click on Fonts in the file and select the More Fonts option.
3. A new pop-up window will appear. We will click on 'Scripts: all scripts' and select 'Bengali'. (Picture 1.3)

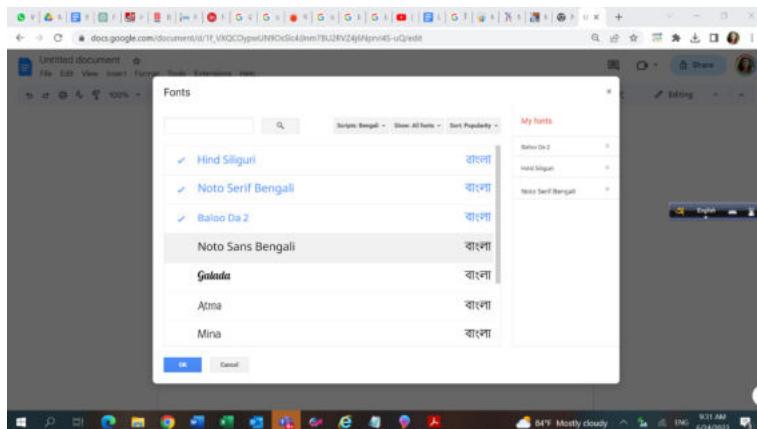


Image- 1.4: Some Bangla font will appear, and we will select all Bangla font from them

4. When we click 'OK,' another new pop-up window will appear with all the available Bengali fonts. We will click on each font one by one to select them. (Picture -1.4)
5. Now, going back to the Font option in our Docs, where we selected the Bengali fonts earlier, we will find all the selected fonts there. We will select any one of these fonts.

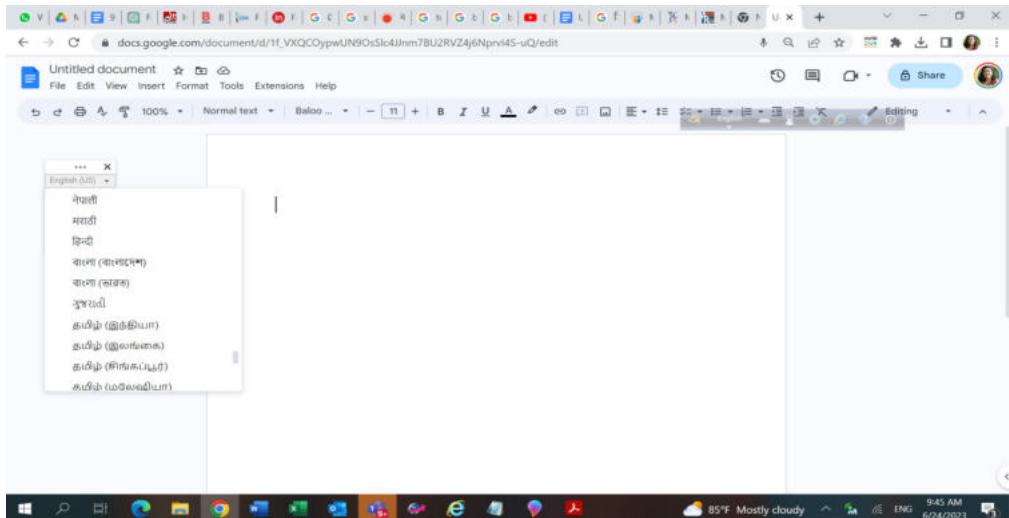


Image- 1.5: Bengali font will visible in our document file and we will select any one of them

6. After selecting the font, press **Ctrl + Shift + s**. Clicking these three buttons together will activate the voice command, and an image of a microphone will appear on the screen. On top of the microphone, there will be an option to select our font. We will choose 'Bengali.'
7. After that, when we click on the microphone, it will start recording our voice, and the content will be automatically written in the Docs file we created.

If this task seems difficult to understand, we can search on internet using the keywords 'Voice Type Bangla Writing.' Several videos explaining the whole process are available, which will help us to easily complete the task.

We will come one by one to the laptop and speak out the points from our home list to create a document. This document will be used when preparing our school bulletin.

This process can also be followed for other subjects like Bangla, Science, Religion, etc. Our tasks will be easier because of this.

If there is no computer available at school, we can also do the task of creating the list on the board.

Now, let us come to today's main discussion. We know television, newspapers, and radio are called 'mass media,' and YouTube, Facebook, and Instagram are called 'social media.' Using the internet, any communication medium is known as 'new media.'

For quick access to the viewers or target groups, most mass media have a 'new media' version. Can we provide some examples of this type?

<b>Mass Media</b>	<b>New Media Version</b>
1. Bangladesh Television	'Live' from Bangladesh Television's website
2. BBC (Television)	BBC YouTube channel, Facebook page, Twitter account
3.	
4.	

### **Incident 1:**

Through some personal accounts on social media, several videos are being seen where heavy rain is falling in Rajshahi and some places are submerged under water. After watching such videos, we might think that the entire Rajshahi district is under water. If this information about the rain is broadcasted in any news media, it should specifically mention which villages or areas in which upazilas of Rajshahi have been affected by flooding. This way, our understanding of the situation will become clear and accurate. Only by watching isolated videos, it can be misunderstood by us.

Moreover, due to artificial intelligence nowadays, we keep seeing the same type of content or information on the internet repeatedly that we once saw or searched for. As a result, we might think that it is actually happening or it is the real truth.

Starting from today until the next two weeks, we will maintain a notebook or journal. We will read, watch, or listen to at least two pieces of news daily. We will record it in the notebook or journal. We can maintain the record in the notebook in the following format:

Date:

Name of the Media:

Headline of the News:

Topic of the News:

My Opinion:

We can get this news from any media, such as newspapers, television, the Internet, or radio. The news and my opinion will not exceed two lines. In the 'My Opinion' section of this news, we will write about whether this news is 'actual truth,' 'created truth by the media,' or 'false.'

In the upcoming session, we will show the Diary to the teacher at school.

In the upcoming session, we will organize a debate competition in the classroom. The teacher will elect the proponents and opponents of the debate team through a lottery.

The topic of the debate may be:

1. "Only mass media can present the actual truth" or
2. "Only the journalists can verify and broadcast truth"

### Session- 3: Verification of Impartiality in Arguments

In today's session, we will participate in a group debate. We will need sufficient evidence and logical reasoning to write the report or article for our bulletin. So, understanding the game of debate or argumentation will help us think using reasoning.

Have we brought our diary or journal? Let us show it to the teacher.

Before starting the argumentation, we can discuss "impartiality" for some time. In any presentation of information, impartiality is the most crucial aspect. It means not showing bias toward any particular side, not depending on emotions, and making judgments or decisions objectively.

Due to various reasons, bias can come into us.

I really like one of my distant maternal uncles. He always encourages me to study and play, gives me gifts at different times, and shares interesting stories. I used to think he is one of the best people in the world. One day, Abir, his son, comes to me and says that his father is pressuring him a lot with unnecessary coaching classes for his studies. I cannot believe Abir's words. The reason for my disbelief is my "prior experience."

Since childhood, I have been fond of a particular filmmaker's work. I have watched almost all of his movies. One day, I came to know that he didn't create his works himself but rather copied stories from various foreign films. I could not believe this information. The reason for my disbelief was my "emotion." Various reasons like nationality, culture, and relationships can cause emotional bias among us.

It is important to remember that it is not always bad to be biased. When I feel that I am biased, it will be appropriate for me to have sufficient evidence in favour of the opinion against my bias. If evidence exists, we must make decisions based on that evidence.

When an individual presents themselves as a journalist or information provider as a profession, they need to present information impartially. They provide us with objective information, setting aside their emotions or prior experiences.

However, in many cases, due to the influence of media ownership, news often becomes biased.

Let us consider the case of a newspaper owner who has a business of sugar. One day, the workers of that owner's sugar factory started a protest as they did not receive their wages for many days. Primarily, not paying wages on time was the fault of that owner. If that owner instructed all the journalists of his newspaper to propagate news in favor of the owner or refrained from reporting any news, the citizens would not receive authentic news.

Let us write in the space below, what other reasons can impact a piece of information or news-



### Preparation for the coming Session:

Now the game of reasoning will begin. The teacher will divide our class into two teams- 'Proponent Team' and 'Opposing Team'- by election.

The rule of the game is that a member of the Proponent Team will speak for 1 minute on a topic, and then a member of the Opposing Team will speak for 1 minute. This way, the game will continue for 15 minutes. A student will not get more than one chance to speak. However, if someone comes up with an argument, they can write and pass the slip to help another member of their team.

Topic:

1. "Only mass media can present the actual truth" or
2. "Only the journalists can verify and broadcast truth".



Image- 1.6 : We all participate in debate

## Session - 4: How Information Becomes News

We regularly gather information from various sources and take our daily decisions on this information. To provide an example within a small context, I can say that- I decide when to go on vacation with my family based on the summer break from the school's bulletin or calendar. Similarly, I install software on my computer after knowing which software is available for free to edit videos and can work with large files. In this way, we rely on information in various ways. However, not all information is news. News has its own characteristics. We will learn about these characteristics and in today's session, we will decide to write a report or article on a topic for our school bulletin.



**Relevance:** The information about an event that reaches the readers or news consumers in the least amount of time will be considered as important news. Information of an incident after a long time does not remain as news. For example, information about a match won by the Bangladesh football team on June 1 will not be considered important news beyond June 10.



**Proximity:** Information related to people in a particular locality is considered important and newsworthy to those people. My school has been awarded as the best institution in the upazilla, which is important news for our school's students, teachers, parents, or people in my upazilla. However, it is not necessarily interesting information for people of another district. So, it is not news for them.



**Impact:** Information that may not be within a particular locality but has an impact on a large number of people becomes news. Impact can take various forms, such as economic gains or losses, emotional connection, or relevance to important decisions.

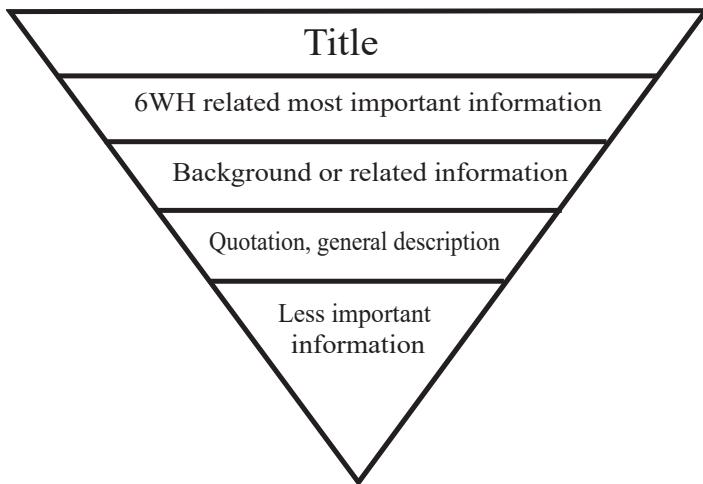


**Balance:** If multiple or more than two sides are involved in an event, a news report about that event must include opinions or information from all sides. If someone accuses an organization of manipulating the recruitment process, only publishing that accusation will not be considered a fair news report. Both the accuser's and the accused parties' viewpoints must be presented in the news.

We have learned which aspects we need to consider when presenting any news. Besides, noteworthy actions, lifestyles, or statements of significant individuals can be interesting news. Athletes, leaders, and artists are considered important personalities.

In the context of news presentations, another essential aspect to remember is the "6WH" principle. If a piece of news answers these six questions: who, what, when, where, why, and how, it becomes complete news. Additionally, adding supplementary details, images, and videos related to the news can make it more acceptable and appealing.

The news structure is compared to an inverted pyramid.



Today, we will decide on the topic for our article or essay. Before finalizing the topic, let us do an exercise. A topic is given below. Write down your thoughts on what elements of news could be associated with this topic:

Topic: Absence of students in our School

The topic we want to focus on: The Reasons Behind the Absences of Students

Possible Information:

Potential data:

Possible interviews:

Types of images or videos that could be used:

### **Planning for writing our investigative or research news article/essay/blog:**

After this experience, we will create an online portal for our school. The portal will feature our written articles or essays/blogs. We will choose topics for our blogs from our surroundings. We need to select topics for which we will need data because, in the upcoming sessions, we will work on data and their presentation.

Some examples of topics are provided below along with related data:

Topic	Relevant Data
Absence of student in our school	What are the absence rates of eighth-grade students in different months last year? Which month has the lowest absence rate?
Child marriages in our locality	Comparative rate of the most prevalent of 5 main causes of child marriage
Participation of school's students in sports	Rate of the grade and gender of students who participate more in sports
Online misinformation or gossip	Top 5 reasons for or sources of spreading gossip, and their rates
Online fraud	Generally, what types of online fraud people are vulnerable to, and their rate
Learning the Internet	what percentage of students, parents, and teachers think that learning or studying using the Internet is possible.

The above examples are provided for our understanding only. From the above topics, from our diary or from any topic from our surroundings, we will choose one and start working on it from now. After finalizing our topic, we will show it to the teacher in the next class. The teacher will help us so that everyone's topics will not be similar.

### My Selected/fixed Topic

### Session 5: Data Presentation

We have understood the concept of creating a school bulletin. When it comes to writing our articles or essays, we need to present our resources or data in a way that makes our writing acceptable and engaging. We will show our selected topic to the teacher, and the teacher will guide us on which topic we should work on.



Image- 1.7 : We will enter at least 10 persons data in our spreadsheet

To include data in our article, we will conduct a survey. A survey is a method of research. Opinions about any particular topic are gathered from relevant individuals through various questions subject. By collecting these opinions, we can arrive at a conclusion. Different types of questions can be used for a survey:

1. Descriptive Questions
2. Multiple-Choice Questions
3. Likert Scale (Rating-based questions)

Since we are learning about data presentation, for the sake of our project, we will only create an objective questionnaire. Today, we will practice how to perform data analysis and visualization in a spreadsheet. Since we have not conducted a survey at this moment, we do not have any data. We will create a data sheet in Excel for the convenience of our work.

Suppose our topic is: The effectiveness of internet usage in education.

Survey Question 1: Respondent's Name:

Survey Question 2: Do you have a computer or smartphone at home?

- A. Yes    B. No

Survey Question 3: The internet assists in studies. With this statement I-

- A. Agree    B. Disagree

Survey Question 4: I encourage my child to use the internet for education. With this statement I-

- A. Agree    B. Disagree

উত্তরদাতা	বাসায় কম্পিউটার বা স্মার্টফোন আছে	ইন্টারনেট পড়াশোনায় সাহায্য করে	আমি আমার সন্তানকে পড়াশোনার জন্য ইন্টারনেট ব্যবহারে উৎসাহ দিই
1			
2	ক	আছে	একমত নই
3	খ	আছ	একমত নই
4	গ	আছে	একমত নই
5	ঘ	আছ	একমত নই
6	ঙ	আছে	একমত নই
7	চ	নেই	একমত নই
8	ছ	নেই	একমত
9	জ	আছ	একমত নই
10	ঝ	আছে	একমত
11	ঞ	আছে	একমত নই

Image- 1.8 : At least 10 persons data will in the spreadsheet

We will present the answers to these 4 questions obtained from 10 individuals in a spreadsheet and it will look like this. We will write the questions in columns (A, B, C, D...) and list the answer options (1, 2, 3, 4...) in rows above and below.

By analyzing the responses of 10 individuals, we will be able to determine how many people gave answers. However, if we are given data from 1000 individuals, it will be impossible to calculate.

So, if we learn to use spreadsheets for this task, we can quickly handle complex calculations or research tasks.

We can easily analyze questions of the same type together. Let us analyze Survey Questions 3 and 4 together. Under the same sheet, once all data comes, we will separate these two questions.

মোট উত্তরদাতা	
	ইন্টারনেট পড়াশোনায় আমি আমার সত্ত্বানকে পড়াশোনার জন্য সাহায্য করে
৩ একমত	ইন্টারনেট ব্যবহারে উৎসাহ দিই
৪ একমত নই	
৫	
৬	
৭	

Image- 1.9 : We will use Column for Question and Row for Answer

We will copy and paste the questions side by side and then copy and paste the answer options below in rows (Image - 1.9).

উত্তরদাতা বসারা কান্সেলের বা খাঁটি মোন আছে	
	বাসারে ইন্টারনেট পড়াশোনা সাহায্য করে সাহায্য আছে
১ ক	অন্যথা
২ ক	অন্যথা
৩ ক	অন্যথা
৪ ক	অন্যথা
৫ ক	অন্যথা
৬ ক	অন্যথা
৭ ক	নেই
৮ ক	নেই
৯ ক	অন্যথা
১০ ক	অন্যথা
১১ ক	অন্যথা
১২	
১৩	
১৪	

Image- 1.10 : We need to select data range

Let us write the formula in the cell (C17) as follows, where I want to integrate or calculate my data,

= COUNTIFS (

Let us select the range of data from the column which we want to analyze by using the mouse. We will put a comma (,) and then select what we want to retrieve from that column by putting the mouse over it. Here, we have positioned the mouse over 'Agree', and the reference of that cell has come into my formula. Now close the bracket {}). As soon as I press Enter, my calculation will appear.

By placing formulas in each of these cells, we can easily perform complex calculations. Once we have calculated values for all cells, we will now find the percentage.

	ইন্টারনেট সংযোগ আছে	সাহায্য করে	পড়াশোনার জন্য ইন্টারনেট ব্যবহারে ক্ষেত্রে সিঁজ
আছে	আছে	একমত	একমত নই
আছে	আছে	একমত	একমত নই
আছে	আছে	একমত	একমত নই
আছে	আছে	একমত নই	একমত নই
আছে	আছে	একমত নই	একমত নই
নেই	আছে	একমত নই	একমত নই
নেই	নেই	একমত	একমত
আছে	নেই	একমত নই	একমত নই
আছে	আছে	একমত	একমত
আছে	নেই	একমত নই	একমত নই

	মোট উত্তরদাতা		উত্তরদাতার শতাংশ
ইন্টারনেট পড়াশোনার সাহায্য করে	আমি আমার সকলানকে পড়াশোনার জন্য <sup>টি</sup> ইন্টারনেট ব্যবহারে সাহায্য করে	ইন্টারনেট পড়াশোনার সাহায্য করে উৎসাহ দিই	আমি আমার সকলানকে পড়াশোনার জন্য <sup>টি</sup> ইন্টারনেট ব্যবহারে উৎসাহ দিই
একমত	5	2	=C17/10
একমত নই	5	8	

Sheet1	Sheet 2	+
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Image- 1.11 : We will enter '=' and Formula in a Cell where we want to calculate the percentage

An easy way to calculate a percentage is,

In the cell where we want to calculate the percentage, we will press (=) keeping the mouse there, and select the cell of which I want to calculate the percentage. We will use the division symbol (/) and put the sum of two options (10) and multiply by 100 after it. Pressing Enter will show the result.

Now, we will select the portion of the table that we want to bring into data visualization i.e., display in a graph. then we will click on "Insert" in the ribbon above, afterwards click on 'Recommended Chart,' and select the preferred graph. (Image - 1.12)

Our graph has been created. Now, we will save the graph on the computer as an image.

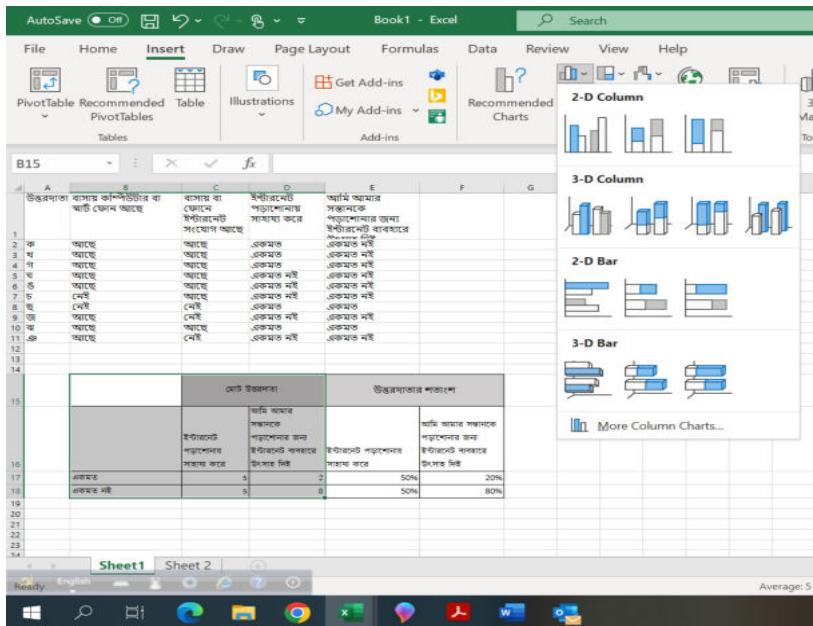


Image- 1.12 : Some default graph will be suggested, we will select one of them

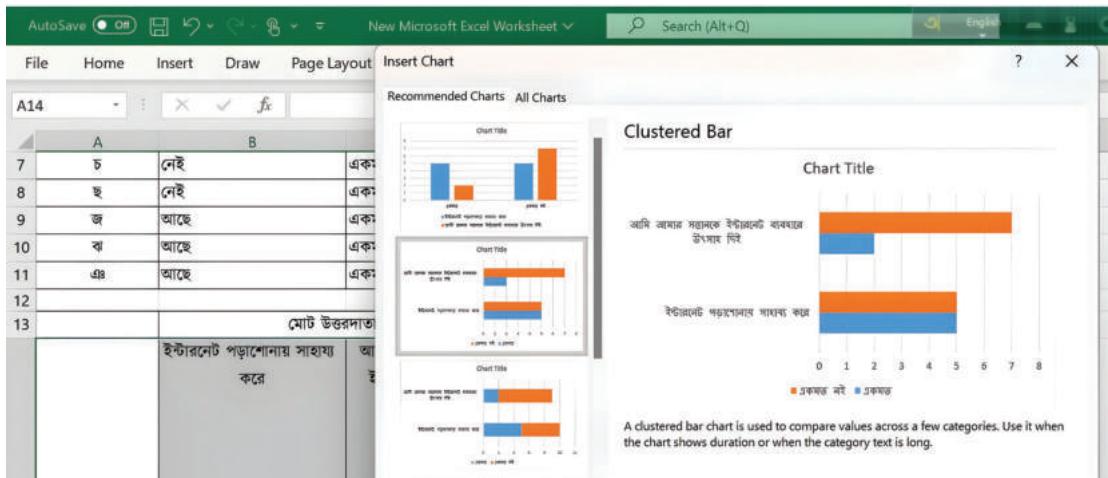


Image- 1.13 : We can select the design and color of graph

In the upcoming session, we will create graphs for our articles or essays. We will need data for the graphs. We will formulate at least 5 survey questions on our chosen topic and gather opinions from at least 10 people based on those questions. If it is necessary, we can also use an online survey form.

## Questions for my survey.

## Session- 6: Creating Graphs for My Assignment

The task for today's session is to create a graph by organizing the data we have brought. All of us in the class will work together to create these graphs. If it is needed, we can complete the task under the guidance of the teacher after the class.



Image- 1.14 : We can develop similar graph using Presentation software

However, we can also create the data visualization in presentation software. If we go to the 'Insert' button in the menu bar and choose the 'Chart' option, we'll find it. But in this case, we need to have the data ready beforehand.

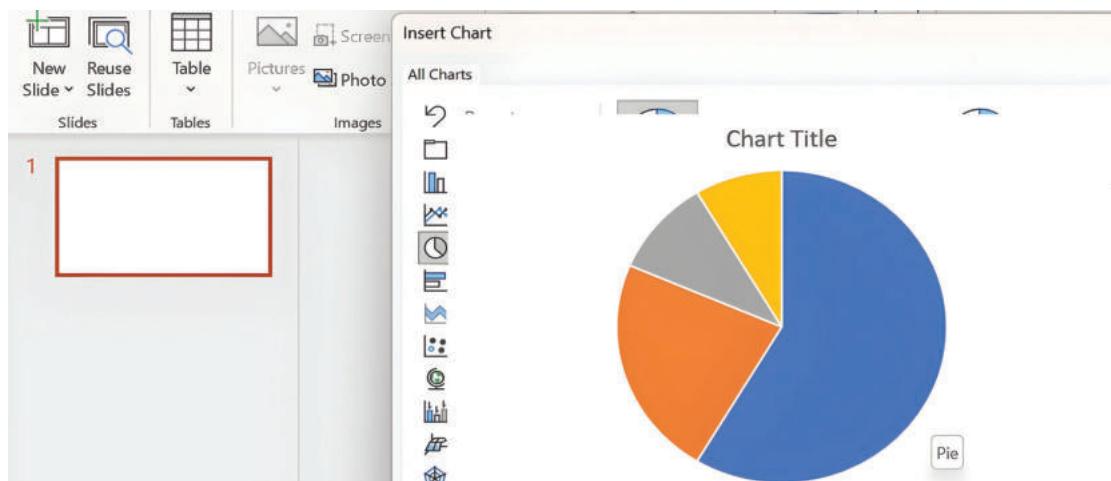


Image- 1.15 : In Power point presentation we can choose any type of graph

## Session- 7: Ensuring Copyright for Our Writing

Our school bulletin will be created based on our writings, so we must ensure that our rights are protected over our writings. Additionally, when we write articles, we might need images, quotes, or graphics. Therefore, it's essential to be aware of copyright from the beginning. Copyright refers to the rights of the creator over their original and creative work. That is, if a creative work is registered under copyright; using, reproducing, translating, and publishing it without the creator's permission can lead to legal actions against the user. Copyright laws include penalties and fines.

Literature, artworks, music, films, sculptures, computer programs, designs, architecture, photographs, i.e., everything created in an original and artistic manner, can be subject to copyright.

**Fair use of Creative Work:** Although copyright registration exists, in some cases, it is possible to use, publish, and present certain creative works. Specifically, these areas include –

News or Documentary   Discussion or Review   Comedy or Parody   Educational Content



However, it's essential to ensure that the newly created task becomes a minor part of the main task. In other words, the new task should be capable of providing a comprehensive idea.

Certain images, songs, videos, etc., though being original creative works, can be suitable for everyone's use. "Creative Commons" is a non-profit institutional initiative that makes such creative works available for legal and valid use by everyone.

Today we will download in class, with the help of the teacher, images that will be needed for our article or essay through legitimate means. We can do it using the Google search engine.

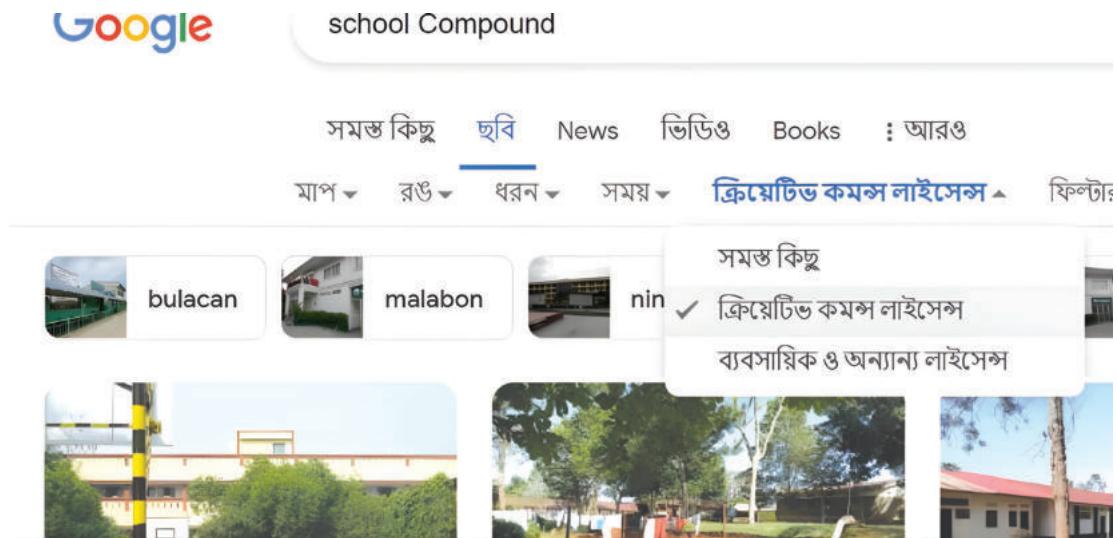


Image- 1.16 : We can Find out ‘Creative Commons’ licensed Picture from google

- First, we will go to the Google homepage and write the Key Word for our necessary image.
- Then, we will click on the 'Image' option. All images for the given keywords on Google will appear. However, not all of these are legally usable.
- Clicking on 'Tools' on the top right of the page will bring several tabs named Map, Color, Type, Time, and Usage Rights.
- Clicking on the 'Usage Rights' tab will show three options: 'All', 'Creative Commons License', and 'Commercial & other licenses'. By clicking on the 'Creative Commons License' option, the images that appear will be usable in a legitimate manner.
- Now, we will download our necessary image and use it.

In this case, if the name of the photographer or the website is mentioned with the image, it should be mentioned as ‘Source’ while using the image.

We will have one class time to create our essay/article/blog. So, the work of creating and publishing should be completed quickly. We should keep in mind that at least one graph or chart should be used in our writing.

## Session- 8: Creating Our Bulletin

We have reached the final phase of creating our school bulletin. Taking the accuracy of information into consideration, and analyzing the uniqueness and structure of news, writing articles have certainly progressed significantly. Today, we will create our own school bulletin platform. We will upload or add our writings from the upcoming sessions. Simultaneously, we can create an online portfolio for ourselves. Apart from digital technology, the other projects we undertake throughout the year can also be uploaded to our personal portfolios. After completing the school level, portfolio to verify my skills.

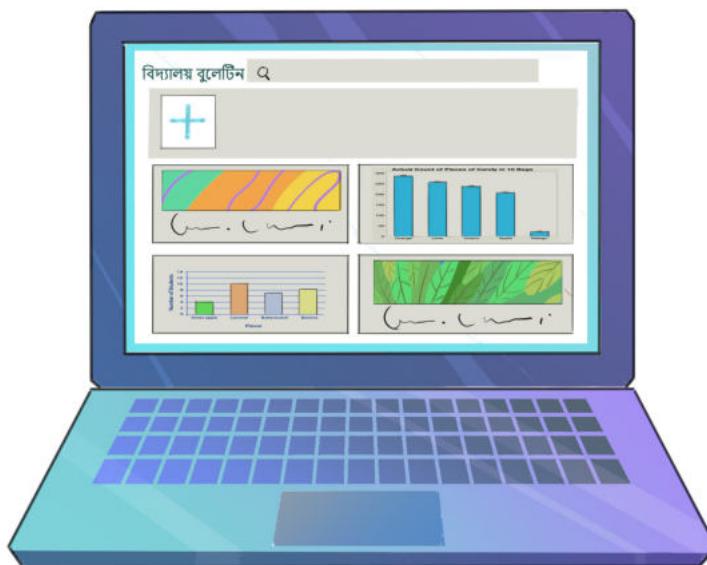
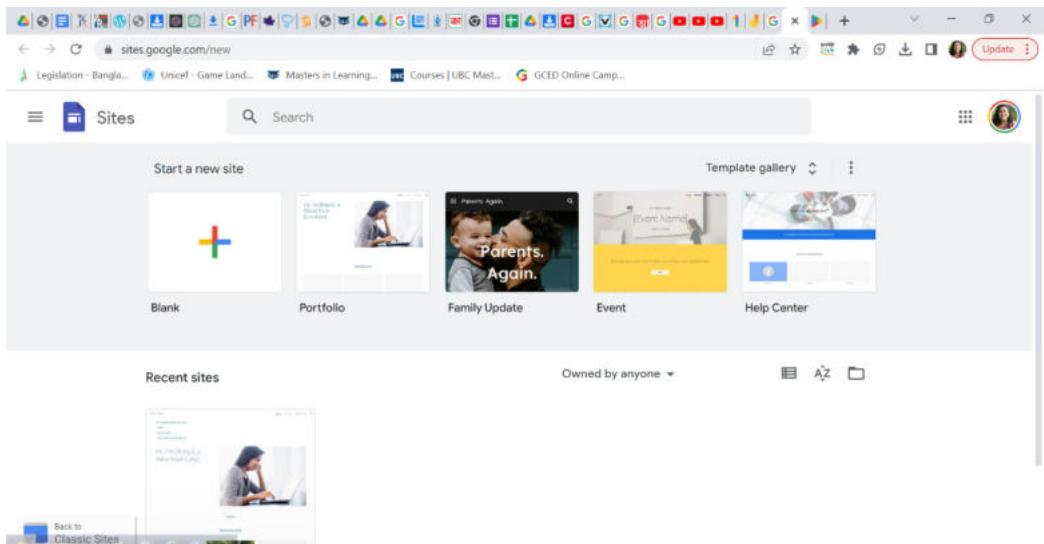


Image- 1.17 : We can design our school bulletin

when we will join college, university, or the professional world, anyone can review my  
There are many free services available for creating personal websites or portfolios,  
Some well-known services are:

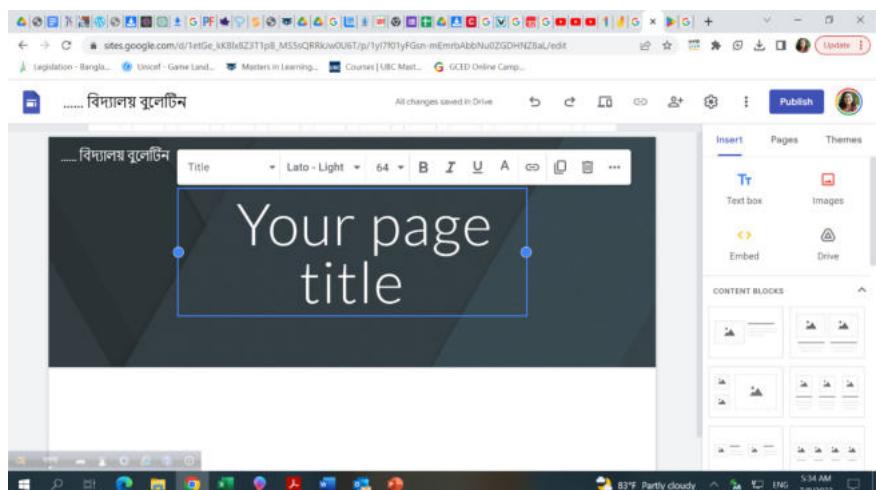
1. WordPress.com
2. Carbonmade
3. Google site
4. Wix.com
5. Behance

We will use the well-known Google site to create the school's bulletin first and then create an online portfolio site for ourselves.



**Image- 1.18 :** We can select Portfolio or Blank option to start our work in developing School Bulletin

We will take an empty page and create our own school bulletin by adding pictures and other information about our school. The teacher will assist us in creating the site using his email address.



**Image- 1.19 :** We can add any of our school picture or any other picture

We will organize our site today. On the following day, after uploading or adding all our writings, we will publish the site. We can also invite our head teacher or another respected individual to view and publish our site.

Before finalizing our essays or articles, we will show them to the teacher once. According to the teacher's advice, we can add images, videos, interviews, and various other things to our articles. Graphs will also be included.

## Session- 9: Bulletin Launch

We can congratulate ourselves. From the beginning of the 9<sup>th</sup> grade, working bit by bit, today we are going to publish our own bulletin. We will upload our tasks during our sessions. Once the uploads are done, we will publish our bulletin either during class time or later in the presence of guests. When we will create our school website in the third experience, we will integrate this bulletin with that website.



Image- 1.20 : Today we will inaugurate our School Bulletin

Today, we can show our article to our parents when we return home. If we provide the web address of our bulletin to our parents, they can view it and provide feedback. If internet access is not available, we can also show it to our parents by writing on paper.

Opinions of parents about the school bulletin (write or use stars)

**Self-Evaluation:** We will do another task at home, that is self-evaluation. Let us write our own opinions in the following three boxes below. These opinions will be a part of our self-evaluation later.

New things that I have learned through this experience.

According to me where the new learning will be useful in my life.

What other new skills I can acquire for fact-checking and presentation.

Congratulations to everyone for successfully completing the task of creating the school bulletin.

## Learning Experience-2



# "Let us Know about Cyber Threat sand Ensure Information Security"

In the present time, information is the most valuable asset for any person. Considering the right to access information, it is categorized into two types: public information and private information. In the previous session, we learned what is personal confidential information and how to keep it secure.

### Session 1: Cyber Risks and Crimes Committed in Digital Media

In this era of the Fourth Industrial Revolution, the use of digital technology is essential for providing personal information for various needs. Due to the proliferation of digital technology, people are facing various types of cybercrimes which are posing risks to information security. Through this experience, we will know about crimes committed using digital devices and the Internet and their impacts. We will also be able to ensure information security by practising safety measures.



Let us keep in mind: Any action against the law and society is a crime and those crimes that occur using online or internet mediums are called cybercrimes. In committing cybercrimes, computers or digital devices and the internet are always used, and sometimes devices or networks themselves become victims of cyberattacks.

Cybercriminals can steal our personal information and jeopardize our lives. Therefore, Cyber criminals can leave our life at risk by stealing our personal information. For this reason, understanding the security of personal information in the context of digital media and cybercrimes is extremely important for all of us. Now let us focus on an incident...

One day, when Abir accidentally left his mobile phone at his friend's house, his friend picked it up and tried to enter out of curiosity. Even though the mobile phone had a password, his friend repeatedly attempted to enter the mobile by guessing different passwords. Eventually, he succeeded. As a result, a lot of Abir's personal information and documents ended up in the hands of his friend.

In the previous grade, we learned how to use strong or complex passwords. If passwords or pattern locks are too easy, it becomes simple to guess and gain access to the devices. The incident above shows that due to Abir's mobile phone password not being very complex, a lot of his personal information ended up at risk.

In real life, just as a thief tries various types of keys to enter a locked room, similarly in digital media, criminals use various types of software to illegally access people's different accounts, such as bank accounts, social media, and email accounts and often try one method after another to guess the entry. If they become successful, they steal various personal information and engage in various crimes against that person. This is a type of cyberattack which is undoubtedly a serious cybercrime. In technological terms, it's called a Brute Force Attack.

Now let us create a list of such experiences that could serve as a threat to the security of our personal information on non-digital and digital media.

<b>Non-Digital Media</b>	<b>Digital Media</b>
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

There is no alternative to being conscious while using digital media. Even a little carelessness can expose our personal information to significant risks through cybercrimes. Due to cybercrimes committed by others, we can fall into various difficult situations. In our country, there are strict laws for punishing cyber criminals. However, by using digital media consciously, life can be made much easier and more advanced.

Let us keep in mind:

In the digital world, there are various types of cybercrimes through which the security of information gets compromised. For example:

Data Interception

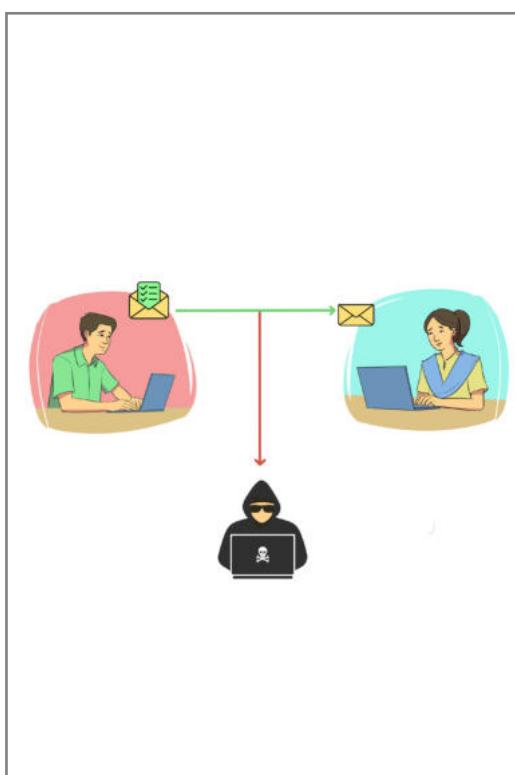
DDoS Attack

Hacking

Computer Malware and so on.

Let us know the above-mentioned cybercrimes in detail.

### **Data interception:**



We almost all have seen water being pumped from a pump to a field for irrigation. From the pump, water is directed to the field through drain or pipes. If someone cuts the drain or pipe midway or if the water pipe leaks, the required amount of water is not available. As a result, farmers are affected. There should be a vigilance system to ensure that no one can illegally take water in the middle. Similarly, when exchanging information through digital means, someone between the receiver and the sender intercepts and steals it. Generally, software or apps that have end-to-end encryption make it impossible for someone in the middle to steal information (messages, photos, videos, voice calls or messages, documents, status updates). This can happen through both wired and wireless medium.

Image- 2.1: Data interception

## DDos Attack

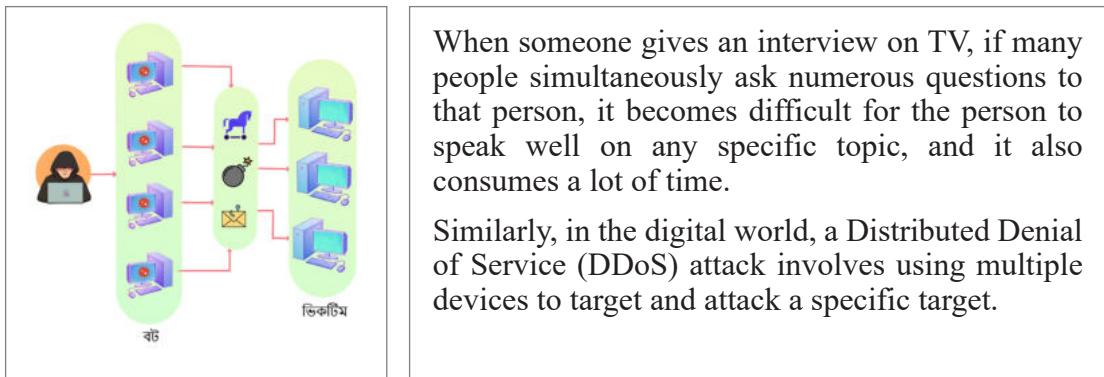


Image- 2.2: DDoS Attack

## Hacking

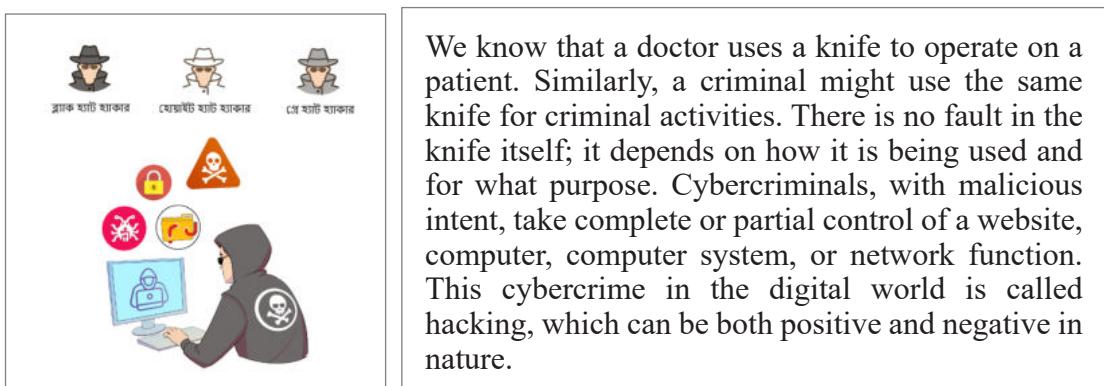


Image- 2.3: Hacking

## Malware

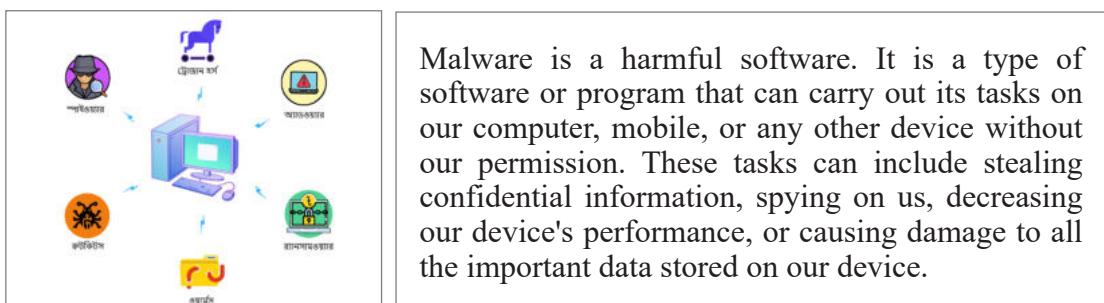


Image- 2.4: Malware

Now, let us complete in groups the mind map with various characteristics of above-mentioned cybercrimes using mind mapping.

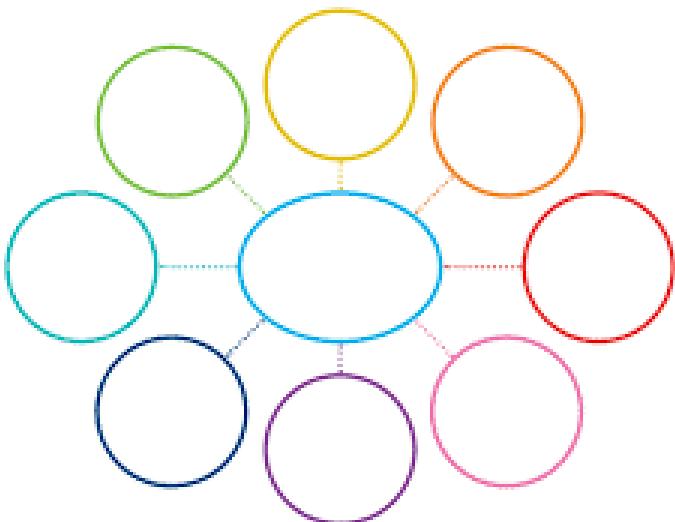


Image- 2.5: Mind Map

### Session- 2: Investigating Cybercrime

We learned in the previous session about the various crimes committed through digital means that pose a risk to information security. Cybercrime and cyber security are the most talked about topics in the world today and our country is no exception. In this age of technological excellence, people's lifestyle, mentality and thinking are changing. This gives rise to diverse criminal tendencies. We will know about some such crimes in this session.

Now, let us learn about cyberbullying...

To harass someone using digital technology is a crime. It can be carried out through social media platforms, messaging platforms, gaming platforms, and mobile phones. In these cases, individuals who are targeted are subjected to various forms of intimidation and harassment online. For instance, spreading false information or posting degrading or embarrassing images about someone on social media, sending harmful or offensive messages through messaging platforms, issuing threats, assuming someone else's identity, and sending derogatory messages to someone. So, harassing someone through digital communication media is called cyberbullying.

Image- 2.6: Cyberbullying

In real life, we often become victims of bullying in various places. Now, we will write about five instances of bullying in both real life and in cyberspace.

Bullying in Real Life	Cyber Bullying

We should not bully anyone in both real life and digital platforms. If we witness someone bullying, we should alert them. In our country, there are strict laws against this.

Now, let us learn about some very common yet fatal cybercrimes in our society...

In this age of extensive use of social media, fake news is spreading at an alarming rate. Fake news on the Internet has led to many political and religious conflicts around the world. On social media, people read countless news stories every day, which may contain some fake news. Some people spread fake news for their political, ideological and business purposes and some people spread it just for fun.

Let us now learn the different types of news that belong to the category of fake news...



Using false statements and presenting incorrect information through misleading means can be referred to as fake news. This fake news can be created due to mistake in writing, deliberate mistakes and use of harmful words. This fake news is spread through various social media platforms.

Image- 2.7: Fake News

We should not run after a kite just by hearing our ear has been taken by the kite.

Similarly, we should check the authenticity of news before believing it when we come across a post or news online. Usually, false news is spread assuming false identities of an individual or an organisation. We should not believe the news we see on digital media right away. We will verify its authentic source, and not share such information. We will also refrain from giving likes or comments.

Now, in light of our real-life experiences, we will write about five examples of fake news on digital media and explore why they are considered fake news. We will share these with our class.

Fake News	Reasons Behind the News Being Fake

Under the Information and Communication Technology Act 2006, for committing cyberbullying and spreading fake news on digital platforms, the offender can face a maximum punishment of up to 10 years in prison, or a fine of up to 1 crore Bangladeshi Taka, or both.

### Let us keep in mind:

Posting any content that is offensive or misleading on digital media, uploading photos or videos, creating an account under someone else's name or fake identity and posting false content, or sharing/liking false statuses can all be considered cybercrimes.

## Session: 3 Cybercrime and Its Impact on People's Lives

In the previous two sessions, we learned about various types of cybercrimes. To counter cybercrimes, it is important to be aware of their impact on individuals, society, and culture. By providing accurate guidelines, we can help individuals lead a normal life while dealing with the diverse effects of these cybercrimes.

We will discover the multidimensional impact of cybercrimes on people through some incidents happening around us. When people fall victim to these crimes, we need to become aware of our responsibilities and also educate our families about these issues.

Now, let us closely examine two incidents...

### Incident : 1

A student named Momo from a university was having a conversation with friends on social media. During this time, she received a friend request from an account, but Momo deleted the request. On another day, while chatting, Momo was asked by a friend to access the account on a social media platform. Momo found various offensive comments from the deleted account while checking the wall of her other accounts. Quickly, Momo blocked that account. While Momo felt alarmed and disturbed by this incident, she also became fearful.

This incident is an example of 'cyberstalking.' Cyberstalking involves using digital means to harass, intimidate, or threaten a person, group, or organization by continuously sending messages, images, or documents.

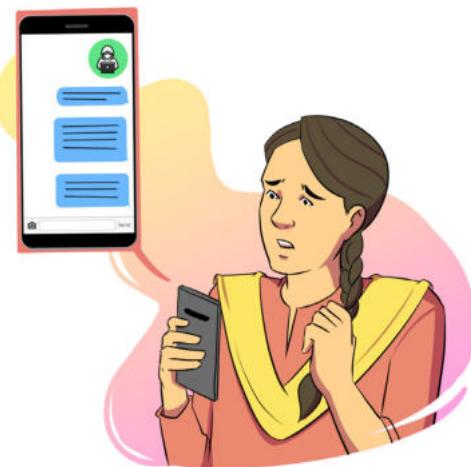


Image- 2.8 : Cyberstalking

Now, let us take a look at another incident...

#### Incident 2:

Afif, a student from another university, noticed that his friends were laughing and joking about him without talking to him. He asked one of his friends about the reason and came to know that an unexpected post had been made from his social media account. Afif realized that someone had logged into his account and posted that content.

In this incident, what has happened is 'social media profile hacking.' Usually, through methods like 'phishing' and 'social engineering,' someone gains unauthorized access to a person's personal account on social media. As a result, without the person's knowledge, someone else can access their account and engage in various malicious activities



Image- 2.9: Hacking of Social Media Profile

Let us now complete the table below from the two incidents.

<b>Name of Cybercrime:</b>		
<b>Impact of Cybercrime:</b>		
<b>Personal</b>	<b>Familial</b>	<b>Cultural</b>

By completing the table, we have understood the various impacts that a person faces becoming a victim of cybercrime. Through this, we have understood the horrible dangers of cybercrime in a person's personal life.

Now, let us take a look at another incident...

### Incident: 3

One day, Tapasi, a bank employee, accessed her social media account and discovered another account with a different name, which had her photo. One day, she learned from a colleague that inappropriate posts had been made from that account in a public group and money was being demanded. Tapasi did not understand what to do next.

This is an incident involving a 'fake social media account'. When someone uses another person's personal information and photos to create an account on social media with bad intent, we can call it a 'fake social media account'.



Image- 2.10 : Fake Social Media Account

As seen in the above-mentioned case study, Tapasi, after becoming a victim of cybercrime, is unable to understand the potential harm she could face and what she should do after the incident. Let us all come together to help Tapasi. In the form of a report, we will highlight the potential dangers associated with this cybercrime against Tapasi and outline the steps she should take.

### Potential Dangers:

**Recommended Solutions:****Session-4: Let the Cyber World Be Secure**

In the previous sessions, we learned about various types of cybercrimes and their risks. Generally, there are no geographical boundaries for cybercrimes, making it challenging to prosecute individuals based on the laws of a specific country. However, despite this, our country has several laws to control cybercrimes. In Bangladesh, there exists a specialized cyber unit within the domain of several law enforcement agencies. All these units track the digital footprints of cybercriminals, bring them under the jurisdiction of the law, and provide legal assistance to victims.

Now let us go through a few incidents...

**Incident: 4**

Mr. Sohel is a businessman by profession. Someone called from an unknown number, informing him that his mobile banking account was temporarily locked. After sending the code to unlock it, the person on the other end of the call asked Sohel for that same code. Believing that the call was genuinely from the mobile banking office, Sohel disclosed the code. Subsequently, after some time, all the funds in his account disappeared.

### **Incident: 5**

Mr. Sabbir sold his mobile phone on an online platform through a website where buying and selling can be done. However, during the selling process, he forgot to log out from his used social media accounts and email on the phone. As a result, the new owner of the mobile phone utilized the connected social media platform and emailed to request money from acquaintances of Mr. Sabbir using various mobile numbers. Due to this, Mr. Sabbir had to be embarrassed.

### **Incident: 6**

One day, a government official named Ashraf came across an advertisement on a social media platform while scrolling through. From the site, he ordered a shirt of olive colour worth 1500 Tk. He immediately paid the amount using mobile banking services. Four days later, after the delivery of the product, he noticed that the shirt's colour was black and the fabric quality was extremely poor, in stark contrast to the online description. Ashraf contacted the e-commerce site, asking them to either exchange the product or receive a refund, but they declined his request.

The three incidents from the previous session and these three incidents can match with that of many of our lives. Anyone at any time can be at risk of losing personal information like this and falling victim to cyber-attacks.

Now, let us figure out the possible steps that can be taken if we become victim to any of these six incidents.

Name of the Steps	Serial No of Events
1. As soon as possible, I will contact the National Helpline 109, National Emergency Service 999, or the ICT Helpline.	
2. I will seek assistance from a neighbour skilled in technology.	
3. I will send a complaint to <a href="http://www.rab.gov.bd">www.rab.gov.bd</a> with evidence.	
4. I will share with my parents, family, or guardians.	
5. I will turn off the digital devices.	

Name of the Steps	Serial No of Events
6. I will report the issue in writing to the Bangladesh Telecommunication Regulatory Commission (BTRC).	
7. I will not share the matter with anyone, keeping it confidential.	
8. I will make a diary or GD at the nearest police station.	
9. I will practise consumer rights.	
10. I will gather evidence of the crime.	

In Bangladesh, there are several policies and laws to ensure information security and cyber safety. Some notable ones are:

- Information and Communication Technology Act, 2006
- Cyber Security Strategy, 2014;
- Information Security Policy Guidelines, 2014;
- Information and Communication Technology Policy, 2018;
- Digital Security Act, 2018

We will remember the laws and if we ever face the risk of losing personal information or becoming victims of cyber-attacks, we will be aware by knowing these laws. Through these laws, we can also learn about our responsibilities.

Now let us learn about the steps to take if someone in Bangladesh becomes a victim of personal information loss or any kind of cybercrime.

Firstly, if we become victims of such incidents, we will not keep it to ourselves. We should inform our parents, even our teachers, and quickly file a General Diary (GD) at the nearby police station.

Now, let us see how to write a General Diary (GD).

জিডিই নমুনা কপি  
 তারিখ: .....  
 বরাবর  
 ভারপ্রাপ্ত কর্মকর্তা  
 .....খানা, ঢাকা।  
 বিষয় : সাধারণ ডায়েরিকরণ প্রসঙ্গে।

জনাব,  
 সম্মানপূর্বক নিবেদন এই যে, আমি নি স্বাক্ষরকারী: .....বয়স : .....

পিতা/স্বামী : ..... মাতার নাম: .....

সাঃ: ..... থানা: ..... জেলা: .....

বর্তমানে: ..... থানা: ..... ঢাকা: .....।  
 এই মর্মে জানাচ্ছি যে আজ/গত ..... তারিখ ..... সময় ..... জারণা থেকে আমার  
 নিৰ্বাচিত কাগজ/মালামাল হারিয়ে গেছে।  
 বর্ণনা : (যা হারিয়েছে)  
 বিষয়টি থানায় অবগতির জন্য সাধারণ ডায়েরিকরণ করার অনুরোধ করছি।  
 নিবেদক,

(আবেদনকারীর স্বাক্ষর)  
 পুরো নাম :  
 ঠিকানা :  
 ফোন নম্বর :  
 অনলাইনে জড়ি করতে হলে ঢাকা মেট্রোপলিটন পুলিশের ওয়েবসাইট [www.dpm.gov.bd](http://www.dpm.gov.bd)-এ প্রবেশ করলে  
 Citizen Help Request নামে একটি সিংক পাওয়া যাবে-

Now, in our country, even GD (General Diary) entries can be done online. This time, we will all collectively perform an exercise of filling out a GD form online. For this, we have to open any internet browser and type in the address bar: <https://gd.police.gov.bd/> and then search.

We have three screenshots below that show the steps for filing an online General Diary (GD).

First, we will register by providing various important information.



Image- 2.11: Homepage of the online GD website.

Then, following the necessary instructions, we will fill in our own information in the online GD form.

#### বিশেষ নির্দেশিকা :

- অপনার ঘাসানো ও প্রতি সকেন্দর অন্যদলের বিষয়ে মে কেন বিষয়ে পুলিশের নিষ্ঠ অভিযোগ করতে এই গড়ের সাইট ব্যবহার করতে।
- সংজ্ঞাটি খালি হতে অপনার ঘৰন অন্যদলের ঘৰন ব্যবহাৰ কৰা হবে।
- অভিযোগের বিষয়টা যদি ঘৰন হয় তাজেলে সেটি লিখি ন এবং আপনাকে অবহৃত কৰা হবে।
- অভিযোগের বিষয়টা যদি ঘৰন হয় তাজেলে সেটি লিখি ন এবং কৰ্মসূচী অফিসের বিষয়টোৱে আপনাকে ডিজিটেল লিখিব কৰি দেখোন কৰা হবে।

#### অভিযোগ কৰার জন্য যা প্রয়োজন :

- অপনার জাতীয় পরিচয়পত্র নথি।
- অপনার সমস মোবাইল।
- অপনার সাইট ছবি।

#### অনলাইন জিভি আপস্ এবং ঘৰেব পোর্টেলের সুবিধা সমূহ :

- পুর সহজে অপনার অভিযোগটি পুলিশকে জানাতে পারবেন।
- অপনার অভিযোগের সর্বোপর অবহৃত জানাতে পারবেন।
- অপনার অভিযোগের কৰ্মকারী অফিসের সহিত অলাইনে যোগাযোগ কৰতে পারবেন।
- অনলাইনে আপনার অভিযোগ (মিভি) কপি ডাউনলোড কৰিব কৰ্তৃতে প্রেরণ কৰতে পারবেন।

#### ব্যবহারে নিয়মাবলী :



প্রেরণের জন্য কোনো অভিযোগটি পুলিশকে জানাতে পারবেন।  
অভিযোগের সর্বোপর অবহৃত জানাতে পারবেন।  
অভিযোগের কৰ্মকারী অফিসের সহিত অলাইনে যোগাযোগ কৰতে পারবেন।  
অনলাইনে আপনার অভিযোগ (মিভি) কপি ডাউনলোড কৰিব কৰ্তৃতে প্রেরণ কৰতে পারবেন।



Image- 2.12: Guidelines for doing a GD online

Finally, after verifying our provided information, we will click the submit button to upload the GD online.

**তৃতীয় ধাপঃ**

- দ্বিতীয় ধাপ সম্পন্ন করে তৃতীয় ধাপ এ জি ডি এর আবেদন পত্রটি চলে আসবে পূর্ববর্তি ধাপের তথ্যসহ। যেমন- ন্যাশনাল আইডি হতে প্রাপ্ত আবেদনকারীর ছবি, নাম, পিতা-মাতার নাম, স্থায়ী ঠিকানা, বর্তমান ঠিকানা;
- প্রয়োজন হলে বর্তমান ঠিকানা পরিবর্তন করা যাবে
- ঘটনার স্থান বর্ণনা করুন।
- ঘটনা সম্পর্কে বিস্তারিত বিবরণ/ তথ্য প্রদান করুন।
- প্রয়োজনীয় ডকুমেন্ট, ছবি সংযুক্ত করুন ( ২০০ কিলোবাইট)
- সিগনচার আপলোড করুন।(২০০ কিলোবাইট)
- ইমেইল আইডি প্রদান করুন।
- “সার্বমিট” বাটনে ক্লিক করে জি ডি ডি আবেদ

Image- 2.13: Filled GD Submit

**Let us keep in mind:** Different units of law enforcement agencies such as Rapid Action Battalion (RAB), Counter Terrorism Unit (CT), Crime Investigation Department (CID), and Metropolitan Police have mobile applications (apps) available on the Play Store, such as "Report to RAB" and "Hello CT App". By downloading these apps onto our mobile phones, we can use them to participate in crime control when needed.

If someone becomes a victim of crime in cyberspace, they can file a General Diary (GD) at the nearest police station and also provide a copy of the GD and the following information through the "Hello CT" (Counter Terrorism) or "REPORT TO RAB" application. Alternatively, they can directly contact the Cyber Crime Helpdesk of the nearby police station with a copy of the GD.

**For direct communication with the law enforcement agencies, here is a list of all the information and documents required:**

Victim's Name:

Address:

Mobile Number:

National ID Number:

Brief Description of the Incident:

ID Link of the Harasser/Blackmailer/impostor/Hacker/Online Gambling Conductor:

At least 5 screenshots of the incident:

Identification of the Suspected Person (if there is any):

Now, let us practice an exercise by taking and giving this information from a friend in our class.

### **Session 5: Practising Security Methods in Internet Use**

In the previous session, we learned about what to do when someone becomes victim to cybercrime. We have familiarized ourselves with the process of seeking assistance from various organizations in Bangladesh and practised how to get all the services. However, our awareness can largely help us keep our information safe and protect us from cybercrimes.

Here are some tips for the safe use of digital technology:

### Enabling Two-Factor Authentication (2FA)

Avoiding using the same password across all digital platforms

Regularly updating computer software and mobile applications (Apps)

Not sharing excessive personal information on social media

Refraining from sharing personal confidential information (PIN codes or passwords) with anyone.

Now, let us enable Two-Factor Authentication (2FA) on an email account...

Let us understand what Two-Factor Authentication (2FA) means.

The concept of Two-Factor Authentication (2FA) refers to a situation where, upon entering our email ID and password to access our email, we receive a One-Time Password (OTP), usually through SMS, on our mobile phones. When we enter this OTP, we gain access to our email.

In the image below, we can see the three steps of Two-Factor Authentication (2FA).

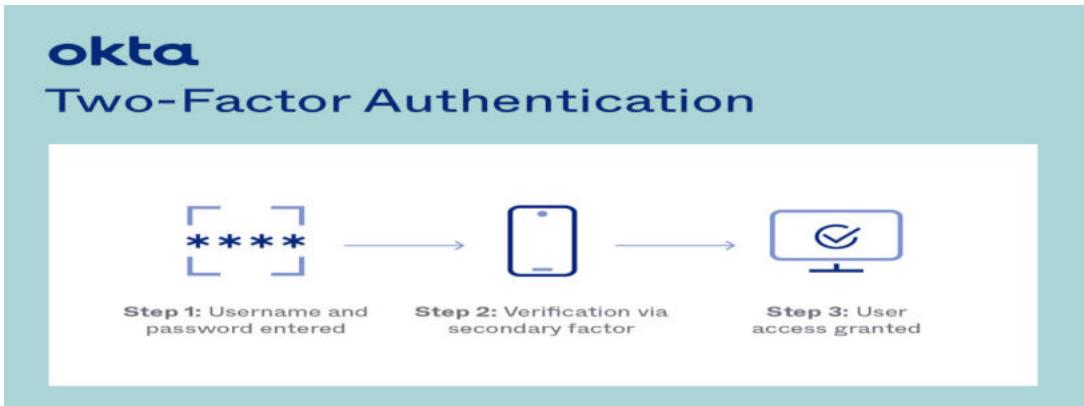


Image- 2.14: Steps of Two-Factor Authentication (2FA)

Using the two steps described below, we will enable Two-Factor Authentication (2FA) for a Gmail account...

#### **Step: 1**

First, in an internet browser's address bar, we will type "Sign in - Google accounts" and click to enter our email ID and password to access the account. After signing into the Gmail account, we will click on "Manage your Google Account" written on the page.

Next, we will click on the "Security" option on the right side of the computer screen, Then, in the "How you sign in to Google" section, we will click on the first option, "2-Step Verification." We can see this from the Screenshot-1 given below. Then, we will click on "Get Started" to move on to the next step.

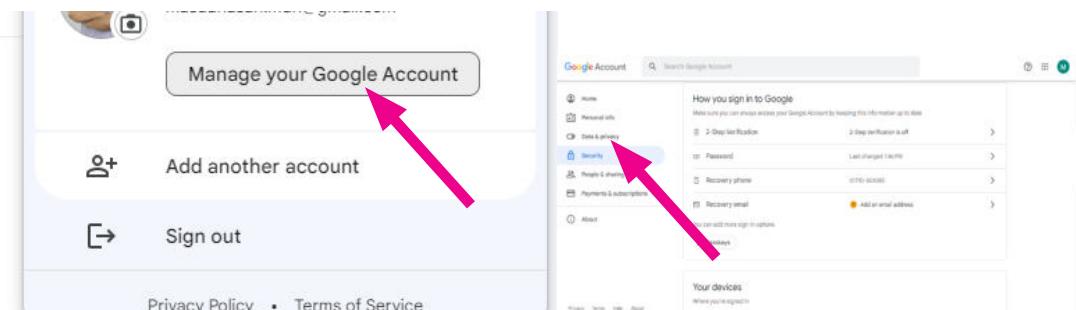


Image- 2.15: Manage your Google Account option

### Step 2:

After clicking on "Get Started," we will enter the next page, where we will see an option to set a mobile number. Here, we will provide a functioning mobile number of one of our family members. However, to learn how to perform this task, we can use the mobile number of our class teacher. In Screenshot 2, we can see the setting up of a mobile number. We will select the option "Text message" and then click "Next" on the page.

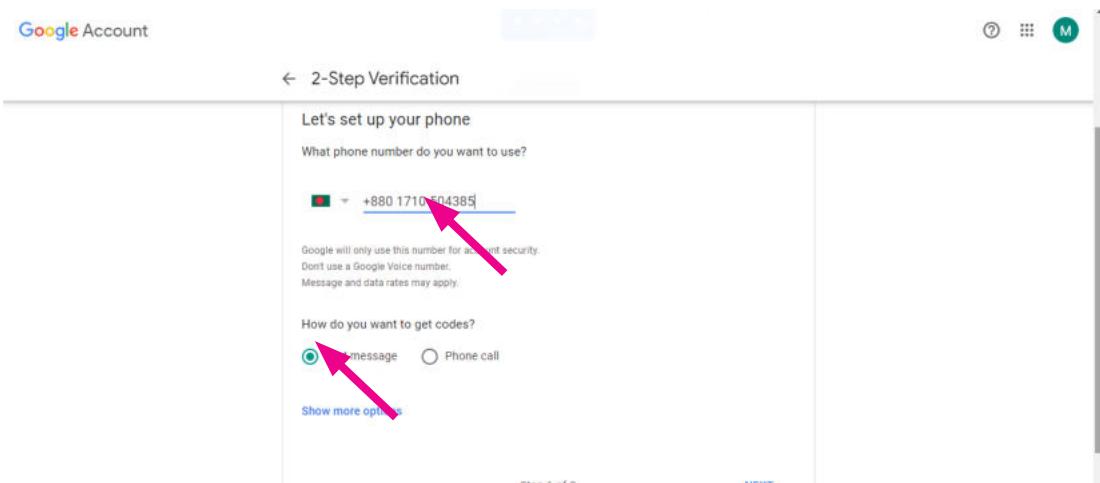


Image- 2.16: Setting Mobile number

After a few moments, we will receive a message on our mobile with a 6-digit OTP. Then, we will write the same OTP below "Enter the code," and click on the "Next button" (as shown in Screenshot 3).

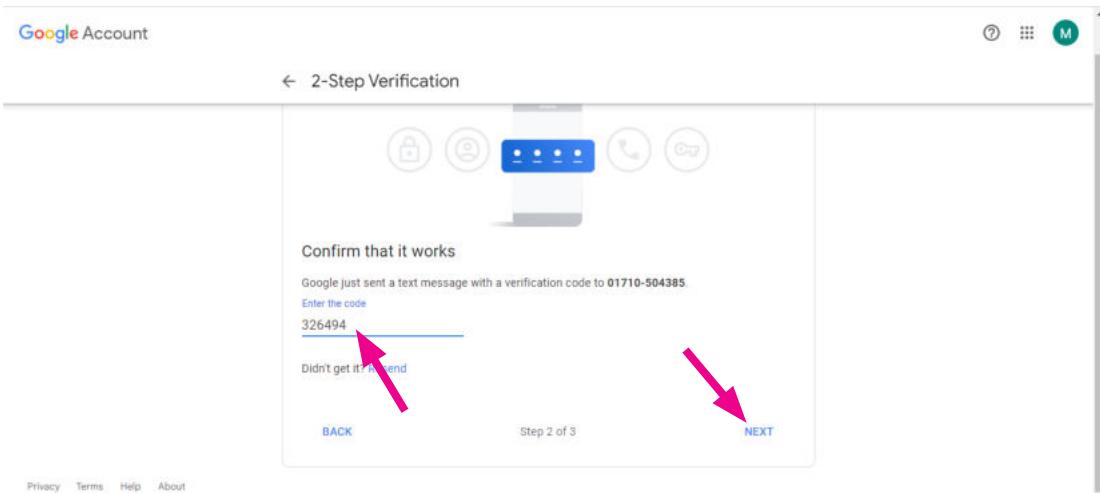


Image- 2.17: Message with 6 digit OTP on mobile

Afterwards, on the page that appears on our screen, by clicking on the text "TURN ON," we will enable the 2-Step Verification for our Gmail account (visible in Image 2.18).

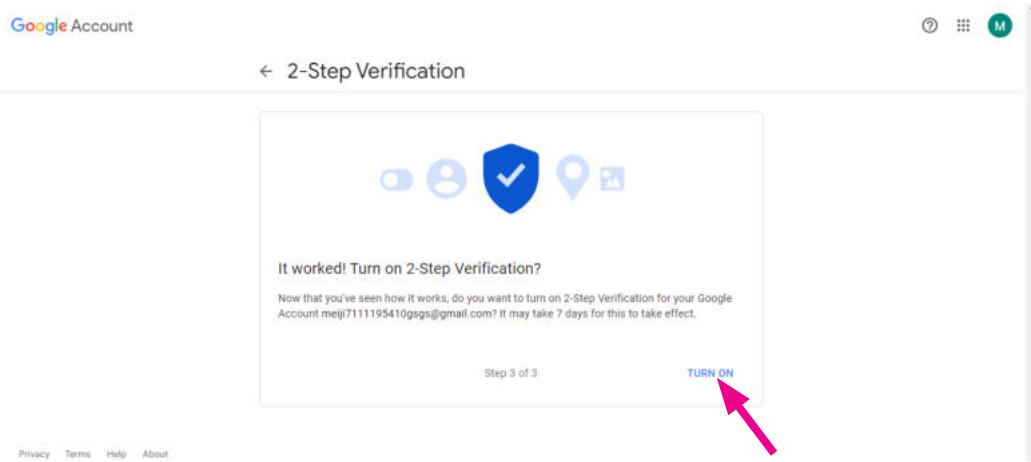


Image- 2.18: TURN ON option

If we forget our password for the given mobile number for any reason, we can recover or retrieve our ID. If two-factor authentication is enabled, hacking an ID by cybercriminals becomes very difficult.

In the present time, the use of social media is quite natural. We use social media for various needs and entertainment. However, we must be very cautious about sharing personal information on social media. We should be aware that hackers can use various information uploaded on our social media for social engineering and create incidents of

Let us know about Cyber Threats and Ensure Information Security

urgent financial transactions to take our money. Now, let us prepare a guideline for safe usage of information to ensure the security of information on social media in a collective manner.

**Title of the Task:**

**Name of the Group and Members:**

**Guidelines:**

## Session 6: Awareness of Cyber Crimes and Security of Information

Until now, we have learned about various cybercrimes that create risks for the security of information, and we have identified the significant impact these crimes can have on people's lives. We have gained an understanding of what actions to take if we become victims of cybercrimes. We have practised the security of personal information in internet use.

At this stage, we will go through a learning experience combining everything. This learning experience will take the form of a play. Behind this play, there will be a story that we ourselves will write. We will also play the characters in this story. We will also direct the play ourselves.

In the previous class, we presented a specific script titled "Committing Crimes through the Theft of Personal Information on Digital Platforms" as a play.

Now, in three separate groups, we will write scripts for three plays. Each play will focus on a cybercrime, its consequences, and the awareness associated with it. We will write these scripts in a way that they can be performed within five to seven minutes.

Each group will divide tasks among themselves, such as who will direct, who will write, who will act, and so on.

First, we will write our group's name, the names of the group members, and the name of the play in the box below.

**Play Title:**

**Group Name:**

**Members' Names:**

Then, we will decide on the storyline of our play and the characters involved. We will write this in the space below.

**Plot of the Play:**

**Characters of the Play:**

Now we will write down each scene one by one. If we need extra paper, we will use our notebook pages.

**Scene 1:**

**Scene 2:**

Next, we will organize an exhibition combining all the plays of all classes for the students. Our teacher will record the performances of all three plays on his mobile phone. The recorded videos of the performed plays will be collected by our teacher. In the following sessions, we will learn how to edit the videos of our team's plays.

Alternatively, we will extract the key messages from our plays and stories to create awareness about cybercrime and write them in a certain place. In the upcoming sessions, we will create infographics based on these main messages. After creating three infographics of the three teams, we will arrange an exhibition for everyone on the school's walls. Later, we will store these infographics in the school's emergency service centre.

### **Sessions 7 and 8: Video Editing and Uploading (Practical)**

We will collect drama clips from the teacher's mobile phone from the previous session. We will use editing software to work on the collected video clips. We can use various computer software or mobile apps for video editing, such as:

- Windows Movie Maker
- Camtasia
- Adobe Premiere Pro
- InShot
- Video Maker
- Power Director
- VidMate
- Splice Video Editor, etc.

Many of these software are free, allowing cost-free usage. Some software offers free trial versions for a few days. If the time limit is exceeded, purchasing the software becomes necessary. Otherwise, watermarks might appear on edited videos. Different versions of the software might exist, but their features and services are quite similar.

Today, we will get a basic idea of creating a project using the trial version of the Camtasia video editing software. This is a continuous process of practice. The more we practice video editing, the more skilled we become. We will do the task in a few steps.

#### **Task 1: Software Download:**

In the search box of a browser, let us type "Download Camtasia" in English. Then we will click on the "Free Download" option (Image 2.19).

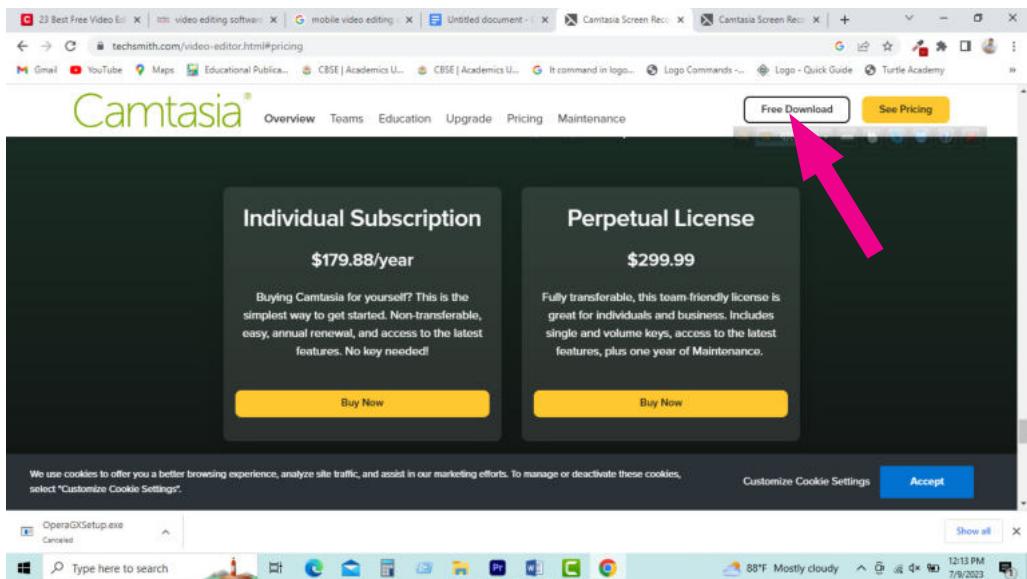


Image- 2.19: Camtasia Download

For using it on a Windows operating system, we will click on "Windows Download" (Image 2.20).

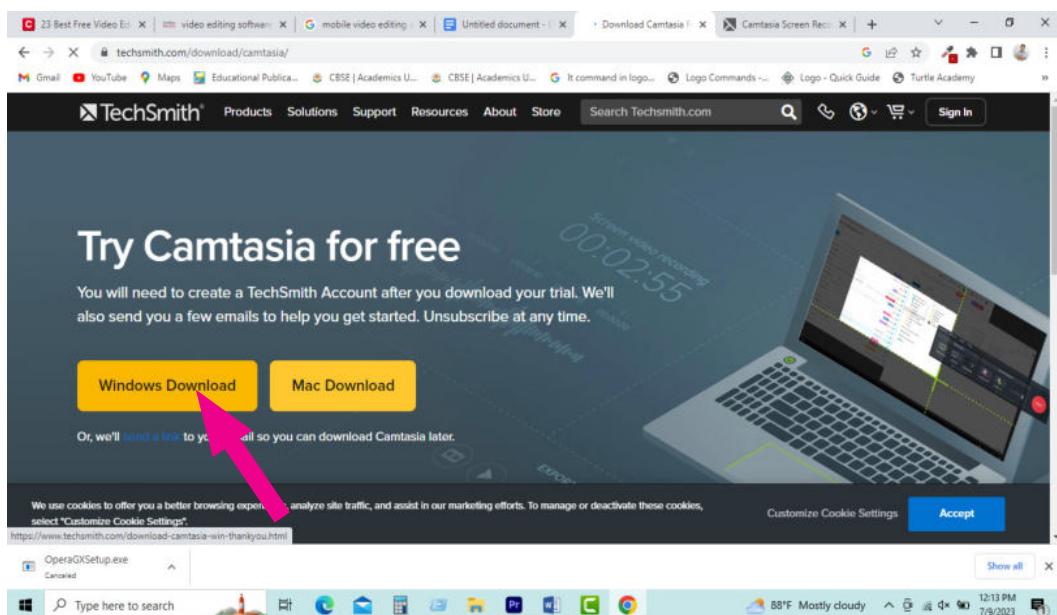


Image- 2.20: Download the Camtasia software by clicking on the Windows Download option

## Task 2: Software Installation

After downloading, we have to select English as the language. Then, we will install the

Let us know about Cyber Threats and Ensure Information Security software (Image 2.21). This might take a while, so we will wait.

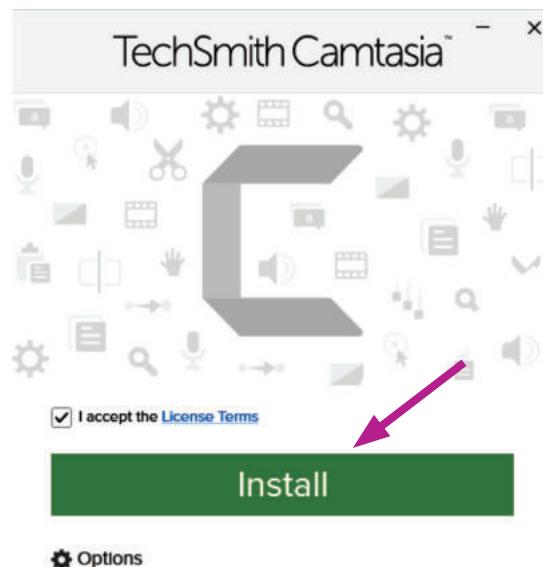


Image- 2.21: Install the software by selecting English as the language  
Then, we will click on the Finish option to complete the installation (Image 2.22).

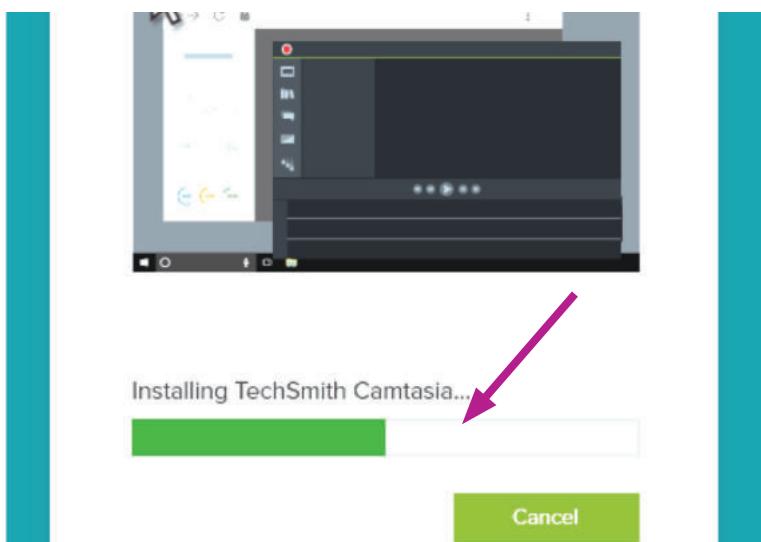


Image- 2.22: Complete the installation by clicking on Finish option

### Task 3: Sign-Up and Sign-In

Next, to choose how it will be used for our purpose, we will click the radio button to submit it. (Image 2.23).

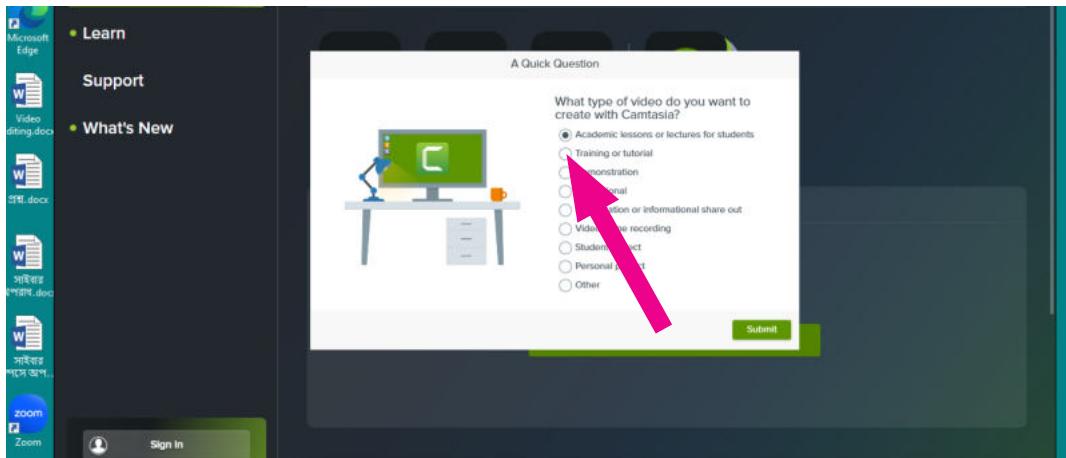


Image- 2.23: Select what it will be used for

Next, we will sign in with an email ID and use the trial version for 3 days (Image 2.24).

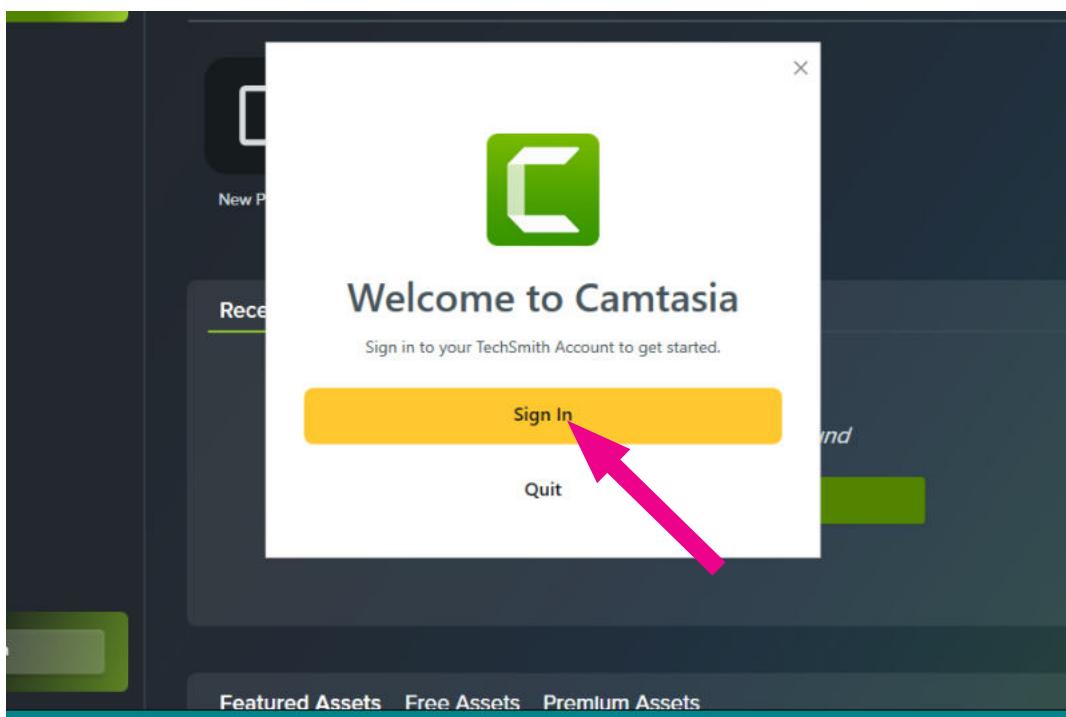


Image- 2.24: Sign in with email id

#### Task 4: Opening a New Project

Now we will open a new project in the software for video editing (Image 2.25).



Image- 2.25: Open New Project for editing new video

### Task 5: Importing Video

We will first keep the recorded video files of our plays in a folder on a computer. Then, we will click on “Import Media” in the software and bring the video files to the media bin section. We will drag the files from the media bin section to the timeline (Image 2.26).

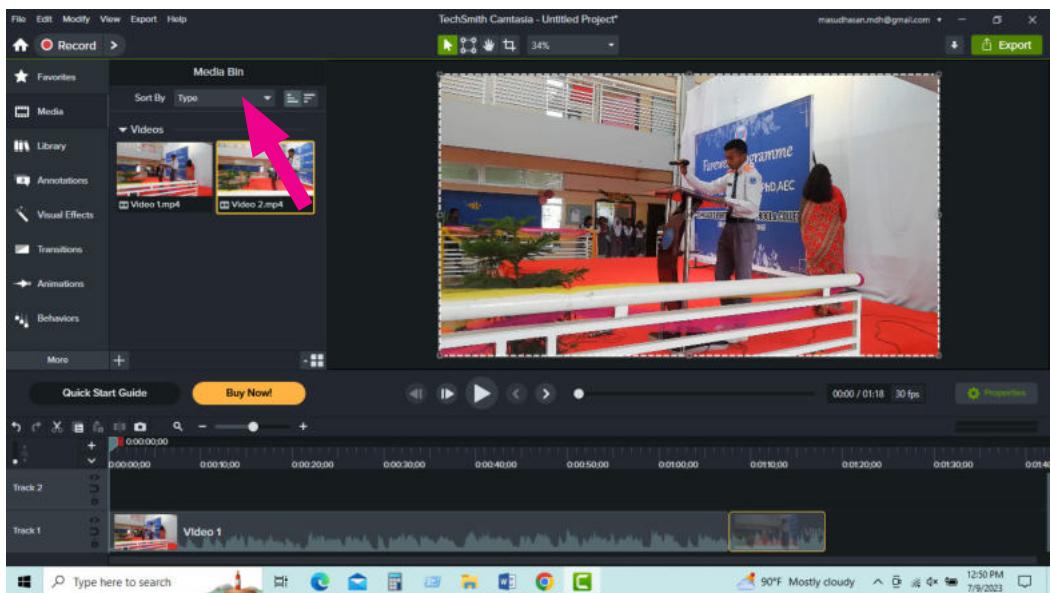


Image- 2.26: Media bin

### Task 5: Editing Audio and Video

Now, to edit sound, we will click on “Edit Audio” section (Image 2.27).

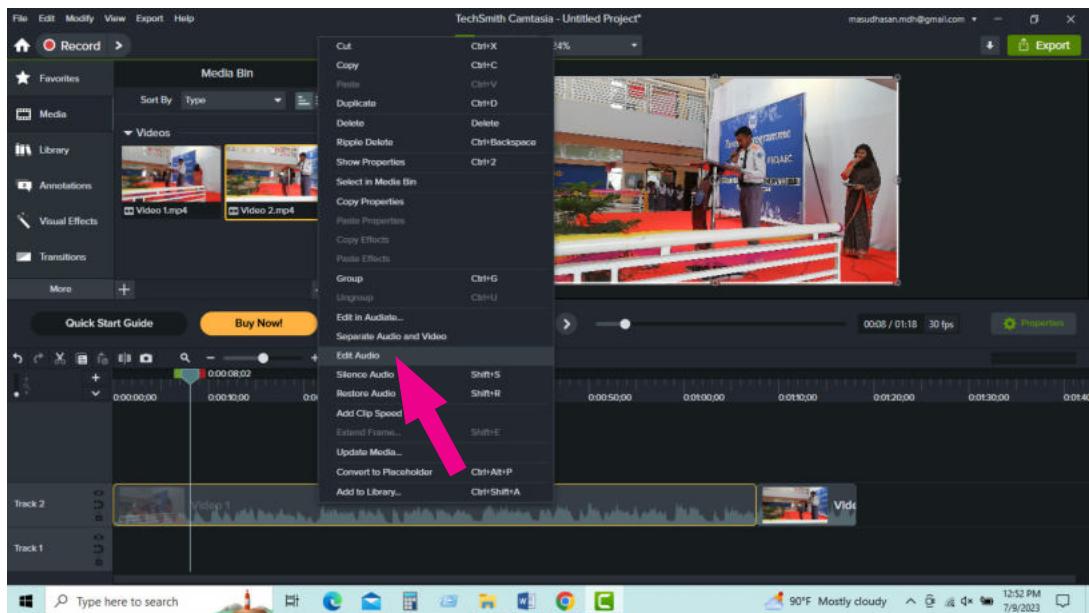


Image- 2.27: Sound editing

We can remove the audio from the video if we want, meaning we can separate audio and video (Image 2.28).

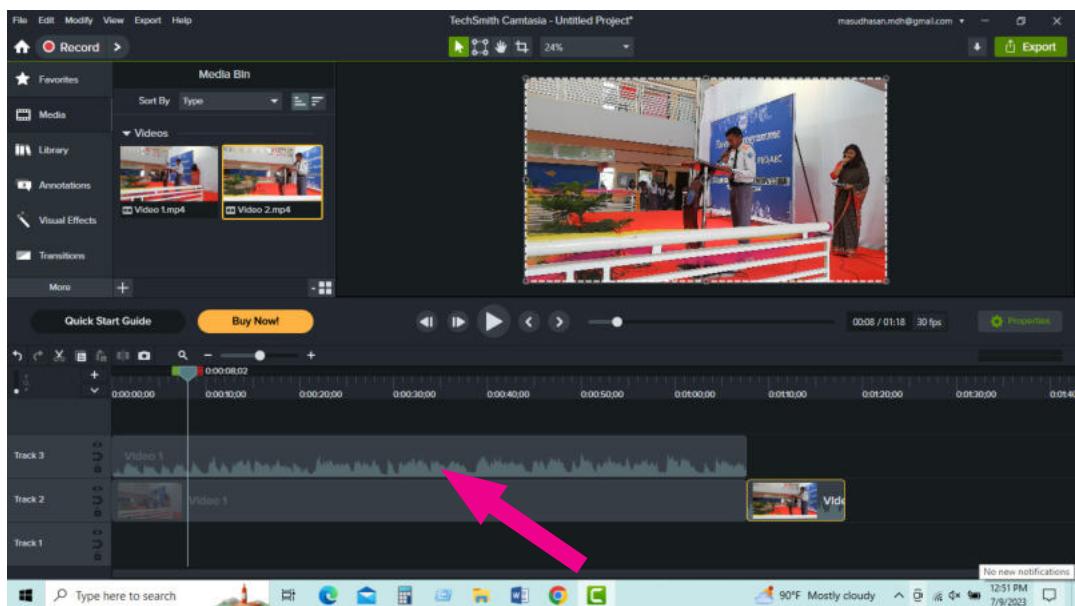


Image- 2.28: Separate Audio Video

We can also adjust the volume of the audio, cut a portion of the video, or even remove

it (Image 2.29).

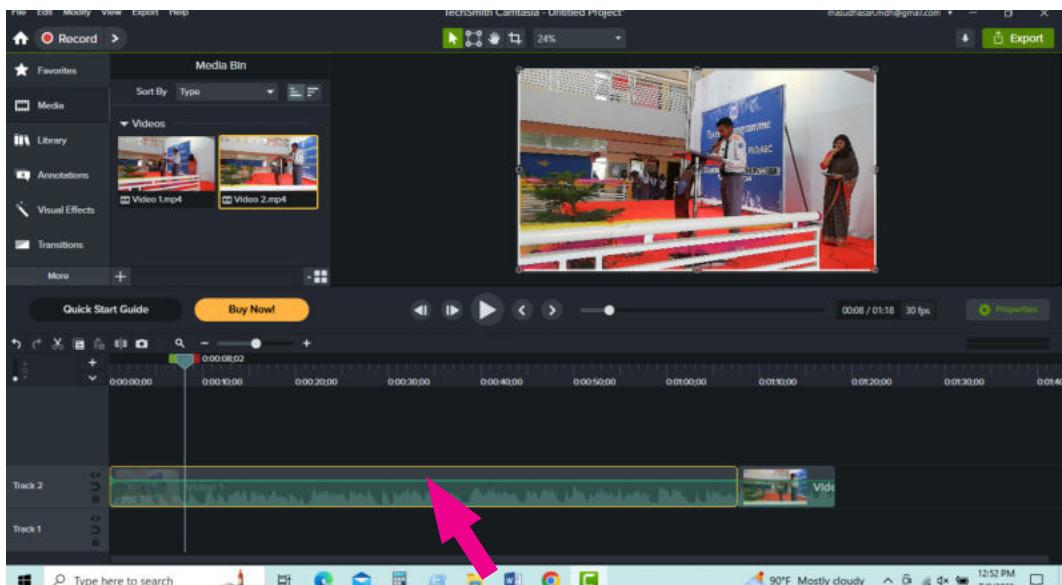


Image- 2.29: Zooming in and out of noise level

**Task 6:** Adding Text and Transitions to Video We can add text or writing to the video if we want (Image 2.30).

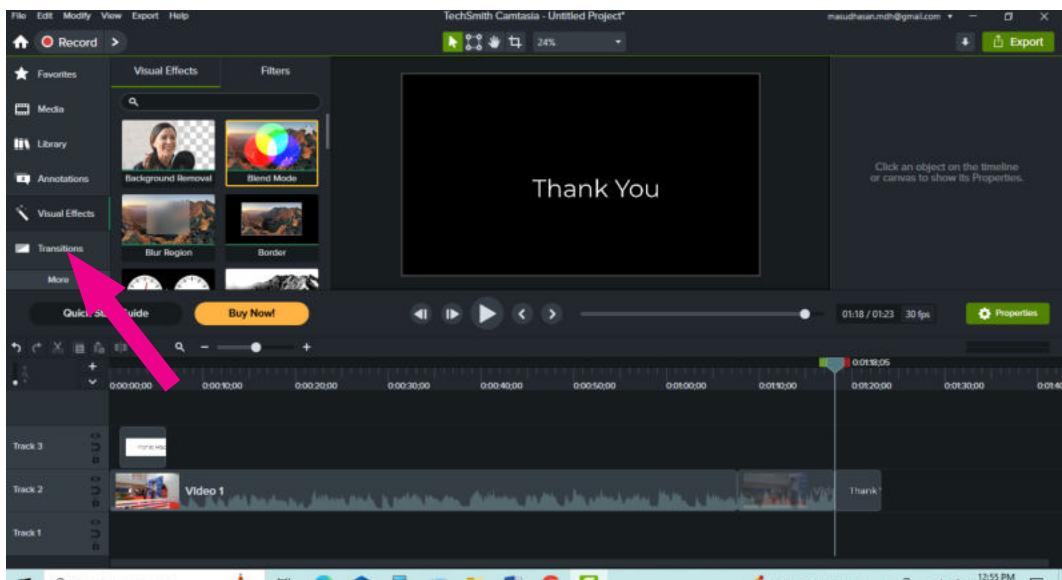


Image- 2.30: Adding text to video

We can use different transitions to cut scenes; this won't make the video monotonous (Image 2.31).

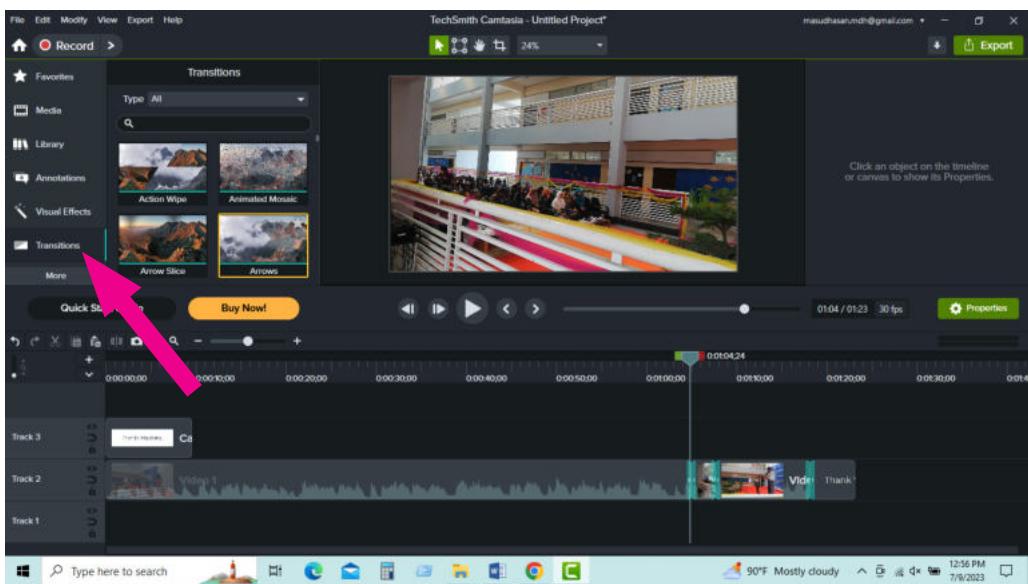


Image- 2.31: Use transitions

### Task 7: Exporting Video

Before rendering the video, we need to review it completely. Because once it's rendered, if any mistakes are found, we might have to edit it again (Image 2.32)

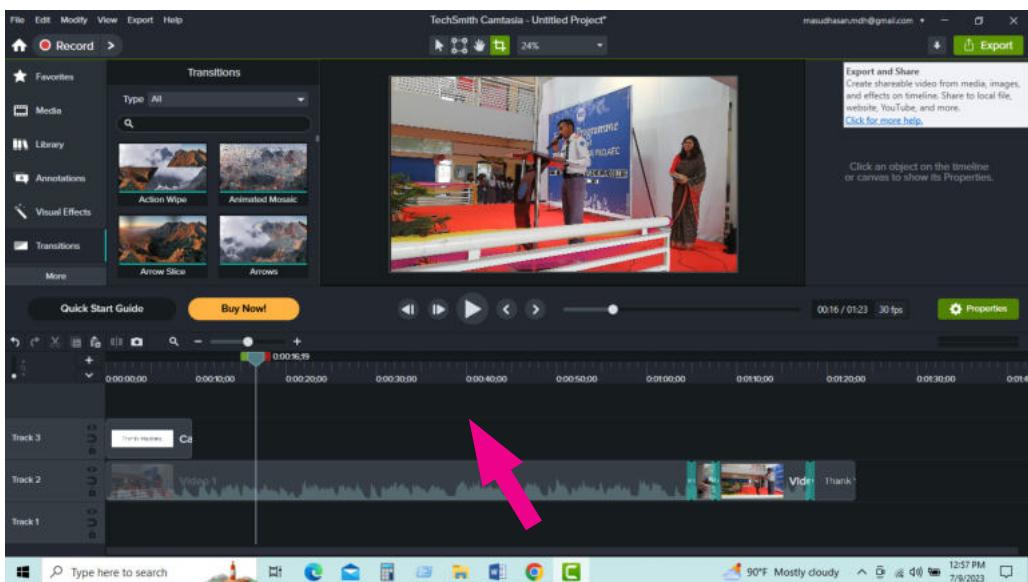


Image- 2.32: Previewing the video before rendering it

Next, we will click on Produce with a watermark in this section, as our version is a trial version (Image 2.33).

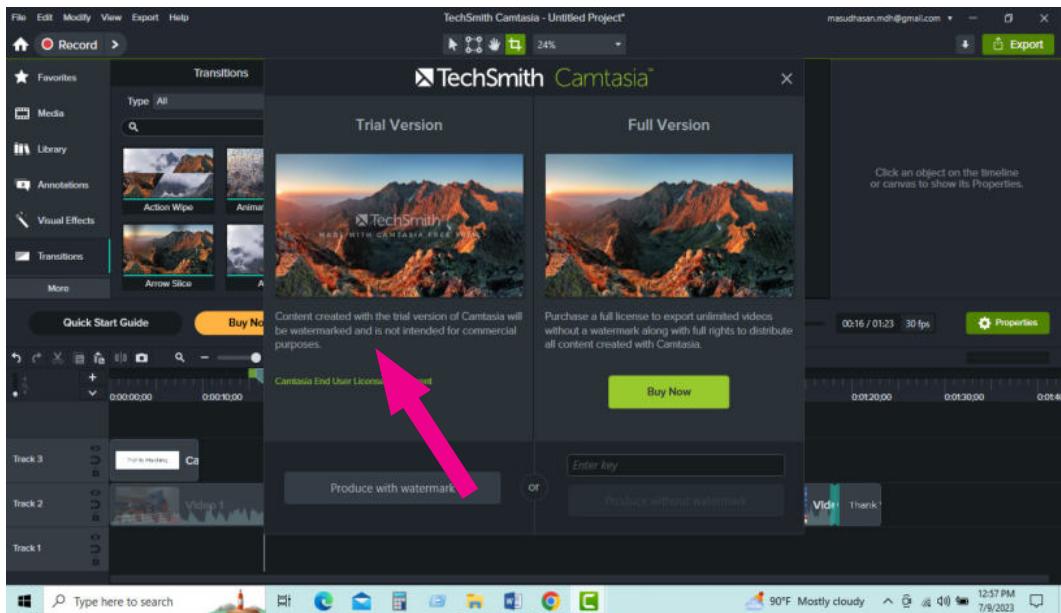


Image- 2.33: Produce with Water Mar

Then, we have to set the file name and location to export it; this may take some time (Image 2.34).

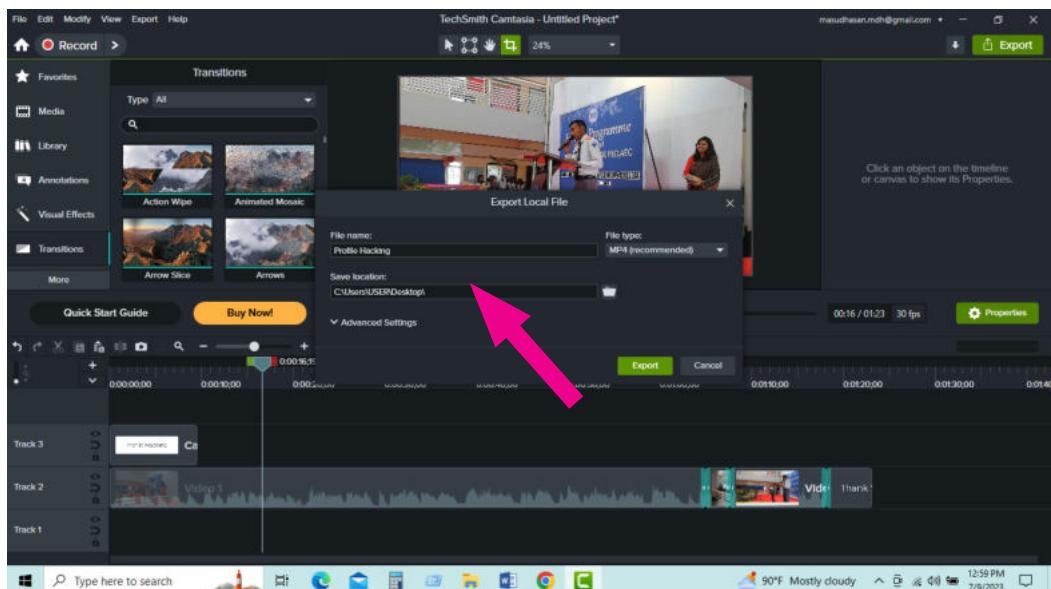


Image- 2.34: Setting file name and location

## Task 8: Saving the Exported File

Once the export is finished, we need to close it (Image 2.35).

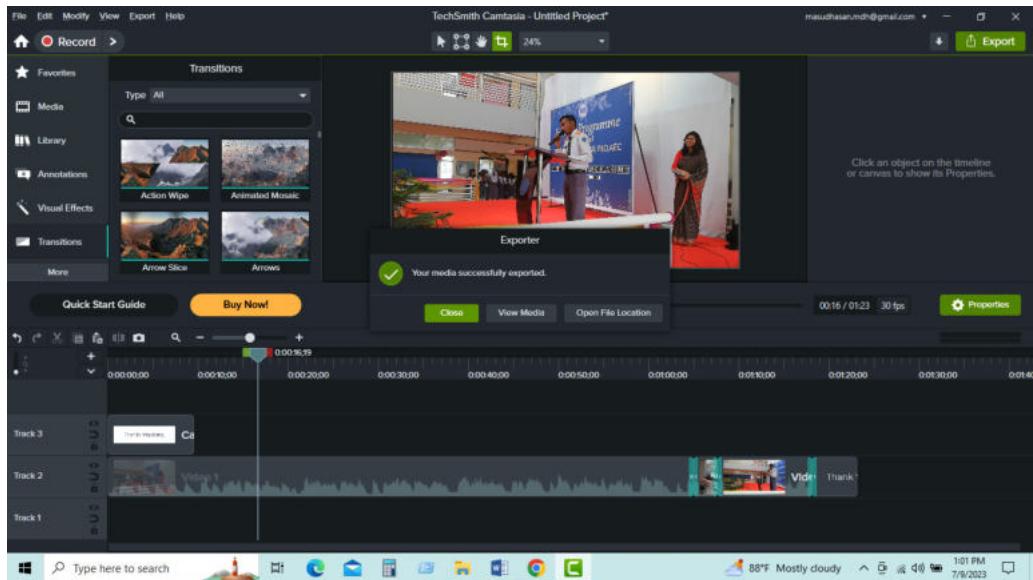


Image- 2.35: Closing the software when the export is complete

Then, if we go to location, we will find our file (Image 2.36).

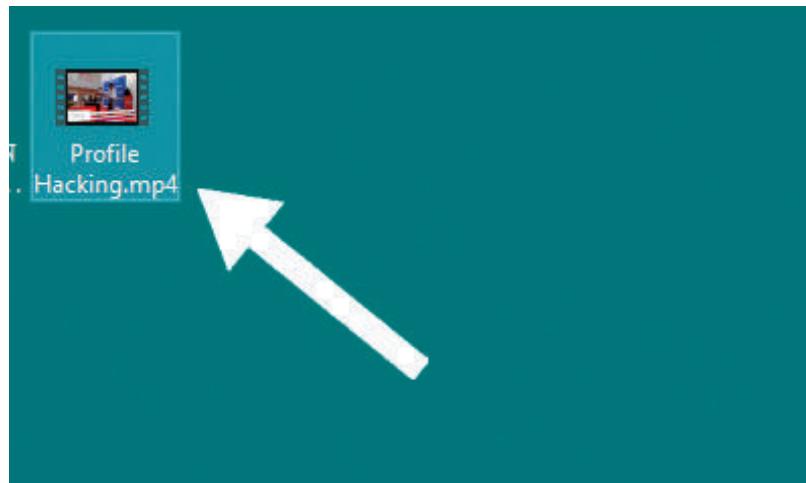


Image- 2.36: Location of the file

## Task 9: Uploading Video to School's YouTube Channel

Now, we will upload our edited video to our school's YouTube channel. If there is no YouTube channel for the school, we will first create one (Image 2.37). You can see a video that has been edited and uploaded to the school's YouTube channel, as shown in

Let us know about Cyber Threats and Ensure Information Security  
the screenshot below.



Image- 2.37: Generated complete video

### Sessions 9 and 10: Creating an Infographic about Awareness to Prevent Cybercrime (Practical Work)

An infographic is a visual representation of various information or a set of briefings. It uses attractive images or colourful texts to present stories, ideas, or concepts in an engaging manner. It is used in various newspapers, magazines, advertisements, or information presentations by different organizations. Additionally, infographics are used in summarizing various research findings. In the following image, we can see an infographic



Image- 2.38: An infographic on cyber crime

When creating an infographic, the following aspects need to be considered:

We will:

- begin with designing a layout on a piece of paper
- determine attractive titles and content
- use an appealing template from software
- maintain consistency in colours and fonts
- include essential information
- use simple images and icons related to the idea.
- create multiple pages if it is necessary

We can use various types of software to create an infographic. Among these, there are Piktochart, Snappa, Infogram, Freepik, Canva, Venngage, Visme, Adobe Spark, Easel.ly, etc. However, for the convenience of free work, we will use Piktochart software. We will create an infographic to raise awareness among all the students of our school about protecting ourselves from cybercrime.

We will create an infographic for raising awareness about cybercrime prevention by following the steps below.

### **Task 1:** Planning for Infographic Design

We will make a plan for the design of our infographic on a white piece of paper. First, we will decide on a title or headline for our infographic. Afterwards, we will document all the text and images that will be in our infographic. Then, based on how the title, text, and images will be presented, we will determine the design. This way, we will have a lot of advantages for our next work.

### **Task 2:** Introduction to Piktochart and Templates

We will start by opening an internet browser (such as Google Chrome) and entering [piktochart.com](https://www.piktochart.com) in the address bar to access Piktochart. For example, screenshot-1 provides an image of Piktochart's homepage.

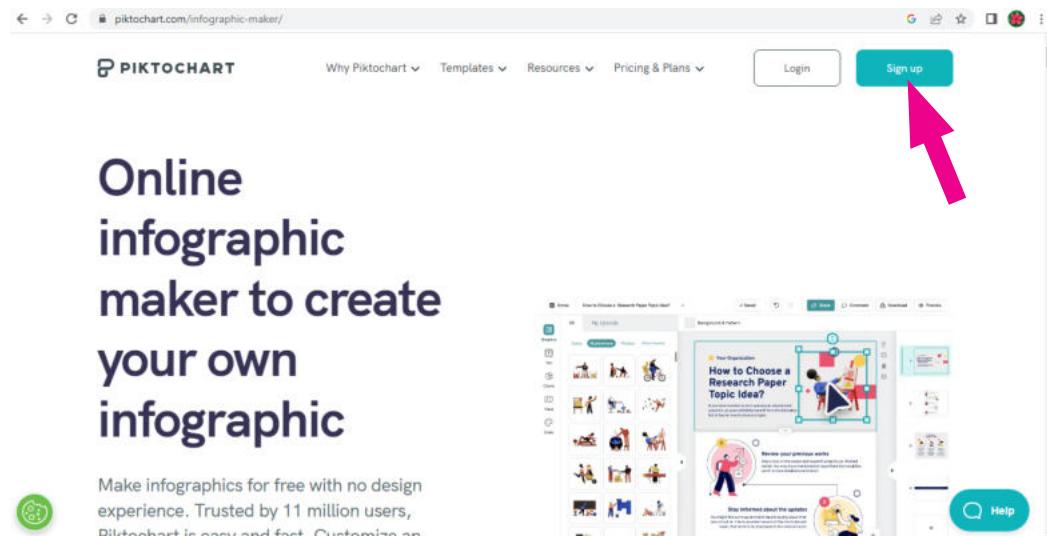


Image- 2.39: Homepage of Piktochart

Next, we need to click on Sign up and register using a Gmail account. If someone does not have a Gmail account, they need to create one first. After signing up, we will click on Login to enter the homepage. Now, we will click on Infographics. Here, we will see all the available templates. For example, screenshot-2 in the Infographics section shows a snapshot of some templates. We can choose any template that suits our design or we can click Start from blank.

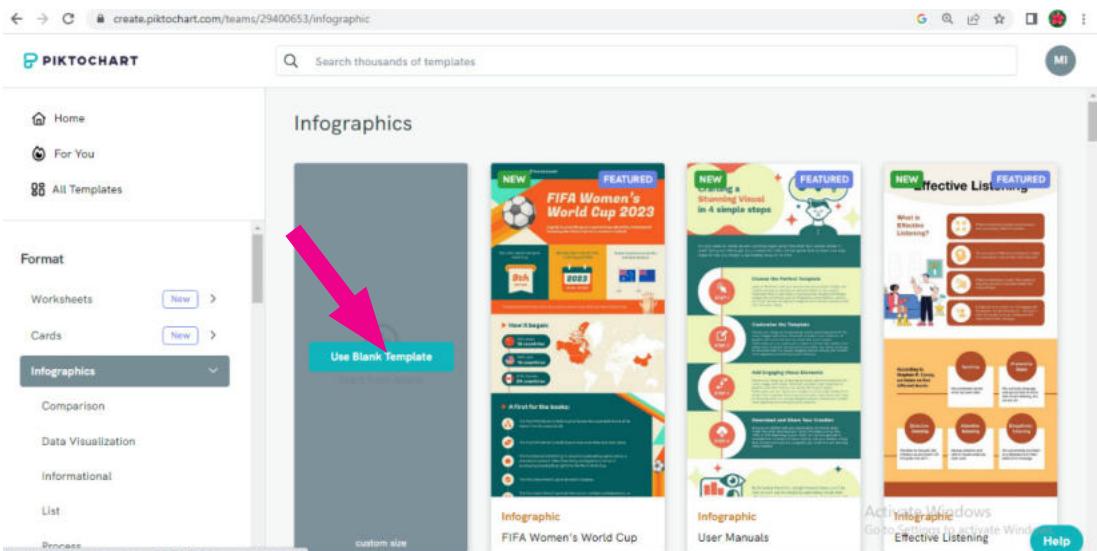


Image- 2.40: Template selection

Clicking on "Start from blank" will take us to a page like the one shown in Image 2.41 below.

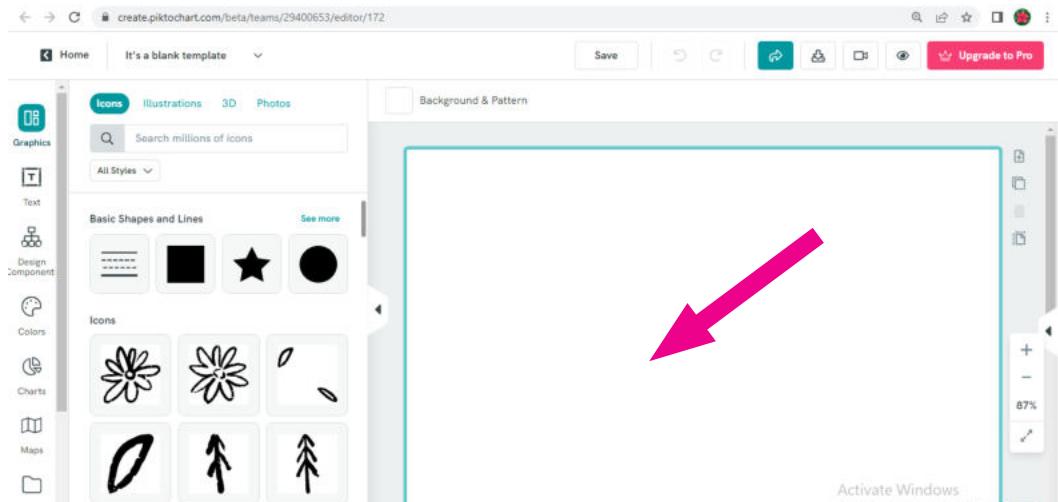


Image- 2.41: Start from blank

Now we will explore the various elements given on this page to create an infographic. We will practice inserting elements one by one from the various parts of the page, such as Icons, Illustrations, 3Ds, and Photos. Image 2.42 shows an element inserted from Icons,

Image 2.43 shows an element inserted from Illustrations, Image 2.44 shows an element inserted from Three Ds, and Image 2.45 shows an element inserted from Photos.

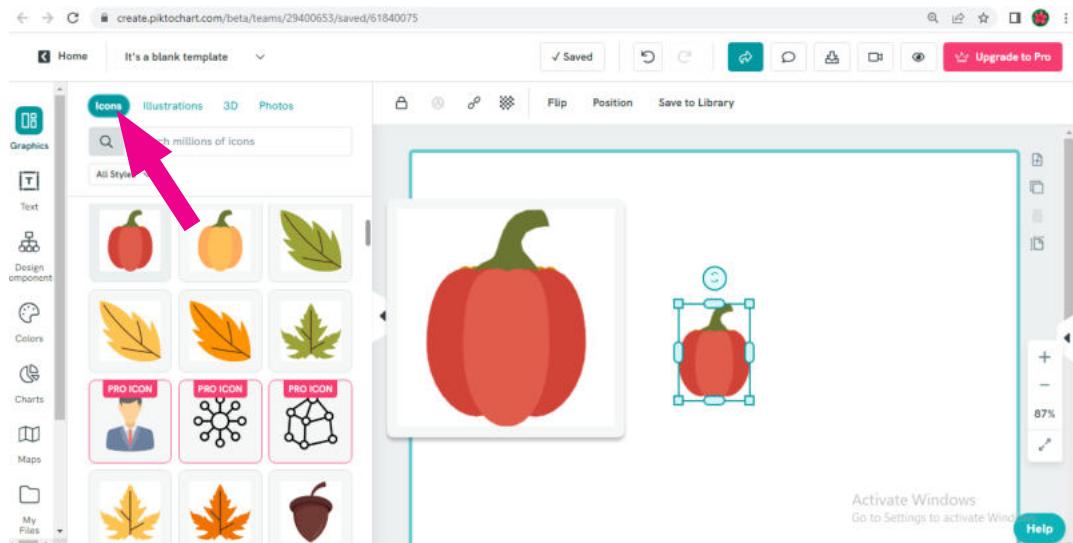


Image- 2.42: Icons option

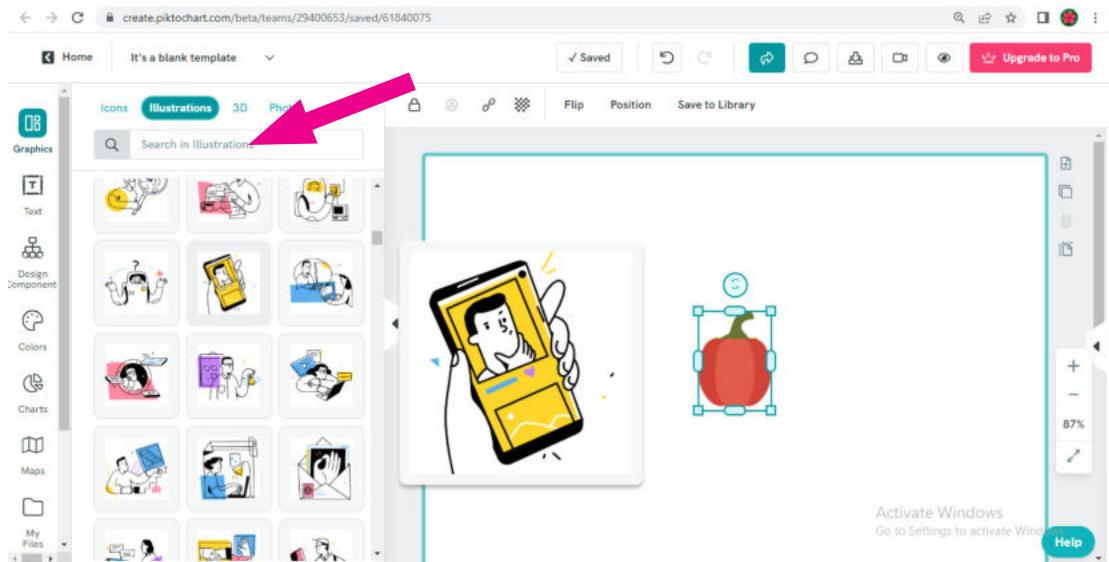


Image- 2.43: Illustration option

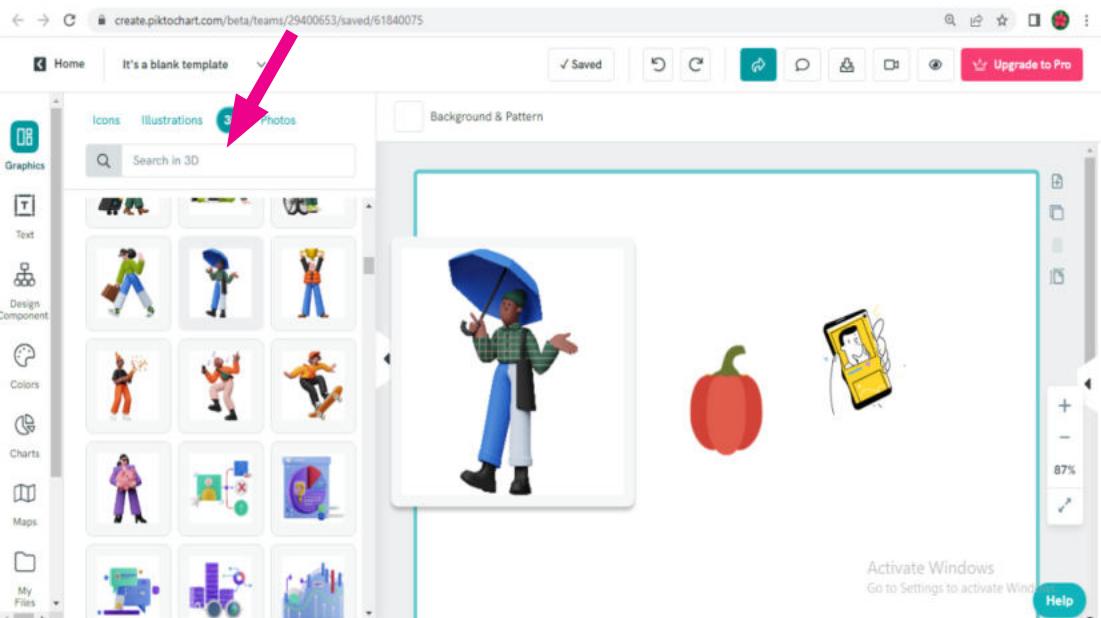


Image- 2.44: 3D option

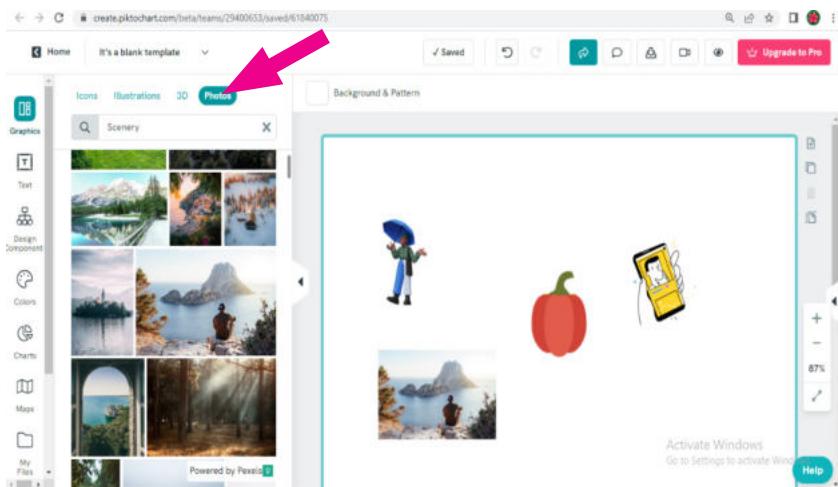


Image- 2.45:Photos options

### Task 3: Collecting Images for Our Infographic and Working with a Templet

Now, according to our plan, if we need to use any images, we will download them from Google Images and store them in our computer. Then, in Piktochart, we will click on My Files located on the left side of the screen. Now, we will drag and drop the downloaded images from the specific location on the computer into the box that says Drag & drop your file here. This will display our images within the file, as shown in Image 2.46.

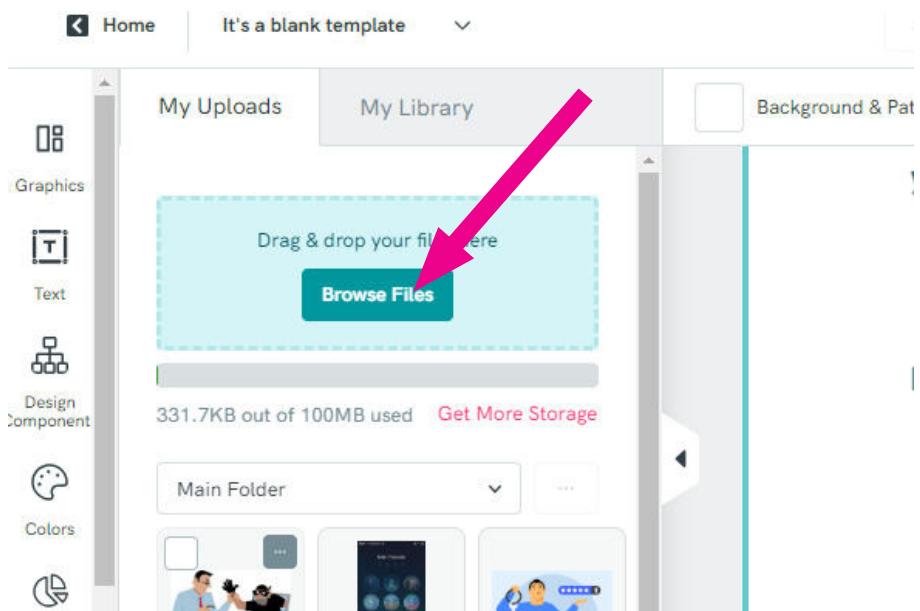


Image- 2.46: File Browsing

Now, we will select a design based on our plan by clicking on Design Component, and

as a result, it will appear on our blank page. Here, we will write the texts from our plan in various text boxes. Image 2.47 shows selecting a design from Design Component and bringing it onto the page.

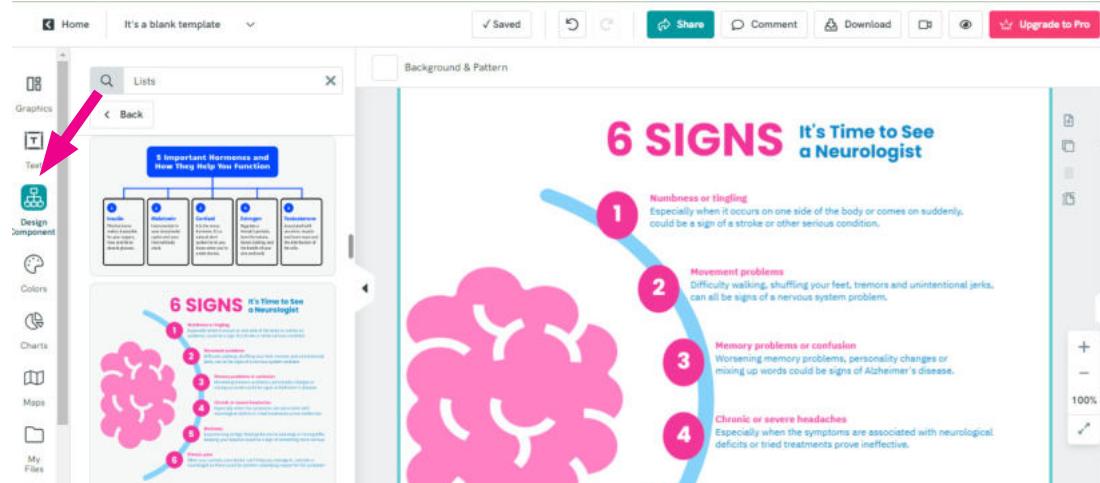


Image- 2.47: Design component

#### Task 4: Editing Text and Images in the Design

Now, as per our plan, we will write the texts in the selected design in text boxes and insert the downloaded images in relevant sections by Drag & Drop method from My Files, as shown in Image 2.48.

As seen in Image 2.49, the sentences are written in Bengali within the previously selected design. We can also add more attractive elements to our selected template. For example, in Image 2.49, three icons have been added.

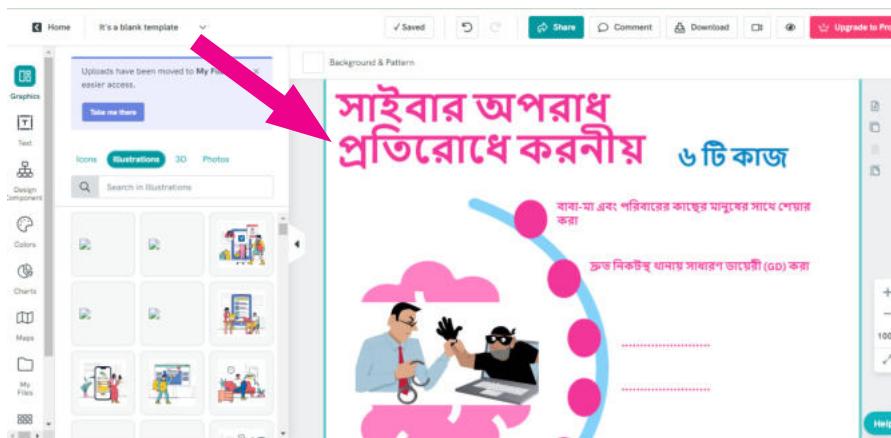


Image- 2.48: Edit text and image

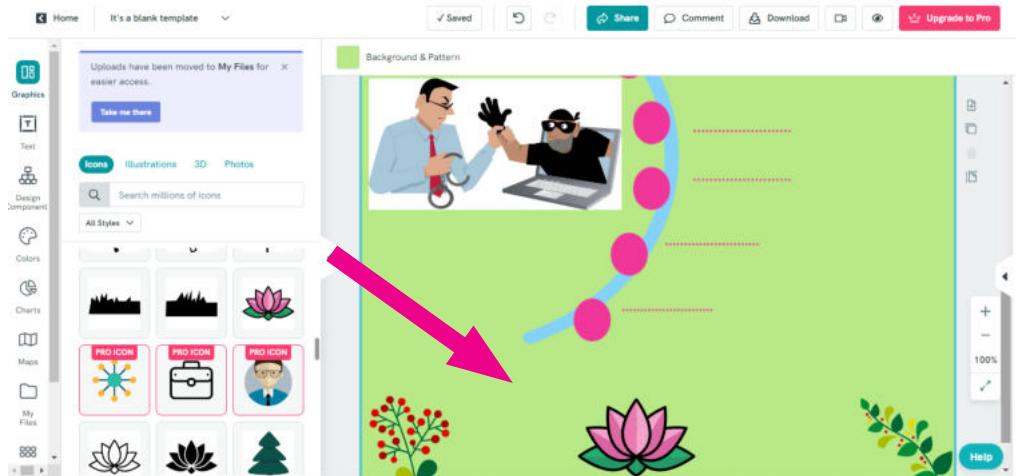


Image- 2.49: Editing text and images

### Task 5: Downloading the Infographic

Once we have completed working on the design according to our plan, we will click on Download at the top of the screen to download it. The infographic we created will be downloaded in zip format. After extracting the file, we will find the infographic in png format. We can see the infographic in png format created according to our previous design in Image 2.50.

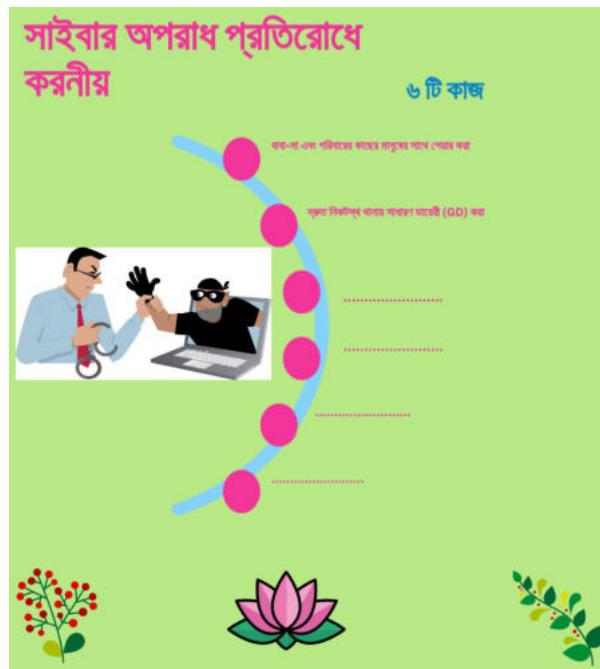


Image- 2.50: Infographic

Now, we will show the created infographic to our teachers and friends. By printing the downloaded infographic in png format, we will submit it to the teacher. We will hang all the created infographics on the classroom wall for display. At the end of the display, we will arrange to showcase the infographics at our school's emergency service centre.

Through this experience, we have gained skills in various subjects that will help ensure the security of our information in the future and prevent cybercrime. We have now understood what we should do if we become victims of cybercrime and how we can secure ourselves on digital platforms and the internet. It's not just ourselves that we can keep safe, but we can also keep many in our family and society safe. We have learned some basic digital skills, which, with further proficiency, can even lead us to work as freelancers in the future. What could be better news than this?

### Experience-3

## Transparency and Accountability in Civic Service

### Digital Means for Simplification of Service, Achieving satisfaction in Service Reception

Due to technology usage, obtaining civic services is now much easier than at any time before. Any civic service is being provided through digital technology. Almost all public and private organizations provide their services to citizens through various apps or software, where the status of service is known from beginning to the end. We can now clearly know what needs to be done to receive the service, who will provide the service, and within how many days it will be provided. Whether providing the service or receiving it, everyone can be assured that digital technology is being used to ensure the proper completion of the service. At the end of this experience, we will create a website where information will be stored to ensure transparency and accountability.

#### Session 1: Use of Digital Technology in Public Services

Nuzhat is eligible to get National Identity Card this year, so this year she was instructed to go to the designated centre for providing various information and photo. After her photo was taken, she filled out a form with all the information and submitted it. A few days later, her father received a message that her national identity number has been assigned, and she would need to collect the identity card at a specific time. However, by registering online, she could now download it. With the help of her father, Nuzhat went to the website and got herself registered and seeing her identity card with photo she felt very happy. She could now see her identity with her photo.

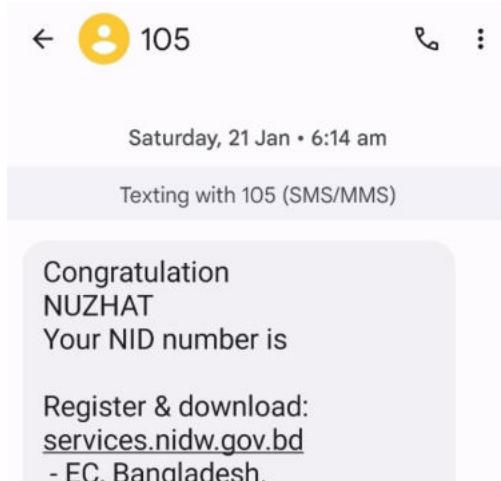


Image- 3.1: Message related to civic service

She also downloaded it, but a mistake caught her eye. Her father's name was misspelt. However, all the information was correct in the form she filled out. So, was the mistake made by those who typed the information? The next day, when Nuzahat's father went to the information service centre at the election office, he learned that it was possible to correct it by going to his account on the website. However, to avail of this service, a service charge needed to be paid through mobile or online banking. Following the instructions on the website, Nuzahat's father applied for a correction of the mistake.

Tuesday, 25 Apr • 1:02 pm

প্রিয় নুজহাত  
 কর্তৃপক্ষের নিকট উপযুক্ত বিবেচিত  
 হওয়ায় আপনার আবেদনটি  
 (NIDCA11232957) অনুমোদন  
 করা হয়েছে। অনলাইন সিস্টেম হতে  
 কার্ডটি ডাউনলোড অথবা আবেদন  
 জমাকৃত অফিস হতে কার্ডটি গ্রহণ  
 করতে পারবেন। - ইসি, বাংলাদেশ।

1:02 pm

Image- 3.2: Message related to civic service

For this, it is also needed to submit some documents along with the application. Within a few days, through a message, Nuzhat learned that her application for correction had been considered appropriate and approved. Her corrected ID card was also found on the website. She was now very happy!



The screenshot shows the Bangladesh NID Application System interface. At the top, there is a logo of the National Identity Card (NID) and the text "Bangladesh NID Application System". To the right, there is a user profile icon labeled "mirzanuzhat" and a language selection option "লংগাভাষ". Below the header, there are three navigation links: "হোম" (Home), "প্রোফাইল" (Profile), and "রিইস্যু" (Issue). A large green button on the left says "প্রোফাইল" (Profile). In the center, there is a green rectangular box containing the text "আপনার সর্বশেষ সংশোধন ডায়ালিকেশনটি অনুমোদিত হয়েছে" (Your latest amendment dialysis has been approved). At the bottom, there are three small buttons: "বাস্তিগত তথ্য" (Vital Information), "অন্যান্য তথ্য" (Other Information), and "ঠিকানা" (Address).

Image- 3.3:: Civic Service Website

From the above event, it has been learned what brought joy and anxiety to Nuzhat in case of getting a service. Digital technology made her work very easy and she got her desired service. We will outline the steps Nuzhat completed to get the service from start to finish in the flowchart below.

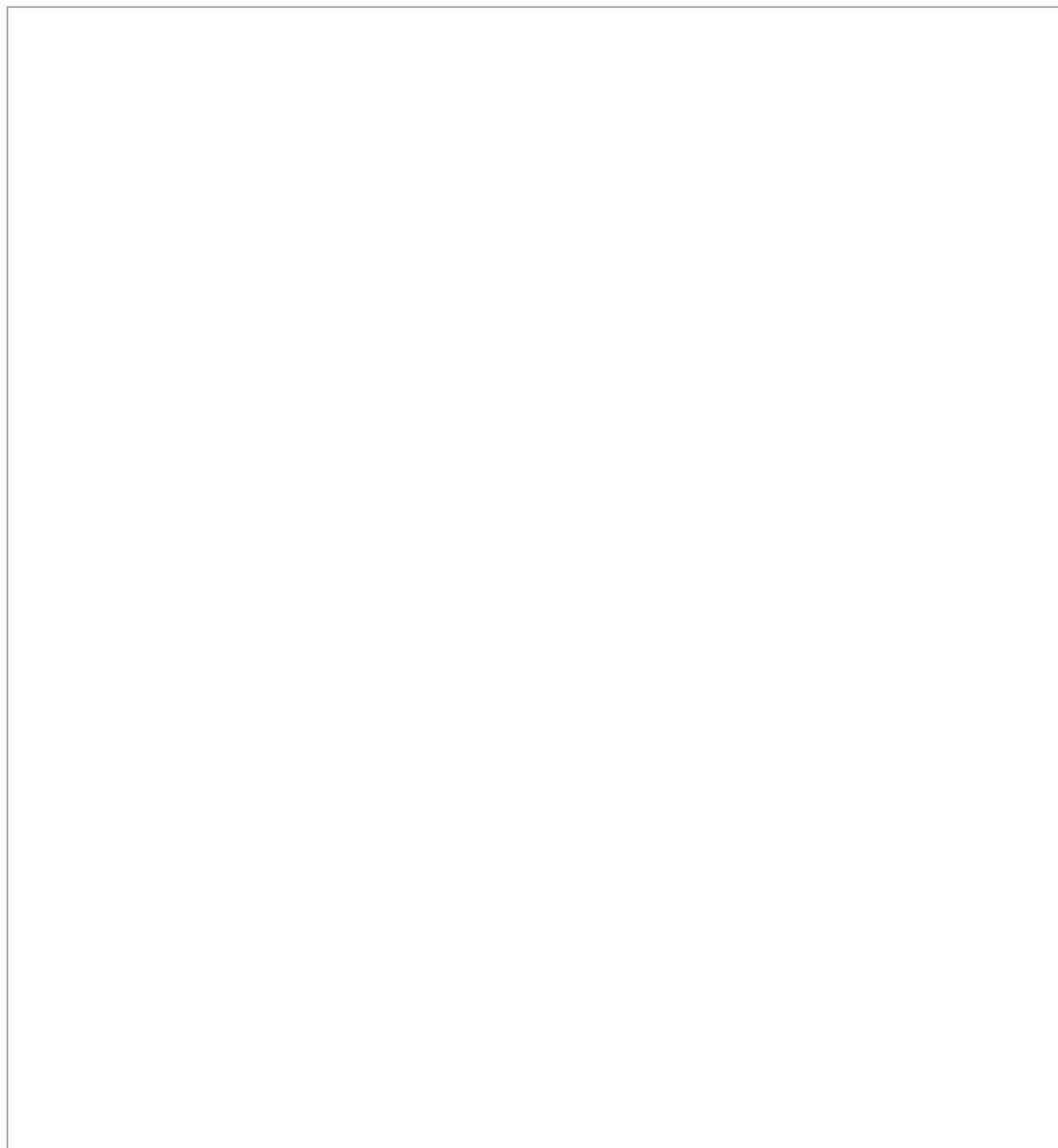


Table 3.1: Steps of Receiving Service

In some of these steps, she was satisfied, while in other steps, she was anxious. Now, in the journey of receiving the service by Nuzhat, we will highlight the points where she felt satisfied in the steps above and mark the points where she felt anxious in the steps below to illustrate the experience of receiving the service. Here, two steps are shown, and let us perform the rest...

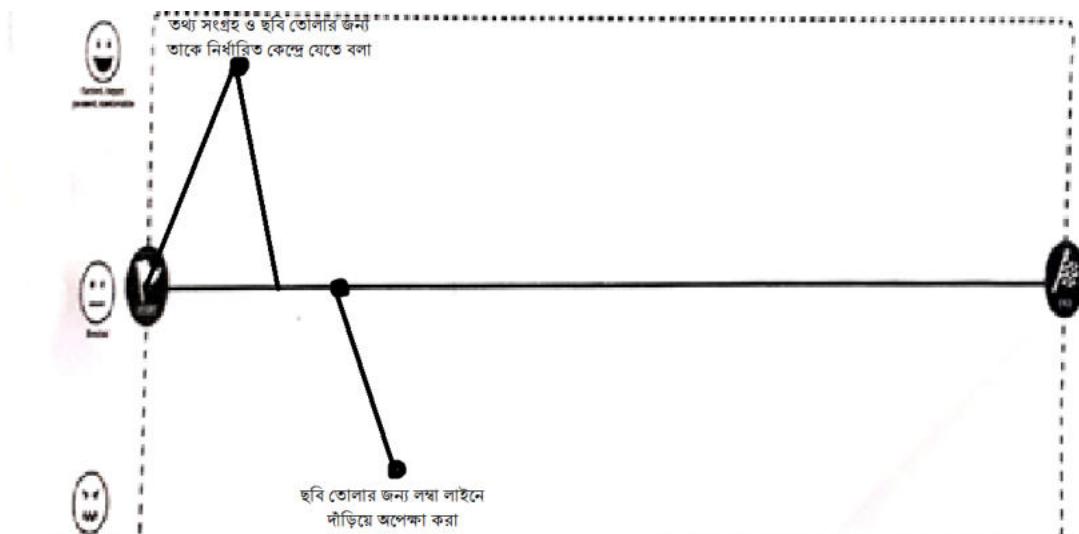


Image- 3.4::Journey of Receiving Services

This is a civic service. This service is very friendly because at every stage one can see the progress or the status of the service, and for this, digital technology is being utilized. However, in the above incident, a citizen was not entirely satisfied while receiving the service, as it was not fully implemented using digital technology from the beginning to the end. So, from where the service used digital and non-digital technology. However, for the convenience of everyone, the service has not yet been fully digitized for all citizens.

<b>Digital</b>	<b>Non-Digital</b>

Table 3.2: Different Phases of Civic Services through Digital and Non-Digital Means

### Session 2: Transparency and Accountability in Citizen Services

In the previous session, we observed how citizen services became much easier through digital technology. The reason for this simplicity lies in our ability to understand how to apply for a service, how to obtain that service, at what stage the service is after applying, and so on. This means that all information and actions related to the service are very transparent to us. Not only that, we can easily acquire any information related to the service. The service provider organization also informs us how we can easily get the service. In other words, due to the use of digital technology, transparency and accountability are ensured in citizen services.

## Transparency

Transparency in general refers to the right of citizens to know whether a service is being provided or a decision is being made and whether it is being implemented properly. Alternatively, it can be said that transparency involves the free flow of all information related to a citizen's claim for or reception of a service, ensuring the right to know the information freely. For this purpose, there are laws that make the flow of this information easily understandable to all levels of the population and ensure its circulation through various means. Therefore, digital means have provided the opportunity for every organization to reach all citizens with all services.

## Accountability

Every institution will remain responsible and accountable to the citizens and, for that matter, to all people for their activities and responsibilities. The institution that provides a service will provide it equally to all citizens and is responsible for doing so. Those who come to receive services will be efficiently served by the institution's designated individuals for quick completion of all types of services. To ensure this, the accountable personnel of the institution must provide information about the status of the application, when it will be completed, and under what circumstances the application is. Ensuring accountability to all citizens through digital means has become much easier now.

Information Table 3.1: Transparency and Accountability

The validity of the passport of Deniyat will expire next month. Since she is not yet eighteen years old, her mother has to open an account online and apply for a passport on her behalf. It is possible to apply for multiple passports from one account. So her sister's and mother's passport applications will also be done together.

The screenshot shows the official website for e-passport applications. At the top, there are two logos: the National Emblem of Bangladesh on the left and the Ministry of Home Affairs logo on the right. Below the logos, the text "বাংলাদেশ ই-পাসপোর্ট পোর্টালে আপনাকে স্বাগতম" (Welcome to the Bangladesh e-Passport Portal) is displayed. On the left side of the header, there is a green button labeled "অনলাইনে আবেদন" (Online Application). The main navigation menu includes "ই-পাসপোর্টের এটি ধাপ", "জনীয়া আবেদন", "নির্দেশনা", "পাসপোর্ট ফিন", "আবেদন পত্রের স্ট্যাটাস চেক", and "যোগাযোগ". On the right side, there is a user profile icon, language selection ("English" and "বাংলা"), and font size adjustment ("A+ A-").

### My e-Passport applications

[Account](#) [Apply for a new e-Passport](#)

The maximum allowed number of applications is 6.

Applicant name	Passport Type	Delivery type	Scheduled at	Status	Actions
Divisional Passport and Visa Office: 4000 AGARGAON BANGLADESH					
DENIYAT ZERIN	ORDINARY	Not scheduled	Incomplete	<a href="#">Delete</a>	

Image- 3.5: Online Application for E-Passport

Initially, Deniyat's mother carefully read the instructions on the website. Having learned in advance what information is required for an e-passport, she had all the necessary details at hand even before submitting the online application. Following this, Deniyat's mother completed all the information step by step and submitted the online application for a new e-passport. Deniyat was quite amazed that even at night, her mother used mobile banking to pay the passport fee, a process that five years ago required her father to stand in line at a specific bank amidst a crowd. It was even more pleasing that as soon as her mother submitted the online application, a message was sent to her mother's phone, informing her when and where to go to take a photo for her e-passport.

**Application submitted**

**Appointment**

- Appointment time: Scheduled 27 March 2023, 11:12
- Delivery Service: Express
- Appointment ID: 2933198

**Application Summary**

- Passport type: Ordinary
- Applicant name: DINIYAT ZERIN
- Date of birth: 24 DECEMBER 2009
- Online Registration ID: OID1013206299

**E-payment Receipt**

Bill Payment Receipt  
Receipt Number: OID1013206299  
17630322 02:20:58

Payment Type	Service Provider:	Amount Paid
ekpay	EPASSPORT	6419.24 Tk

**Payment Details**

Name	DINIYAT ZERIN
Mobile	+8801773888
Email ID	naveen@yahoo.com
Transaction ID	ZB0117020209840
Order Application ID	OID1013206299
Payment Date	2023-03-17
Passport Amount	6419.24 Tk
Passport Challan Number	POT20230322
Var Amount	628 Tk
Var Order Number	POT20230324
Payment Gateway Charged	78.00 Tk
Total Amount	6419.24 Tk

Thank You  
For suggestions or any complaint, please email: ekpay@ai2.gov.bd

To Verify Your Challan Please Visit:  
[http://iechallan.gov.bd/challan\\_search](http://iechallan.gov.bd/challan_search)

Image- 3.6: Using Digital Medium for Accountability in Civic Service

Image-3.7: E-Payment

After the verification of all the information provided in the online application, Deniyat and her mother were informed that they would have to wait for their biometric data to be collected. However, on the same day, there was a large crowd of applicants at the passport office to provide their biometric data, and they had to wait for a long time for their turn. For this Deniyat became tired after finishing his work. After completing the process of providing all biometric data at the passport office, while returning home, they received a message informing them when and from where they could collect their passports.

Wednesday, 29 Mar • 9:00 am

Texting with 01552-146252 (SMS/MMS)

Dear █ █ █ ZERIN, Your new passport OID1013206299 is now ready for collection at the Regional Passport office.

Image- 3.8: Using Digital Medium for Transparency in Civic Service

On a specified day, when Deniyat's mother submitted the receipt of the application at the passport office, she was given a token with a serial number. When she was called from a specific counter as per her serial, Deniyat's mother took Deniyat and her sister to the counter and collected their passports. Even to collect the passport, Deniyat had to face a considerable crowd, as a result, she became quite tired after coming home.

All citizens of Bangladesh can now obtain an e-passport. An e-passport is a biometric passport with an electronic chip. This electronic chip stores biometric information with which the passport holder's identity can be verified. In Bangladesh's e-passport, an individual's photo, fingerprint, and iris biometric data are stored. For adults, all the information from the national identity card and for individuals below 18 years of age, birth registration information is included in the passport.

Information Table 3.2: E-Passport

Let us write the steps for how Deniyat's e-passport is obtained in the box below...

Table 3.3: Different Steps of Obtaining an E-Passport

In the above incident, various measures have been taken to ensure transparency for citizens at each step of obtaining an e-passport. Some of these measures include:

- A highly effective website has been established for obtaining passports easily and from anywhere.
- Clear instructions for online application are provided.

**Furthermore, measures have been taken to ensure accountability, and some of these include:**

- Applicants can sign in using their ID to track progress at each step.
- Contact options for any assistance are available, etc.

Now, on the images of the website used for obtaining a passport through digital means, let us mark the areas with a circle for transparency and a square for accountability.

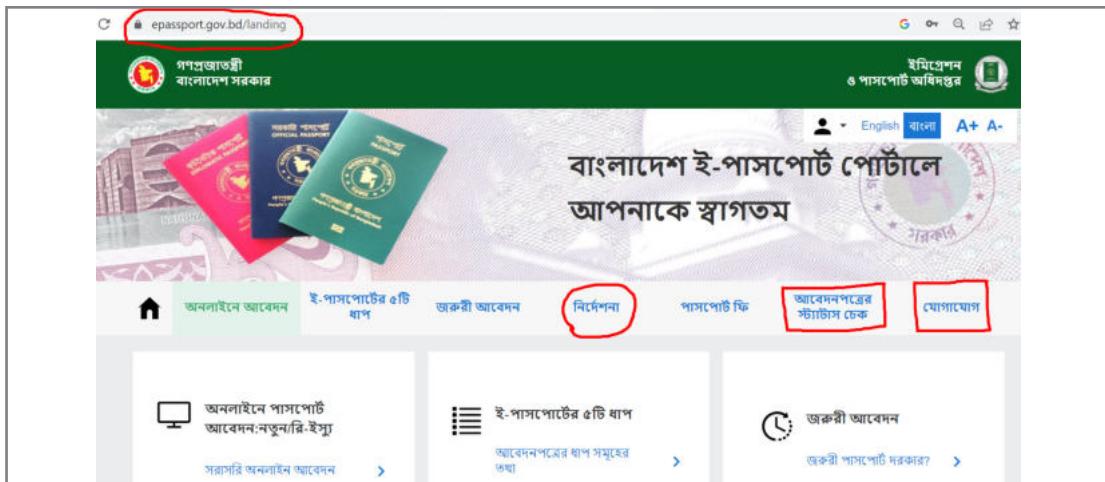


Image- 3.9

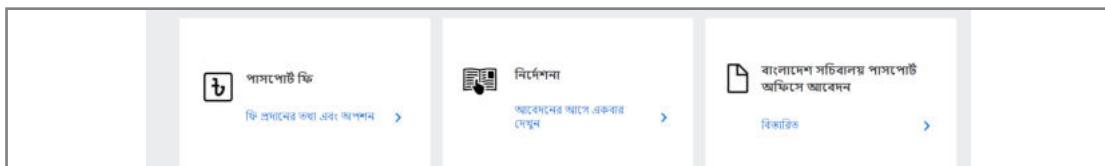


Image- 3.10



Image- 3.11



Image- 3.12: Identifying Transparency and Accountability in Citizen Services Using Digital Medium

### Session 3: Ensuring Transparency and Accountability through Guidelines

Transparency and accountability are closely connected. When we want to know about any information or service, keeping it open is transparency, just as the responsibility of informing me at each step of receiving the service is included in the accountability of that organization or service provider. Ensuring transparency in all operations of an organization means ensuring accountability. This transparency can be effectively ensured through digital means, as now almost every citizen is accustomed to using digital platforms to some extent. Each organization has its website or portal where all information related to its services is made available. Where, from whom, through which process, and within how many days a service can be obtained is easily understood from there. This approach to keeping information transparent is termed 'Citizen Charter.' There are government policies for ensuring transparency and accountability for every institution. The "Right to Information Act 2009" was enacted to ensure transparency and accountability in all government and private institutions.

**Right to Information Act, 2009  
(Article No. 20 of 2009)**

[April 6, 2009]

Whereas freedom of thought, conscience and speech is recognized in the Constitution of the People's Republic of Bangladesh as one of the fundamental rights and the right to information is an inalienable part of freedom of thought, conscience and speech; and

Whereas all powers of the Republic belong to the people, and it is necessary to ensure the right to information for the empowerment of the people; and

Whereas if the right to information of the people is ensured, the transparency and accountability of all public, autonomous and statutory organisations and other private institutions constituted or run by government or foreign financing shall increase, corruption of the same shall decrease and good governance of the same shall be established; and Whereas it is expedient and necessary to make provisions for ensuring transparency and accountability in all public, autonomous and statutory organisations and other private institutions constituted or run by government or foreign financing; it is hereby enacted as follows: Effective implementation of this Act will ensure public access to information, which will ensure good governance by ensuring transparency and accountability of all authorities and ensuring a viable democratic environment in the country. Digital media is playing an effective role in making all information available to citizens as per the directives of this Act.

In previous sessions we have seen where, to whom, what information or documents to get citizen services and how much service will be available through service charges- all of these are being communicated through digital means. The services that any citizen is getting with such transparency are possible only by using the digital medium in all areas. The second chapter of the Right to Information Act 2009 deals with the right to information, storage of information, disclosure of information, method of providing information etc. However, the law also states that we cannot redistribute all information. Any confidential information, which may be a threat to the security of the country, may damage someone's intellectual property rights, may violate someone's privacy, the exam question papers or the marks given in the exam before publication, etc. cannot be disclosed.

The directives of the Right to Information Act 2009 state that every public and private organization shall facilitate access to information for all citizens as per the Freedom of Information Policy-2015. That is why digital technology is being used as a means of providing information and services by all organisations.

Information Table- 3.3: Right to Information Act, 2009

In the following section, based on the Right to Information Act, let us mention several points regarding what we can and cannot do to ensure accountability and transparency in an institution.

What we can do	What we cannot do

Table 3.4: Actions According to the Right to Information Act

Now, let us visit a website of a local government institution in our area and see what information and service opportunities are provided on that website to ensure transparency and accountability.

The screenshot shows the homepage of the Upazila Parishad Borbon website. The top navigation bar includes links for 'Upazila Sampr�rtit', 'Upazila Parishad', 'Upazila Prashasnan', 'Sarakarী Afis', 'Bibiro Pratisthan', 'E-Serv', 'Surborjantri Karnar', and 'Golalar'. A sidebar on the right is titled 'Sarbohaner Janay Krikon' and lists various posts with names and dates, such as 'Nari (Enabrode Fom)' dated 15-Nov-2023, 'H-Moraih Komort' dated 15-Nov-2023, etc. Below the sidebar are sections for 'Chakrari', 'Chittaran', and 'Bijapam'. The main content area features sections like 'Nootish Board', 'Amader Sampark', 'Shuktachar', 'Tathy Adhikar', and 'Abhyag Pratikar'.

Image- 3.13: Ensuring Transparency and Accountability in Local Civic Services through Digital Means

Visiting the first page, other links of the website or any other page of the local organization of each area, we will see in which cases digital media is used and transparency and accountability are ensured in providing any citizen services. Let us write a list of these areas in the space below...

Table 3.5: Areas of Transparency and Accountability through Digital Media in Public Services

It should be noted that any website we see now may not remain the same after a few days. Websites are regularly updated or modified. New services are added, service delivery techniques are changed, and service providers themselves may change. Therefore, we must keep these in mind in using digital media to avail of services.

#### **Session 4: Design of Website or Social Media Page for Receiving Citizen Services to Ensure Transparency and Accountability**

All government offices now have websites and social media pages or groups where all notices, progress reports, necessary forms, photos of various activities, etc. are published. Even communication with the authorities can be done. Many offices can be contacted 24/7. Private and business establishments have also launched various mobile apps to make customer service easily accessible and user-friendly. Some social media page apps allow customers to communicate instantly.

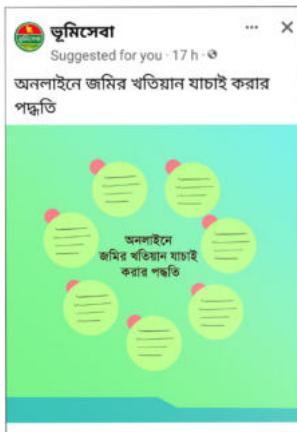


Image- 3.14: Transparency in public service using social media

In this experience, we will design a website for ourselves where all the information about our class will be kept open to teachers, students, parents, and others, ensuring transparency and accountability, just like other websites. Though initially we will create a simple website, in the future, we will create a more enriched website. We still do not know how to create a website! We have nothing to worry about. Creating a website is now very easy. There are many platforms or mediums through which a website can be designed very easily for free, using templates or designs. That is why we need to plan first. The factors to be considered in planning are mentioned in table:

- Which medium or platform can be used to create it;
- What will be the name of the domain or the website/page;
- Who is the target group;
- What information will we provide on the website/page;
- Categorization of information based on their types (e.g., notices, photos and videos, routines, etc.);
- What information will be on the first page or start of the website/page;
- What can be the rules and regulations for using or exchanging information;
- How the target group can be informed about this website/page;
- Who will be responsible (admin) for regular updates and improvements, etc

Information Table 3.4: Things to Consider in Creating a Website/Page with Transparency and Accountability

For discussing these topics, we will work in groups. If there are any other relevant topics, we will research them as a team. Based on the above topics, each team will design a website or page. We will design a website for our organization or class

following the design provided below, We will do the work integrating the domain name, website/organization/class name, menus, description of images/graphics, copyright information, and more. We will always remember during website design that our website should ensure the transparency and accountability of our activities.



Image- 3.15: Planning for Website Creation

### Session 5: Website Design

Nowadays having a website is very important for any individual or organization to be found online. Customers or citizens search for information on the website of the relevant institution to find information. Through the websites, the transparency and accountability of the organization's work can be ensured. For example, when a parent wants to admit their child to a school, they search for different school websites to find the right school. In addition, parents and students search the website for various notices and information from the school. Therefore, based on the previous session's plan, we will practise how a website can be created. Before that, let us learn about the various aspects of website creation.

To create a website, you need to have an idea of two things: firstly, domain name and secondly, web hosting. The domain name is the name of a website, such as youtube.com, google.com, Wikipedia.org, etc., which everyone uses to recognize a website. By using the domain name of the website, you can easily enter the website or direct someone to browse a particular website. The domain name helps the client computer connect to the web server. Each website has a specific IP (Internet Protocol) address shown (eg 180.102.434.8.). But since it is difficult for people to remember such numbers or numeric values, this IP address is stored with specific domain names or characters. The domain name consists of two parts: second-level domain and top-level domain, for

example, in youtube.com, youtube is the second-level domain and .com is the top-level domain. Additionally, there are other top-level domains like .net, .org, .info, .gov, .edu, etc. There are also top-level domains (ccTLD) in the names of different countries, such as .bd for Bangladesh, .us for the United States, .uk for the United Kingdom, etc. Furthermore, a domain name for a website can have multiple parts, such as top-level, second-level, third-level, etc. (e.g. www.example.gov.bd). In this case, the top-level domain is .bd, within which the second-level domain is .gov, and within the .gov.bd domain, the third-level domain is example.

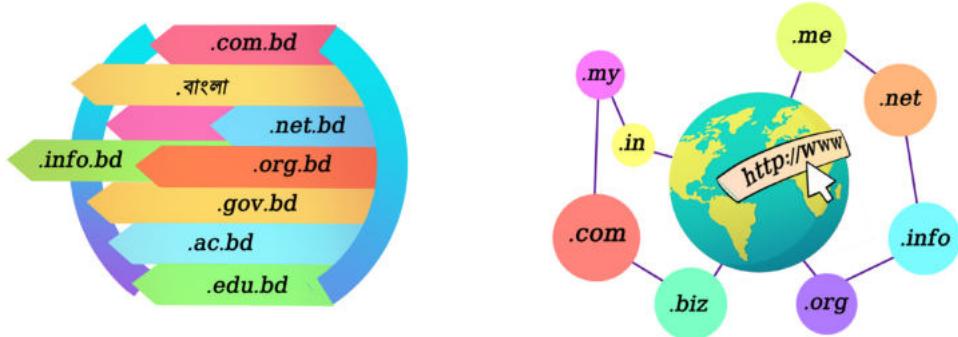


Image- 3.16: Different Types of Domains

Let us fill in the following table...

Website's Domain Name	Second Level Domain	Top Level Domain	Country Code Top Level Domain
www.moedu.gov.bd			
www.nubd.info			
www.microsoft.com			
www.oecd.org			
www.gov.uk			
www.du.ac.bd			

Table-3.6: Identifying Different Types of Domains

## Now we will learn about web hosting...

In addition to the name on a website, there are various documents such as images, various information, videos, etc. Different types of coding are also done to keep the website running. These documents and codes must be stored somewhere. This online-based service of storing, collecting, distributing, and maintaining these documents and codes provided by agencies or organizations is known as web hosting. Through web hosting, different agencies or organizations can create a website for a company or individual and host it on the Internet. Different agencies have to buy web hosting services to create and host websites for large platforms. However, various web hosting agencies or organizations provide free services to create and host websites at the initial level and host a small number of documents. The two images below show the documents that web hosting collects and the steps through which a website is prepared and displayed on the user's device screen through web hosting.

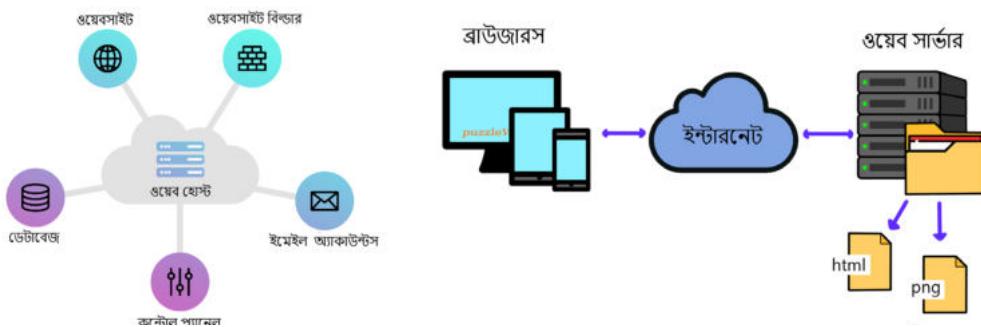


Image- 3.17: Web hosting

Let us write in the following table the links among different devices through web hosting as shown in the image:

Device 1	Device 2	Link
----------	----------	------



Image- 3.18: Links between Various Devices in Web Hosting

Different web hosting agencies provide interfaces to create websites from their websites. These interfaces allow users to create a website using various tools without the need for coding knowledge. These sites provide free space for hosting the created website, making it possible to create and host small websites. Platforms like Google Sites, WordPress, Wix, Squarespace, Weebly, and GoDaddy offer the opportunity to create and host websites. Now let us learn about the various benefits of these websites.

Name	Logo	Benefits
Google Sites		With the help of this free tool from Google, it is easy to create visually appealing websites without any coding skills. Many user-friendly interfaces are available here, where various templates, themes, and options are available to design different websites. It is very easy to integrate other Google services (such as Google Drive, Google Maps, etc.) here. Although it offers the opportunity to create a website for free, it is also possible to create professional designs using various modern themes. Its web address is: <a href="http://sites.google.com">http://sites.google.com</a>
WordPress		This is a content management system that allows you to work here with little technical knowledge. Various freelancers and various small businesses use it to create their websites. It has two sites - <a href="http://wordpress.com">wordpress.com</a> for the free version and <a href="http://wordpress.org">wordpress.org</a> for the paid version. Its free version allows you to work on multiple pages, and the paid version has more modern features. You can start working here by watching various online video tutorials.
Wix		Its web address is <a href="http://www.wix.com">www.wix.com</a> . It is another free website builder, and it also has various premium and e-commerce plans. The free version has very limited functions, but the paid version offers the opportunity to use around 500 templates. Beginners can use the drag-and-drop feature to work without any technical knowledge. It also provides coding for visitor tracking.

Squarespace		<p>It is a popular website development tool for creating visually appealing and professional-looking templates. Though it does not offer free hosting services, it provides a 14-day free trial to explore the features of its paid services. Users can sign up using their email account, Gmail, or Facebook account. Websites can be created using the drag-and-drop method. It provides a detailed analysis of various data on the website, making it possible to optimize it for popularity. Its web address is <a href="http://www.squarespace.com">www.squarespace.com</a>.</p>
Weebly		<p>It offers both free and paid plans for creating websites for personal, small business, and e-commerce purposes. Even without prior experience in web design, websites can be created here using the drag-and-drop method. Its web address is <a href="http://www.weebly.com">www.weebly.com</a></p>
GoDaddy		<p>It is known as a primary domain registration and hosting provider, but it also offers user-friendly website creation tools. It does not have a free plan but offers a one-month trial to explore its features before subscribing. It allows developers to use the drag-and-drop method to work without any prior technical skills. Its web address is <a href="http://www.godaddy.com">www.godaddy.com</a>.</p>

Information Table-3.5: Open-Source Platforms

Now, we will write down the web addresses of the websites in any internet browser and explore them. We will write down information about any website in the following format:

Website Name
Web Address
What information will be on the website:

Table-3.8: A list of Contents for a Website

### Session 6: Creating our Website on an Open-source Platform

In the previous session, we familiarized ourselves with creating a website on various platforms. Now, we will create our website. Since this is our first time creating a website, we will use a free platform. In this experience, we will explore two different free platforms, but when creating a website for our class, we will use the platform that we find most convenient.

Now, we will follow the steps to create a new website for our ninth-grade class:

#### Task 1: Introduction to Google Sites and Templates

First, we will open an internet browser (such as Google Chrome) and enter sites.google.com in the address bar to access Google Sites.

Afterwards, we need to sign in with a Gmail account. If someone does not have a Gmail account, they will need to create one first.

After signing in, we will enter a new page where Blank is written and there is a plus (+) icon. Clicking on the icon will show a blank website. This blank website can be designed by inputting various information and documents.

Instead of clicking on the blank icon, we will click on Template Gallery located above it to explore more templates.

From the specific templates, we will go to the Education section. Since we are creating a specific website for our ninth-grade class, we will select the template named Class. In this template, we will see the title CLASS NAME. There are three pages named Home, Schedule, and Newsletter, as well as three options named Insert, Pages, and Themes on the right side.

By clicking on Insert, we can add various documents and Google's different software to the website.

Clicking on Themes allows us to change the design of our website. Clicking on Pages allows us to access the three pages named Home, Schedule, and Newsletter.

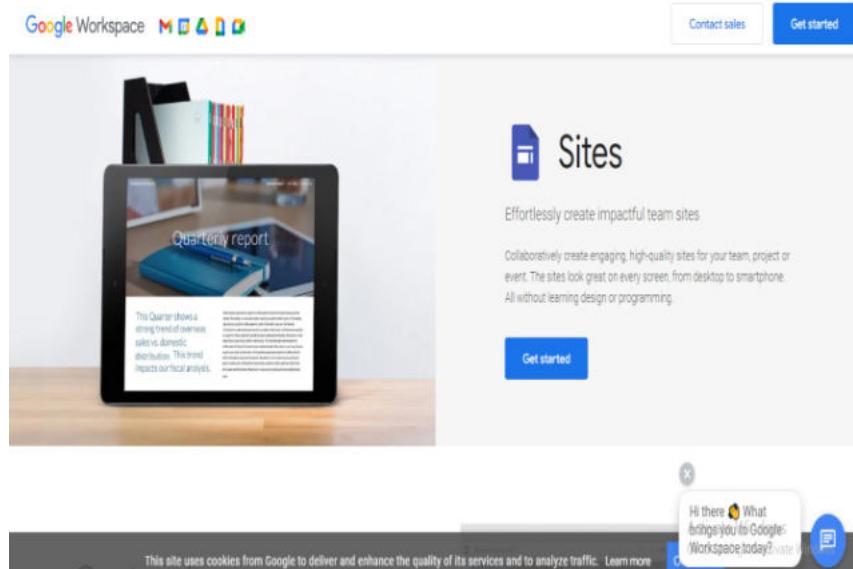


Image- 3.19: Google Sites' home page

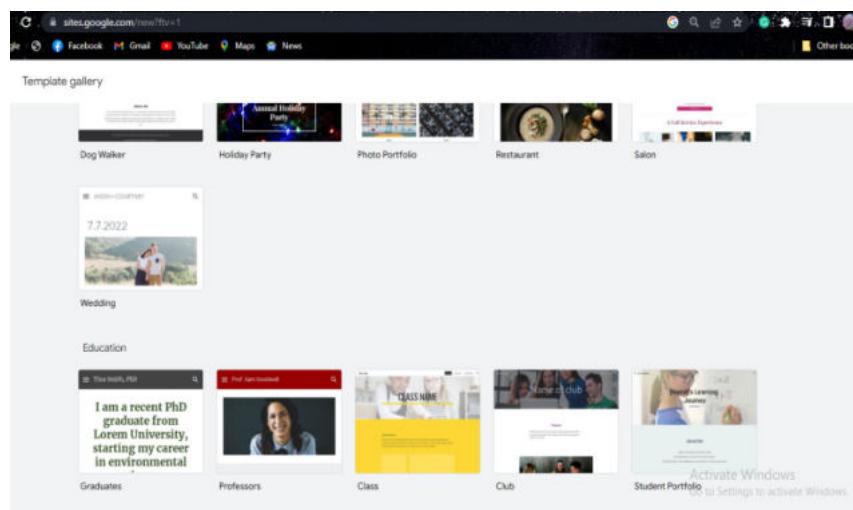


Image- 3.20: Google Sites' template gallery

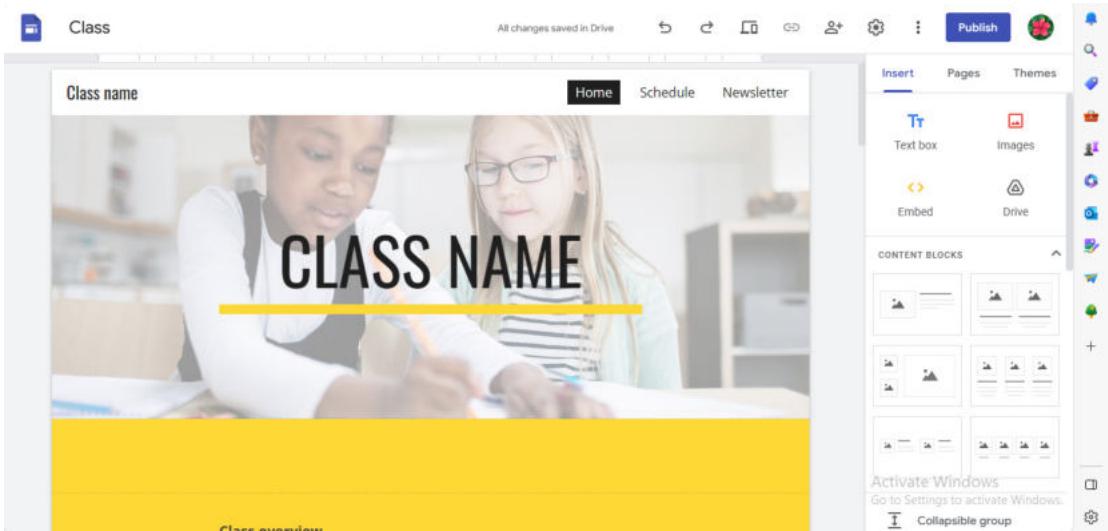


Image- 3.21: Google Sites' Class template

### Task 2: Setting the Name, Logo, and Background Image of the Website

On Google Sites, on the right side of the logo, we will write the name of our document. For example, in the given screenshot, it is written as Anandalok School.

Next, in the top left corner of the template, where it says Class Name, we will write the name of our school. For example, in the screenshot, it is written as Anandalok High School.

Right below it is Add Logo. Here, we will add the logo of our school. To do this, we will save the logo of our school in a specific folder on our computer. Depending on the colour of the logo, we will set the background colour, so that the logo can stand out beautifully. For example, in the screenshot, the logo of Anandalok High School is added and the background colour is set to black, making the school's name and logo can stand out beautifully.

Now, in the middle of the Home page, under the heading CLASS NAME, we will write CLASS NINE. We can use our preferred font and colour for this text. For example, in the screenshot, CLASS NINE is written in green colour.

Behind the text "CLASS NINE," we will upload a picture of our school. For example, the screenshot shows an image of Anandalok High School which has been uploaded.

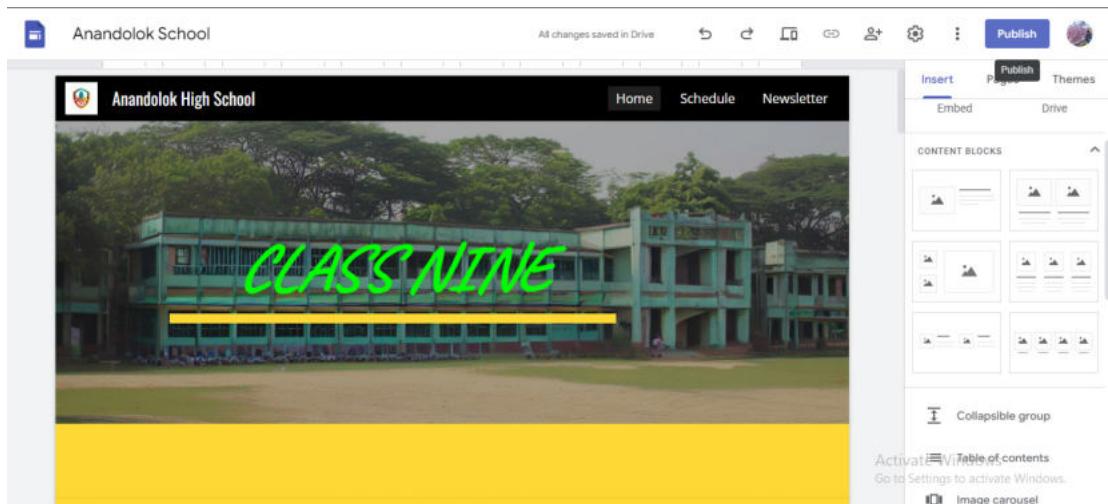


Image- 3.22: Screenshot after setting the name of the document, logo and background Image

### Task 3: Writing Class Overview and Uploading Images

Under the CLASS NAME, we will write a brief overview of the class and the school. This will give visitors an idea about the school and class when they search for it. For example, in the screenshot, it can be seen that Anandalok High School and Class Overview of Class Nine have been uploaded.

Let's upload an image of a class and a picture of students from our school's ninth grade on the website. Below the Class Overview, we can upload the image from the Insert Image option given under the two options or on the right side of the template. For example, the screenshot shows that a picture of a class and students from Anandalok High School's ninth grade have been uploaded.

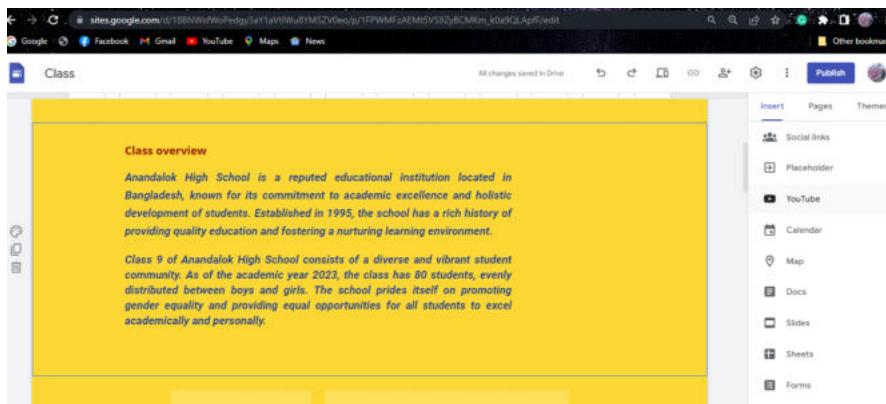


Image- 3.23: Screenshot after writing Class Overview

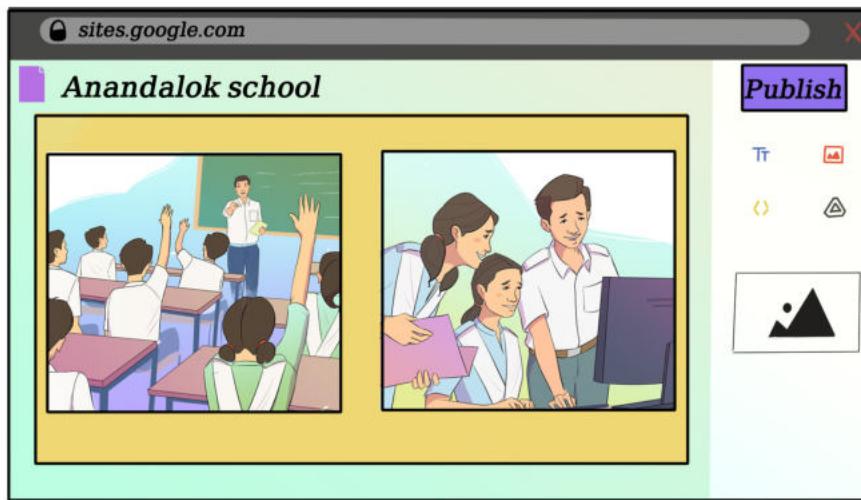


Image- 3.24: Screenshot after uploading two Images

## Session-7: Adding different Google Services to Website to Ensure Transparency and Accountability

### Task 4: Adding different Google services to website

We will select the location of our school map and add Google map to the homepage on the right side insert option of the template

In the same way, we will add a YouTube channel of the school from the insert option. If we do not have any channel, we will open a YouTube channel and insert it in the homepage.

For example, the screenshot below shows that the Google map and YouTube channel of Anandalok High School has been uploaded.

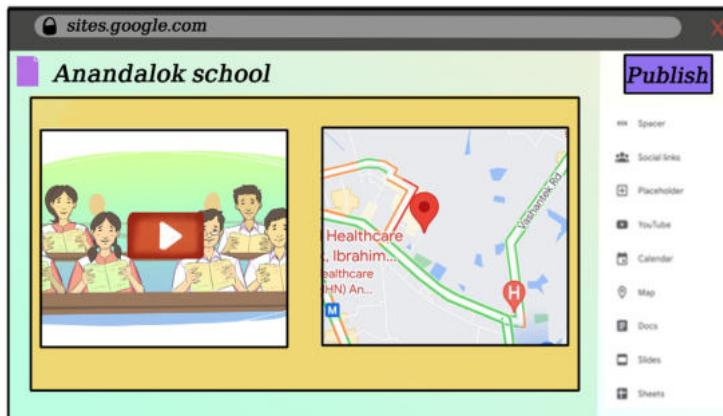


Image- 3.25: Screenshot of uploaded Google map and YouTube Channel

### Task 5: Inserting list of the teachers, students, and guardians

Again, we will add the names of the teachers, students, guardians, and other important information created in Google Sheets or Google Docs to the homepage from the insert option at the right side of the template. We will create the list of the names of the teachers, students, guardians, and other important information in Google Sheets or in Google Docs using the same Gmail id used during the sign-in to Google Sites. For instance, the following screenshot shows the insertion of the names of the teachers, students, guardians, and other important information created in Google Sheets into the Homepage.

Thus, by clicking on the social links on the right side insert option, we will add different social media accounts links (like Facebook, Twitter, etc.) to the homepage. If there is no such social media account of the school, we will create an account and paste the web address to add the social media. For example, the screenshot shows that the Facebook link of the Anandolok School is connected to the homepage.

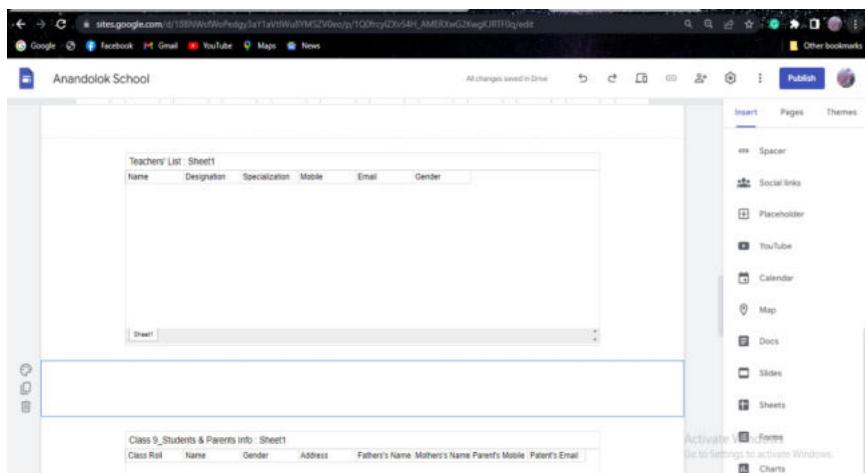


Image- 3.26: Screenshot of the uploaded names of the teachers, students, and guardians

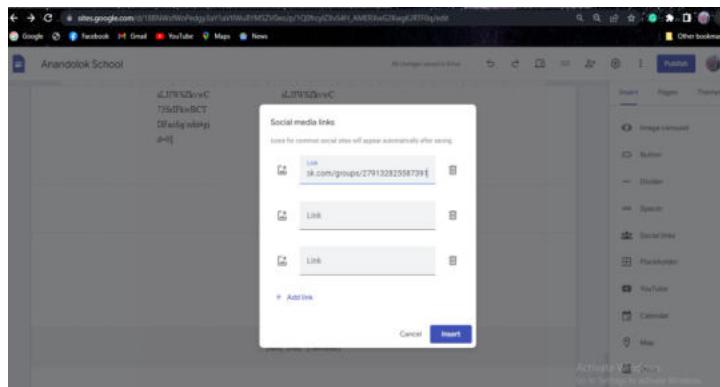


Image- 3.27: Screenshot of uploading the link to social media account

### Task 6: Uploading class routine and multiple images of a single event

The second page of the Class template is called Schedule. On this page, we will upload the class routine of grade-IX. For this, we will click Images in the insert option on the right side of the template and attach the image file of the class routine for grade-IX from the computer. For example, the screenshot shows that the annual plan and class routine of the Anandolok High School have been added to the Schedule page.

Image- 3.28: Screenshot of Schedule page after uploading the class routine of grade-IX

Again, the third page of the Class template is called Newsletter. Usually, the Newsletter is organized by inserting the images of events and programmes that happened in a month. At first, we will write the name of a month and year in the Textbox in Newsletter. Then we will upload the folder containing images of programmes of a month of our school in Google Drive using the same Gmail Id used during the sign-in to Google Sites. Then we will click on the Drive icon of the Newsletter page to attach the images. Now the images are visible on the page. For example, the screenshot shows four images of annual sports in March, 2023 on the Newsletter page

Image- 3.29: Screenshot of Newsletter displaying four images of annual sports in March, 2023

## Task 7: Publishing a Website

We have successfully designed a website. Now we will publish the website. To publish the website, we need to click on the Publish button on the Google site. If you want someone to edit your website before publishing, you need to click on the Share with other option on the left side of the Publish button. You may write someone's email Id in the box Add people and share the website with the person before you publish it. The website needs to be restricted so other people cannot edit it without permission, and the Publish site option should be public so that people can search and find the website.

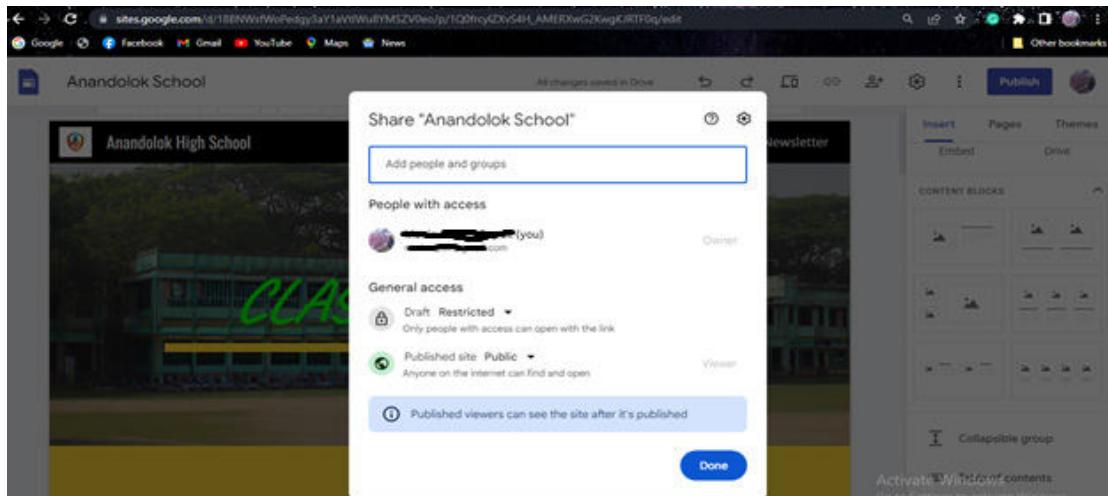


Image- 3.30: Screenshot showing edit, restriction, and search options of a website

Now, if you click on the Publish button, you will be suggested a web address. You may use the suggested web address, but you need to buy the domain if you want to change the name of the web address. To allow others to search and find your website, don't click the checkbox. Now click the Publish button below and we will be given Published notification. Clicking beside the Publish button will show different publish options. Again, by clicking on the View Publish Site, we can view our created website. We can type the domain name of the website in any address bar of any browser and find our website. For example, the given screenshot shows that the website (<http://sites.google.com/view/anandalok-high-school/home>) of Anandalok High School is viewed after searching with the domain name.

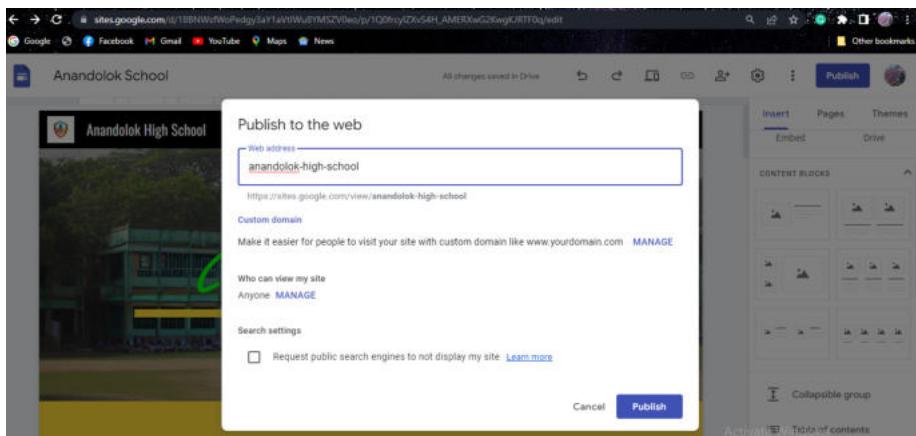


Image- 3.31:Screenshot showing different options before publishing

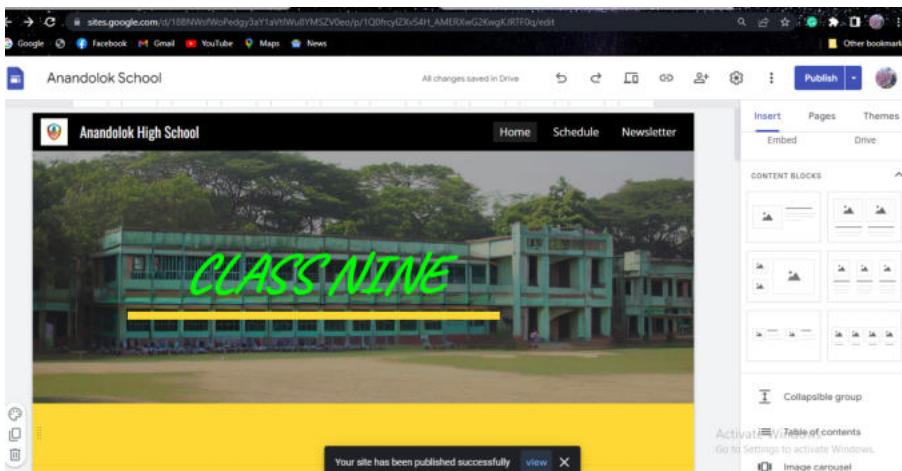


Image- 3.32:Screenshot showing notification after being published

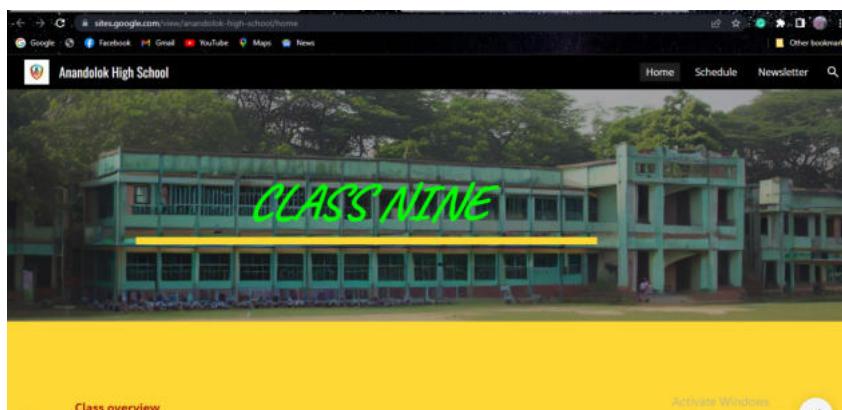


Image- 3.33:Screenshot of the website after searching with domain name

We came to know at the beginning that there are some platforms where a website can be created for free. In the previous sessions, we learned how to create a website using Google Sites. Besides, we may learn how to create a website using another platform called WordPress. WordPress is used globally to create websites. Many students and people of our country are earning a lot of foreign currency by outsourcing which involves uploading and maintaining websites made with WordPress. So, we can use WordPress to develop the websites of our institution or class to maintain transparency and accountability. We will build a website of our own using Google Sites or WordPress or any other platform.

## Session-8: Building Website with WordPress

WordPress is an open platform that can be used to build a website. It is possible to ensure transparency and accountability of any institution by attaching pages and menus to the website as per its needs.

For this, at first, we will create an account with our email, user name, and password. Later on, after logging in with email and password we need to create our own domain name as shown in the following image. We will see the possible website address list as per the domain name. From the list, we have to select a free domain.

The screenshot shows the WordPress dashboard's 'Choose a domain' section. A search bar at the top contains the text 'fulbaganschool'. Below it, three domain suggestions are listed:

- fulbaganschool.blog** (Recommended) - Free for the first year with annual paid plans (US\$22/year). A blue 'Select' button is available.
- fulbagan.school** (Best Alternative) - Free for the first year with annual paid plans (US\$28/year). A blue 'Select' button is available.
- fulbaganschool.wordpress.com** (highlighted with a red box) - Free. A blue 'Select' button is available.

On the right side of the screen, there are promotional messages and links:

- Get a free one-year registration with annual plan.
- Use the search tool on the domain you love, then select annual plan.
- We'll pay the first year's domain fees for you, simple as that.
- [Choose my domain later](#)
- Already own a domain? Connect your domain purchased to your WordPress.com site mapping or transfer.
- [Use a domain I own](#)

Image- 3.34: Choosing a domain name for free

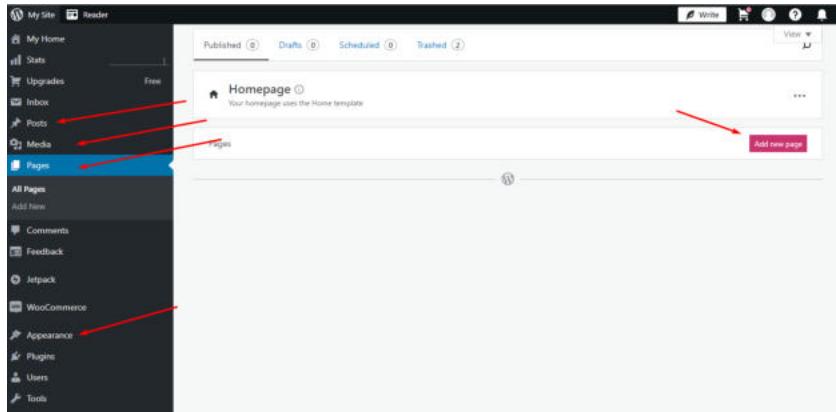


Image- 3.35: : Dashboard of WordPress

Every option allows us to customize the website. For the customization of the website, we need to save all the contents (image, word file, routine) beforehand.

We can click on Add new page button to add new pages where we can add all necessary information or contents as per the design of the page. We can update the website by clicking the Publish button after giving the title and uploading an image, or file. But we need to keep in mind that WordPress gives us limited storage facility to save contents.

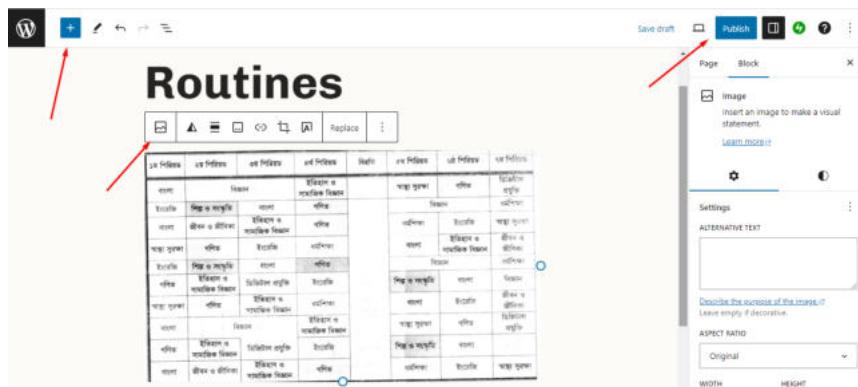


Image- 3.36: Content saving and website publishing

In the end, we will inform our teachers, friends, and family members about our website. Afterwards, we will upload our digital contents and notices on the website. We will inform others how we can take the opportunities to ensure transparency and accountability in such public service using digital mediums as well as how to provide them with different services. In the next class, we will inform everyone of all the information of our class through this website. This will ensure the transparency and accountability of our class activities. In this way, we can ensure transparency and accountability in other fields.



# Programming in Solving Problems

A great way to solve a real problem with a machine is to design a programme. For the machine to understand the steps of our solution, it is necessary to first design the entire programme in any one programming language that the machine can understand. Then the machine can work accordingly by following that programme. In this learning experience, we will see how we can solve a problem through programming if it happens repeatedly or needs to be solved repeatedly. In this experience, we will start working on programming and verify the effectiveness of it in solving problems using programming.

## Session-1: Introduction to Programme Design

The instructions given to a computer must be written in a language that the computer can understand. Any electronic device, including a computer, can only understand 0 and 1 but it is difficult for us to write down our instructions with only 0 and 1. The languages we humans use are not just made up of 0's and 1's. So, how will we communicate with computers? There are some languages, in which if we write the instructions following the conventions of that language, the computer can easily understand the instructions by converting that language into one that it can understand. These languages are called programming languages. People use Bengali, English, French, Latin, Spanish, etc. languages to talk to each other. There are also many different programming languages, for example - C, C++, Python, Java etc.



Image-4.1

If we learn any such programming language, we can give various instructions to the computer through that language. We will first write instructions in a specific programming language in a software application on our computer. Computers have a conversion system that converts the programming language instructions into machine code.

What is machine code? Basically, the binary code made up of 0 and 1 is called machine code, which our computer can understand. This conversion allows the computer to understand our instructions and follow those instructions to complete a task.

The conversion system of computer programming language can be of two types-

- A) In some conversion systems, if the instructions provided are all correct, all the instructions will be converted into machine code at once. This conversion process is called compiling and the software that converts is a compiler but if the compiler finds an error anywhere in the entire instruction, it cannot convert. Only if all the instructions are correct then the conversion can be done.

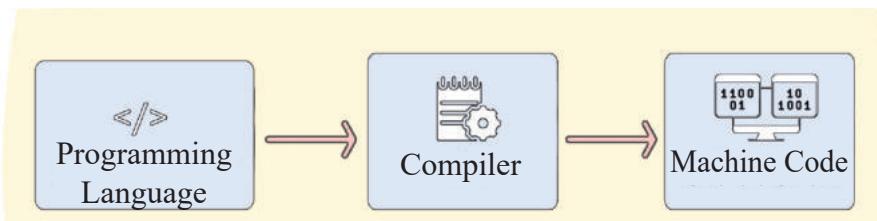


Image-4.2

- b) In some conversion systems, no matter how many instructions we give, they will not all be converted at once. One instruction at a time will be converted sequentially. This conversion process is called interpreting and who or what is doing the transformation is called interpreter. The interpreter will continue to convert instructions one by one. If there is a mistake in an instruction, it will stop after reaching that instruction.

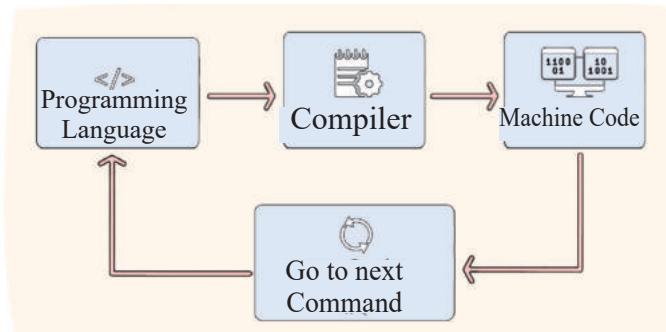


Image-4.3

Now, let us tick the right options in the following table:

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 by 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 that can be learned easily.

To write instructions in the Python language, we need to do 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-



Image-4.4

We will click on the options below the 'Install window' and 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 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-

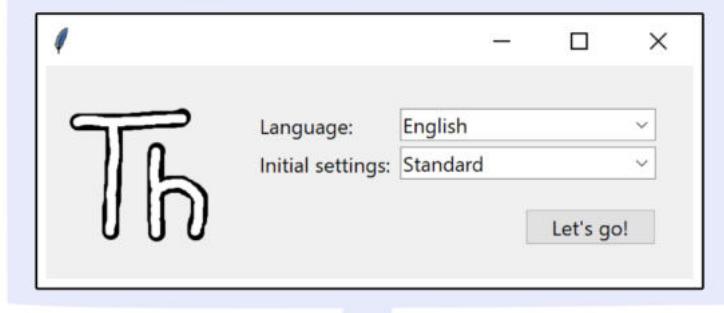


Image-4.5

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

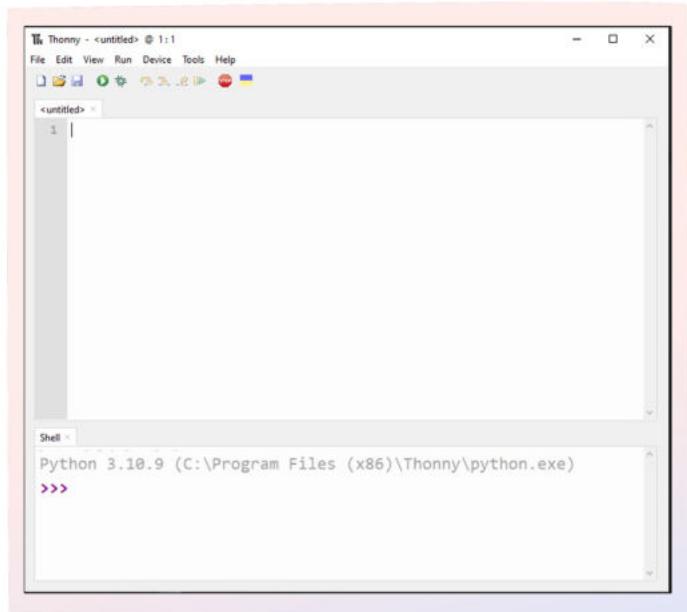


Image-4.6

6. Let us understand some important parts in this window:

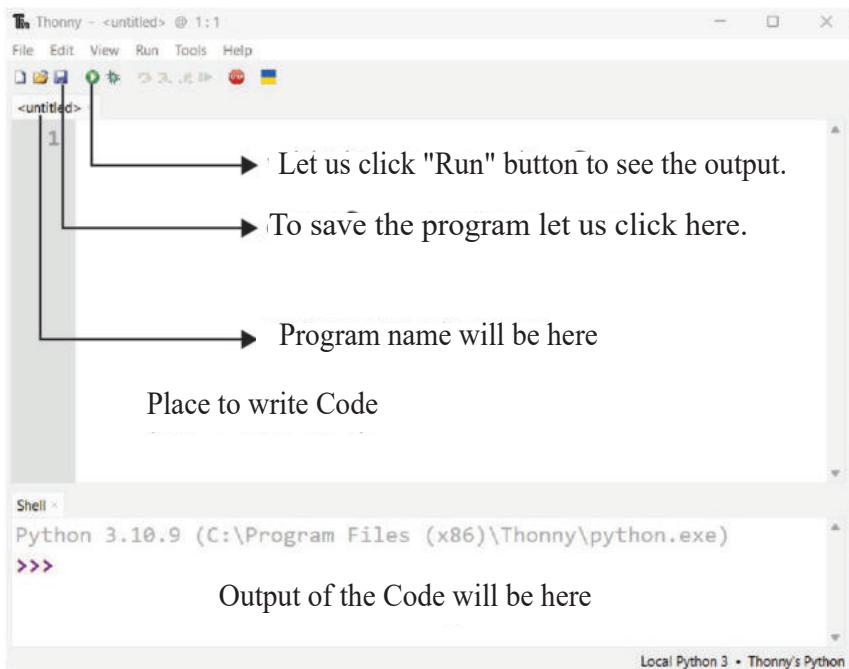


Image-4.7

7. Now let us do a task. We will write a programme that will print Hello World! as the output. To print something as 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!

We will Type:

```
print ('Hello World')
```

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

```
<untitled> * ×
1 print('Hello World!')

Shell ×
>>> %Run -c $EDITOR_CONTENT
Hello World!
```

Image-4.8

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.

```
Thonny - C:\Users\Administrator\Hello world.py @ 2:1
File Edit View Run Device Tools Help
Hello world.py ×
1 print('Hello World!')
2

Shell ×
>>> %Run -c $EDITOR_CONTENT
Hello World!
```

Image-4.9

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

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

`Print ('আমি এখন পাইথন শিখছি')`

Can you also display various texts like this?

In the following table, 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	
I read in class 9.	
Learning programming is a lot of fun.	

## Sessions 2 & 3- 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 –

- Firstly, the name of the variable should always be a single word. It means that we cannot write the name of the variable with multiple words. However, the variable names can be set 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 ^.

Correct naming of variable	Incorrect naming of variable
z1yan	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 us 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	
tiigeeeeer	
Robotics learning	

Also, to assign a value to a variable, we use the equal (=) sign. This is called value assignment. Let us 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-

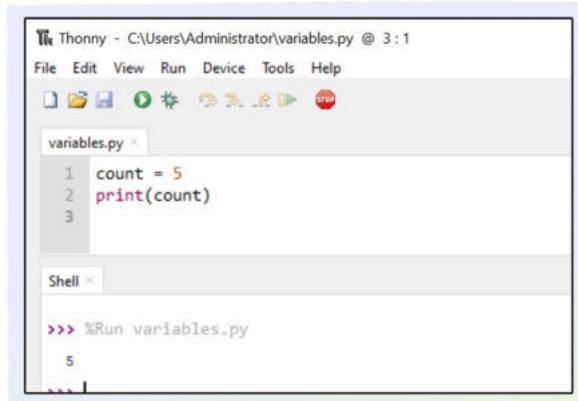


Image-4.10

It means that 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)
```

Let us write the output of this programme in the box below-

Note that we have repeatedly 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 do not always store the same 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 is 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 us 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 us 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 stored in the variable 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 the information stored in the variable named my\_variable is 23.07, and it is included in the float datatype.

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

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

## Session 4 - Let us 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 will we do? It is very easy to do using the `input()` function.

If we write it like this –

```
my_input = input()
```

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

Let us do a task. Take an input in a variable and print it. Writing such a programme is very simple. Let us 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. 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 is easy to convert `int`, `float`, and `str` among the four main data types. By using a single function, this can be done.

Data Type	Function to convert to that data type:
<code>int</code>	<code>int()</code>
<code>float</code>	<code>float()</code>
<code>str</code>	<code>str()</code>
<code>bool</code>	<code>bool()</code>

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 such 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, if we 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 an input:**

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

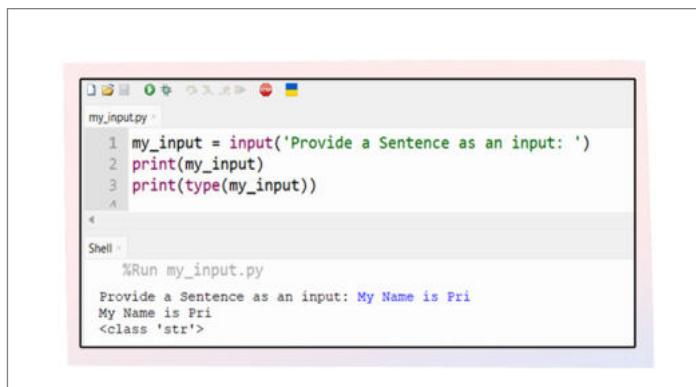


Image-4.11

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:

```
my_input.py
1 my_input = int(input('Write down an integer number:'))
2 print('This is your integer number: ', my_input)

Shell
>>> %Run my_input.py
Write down an integer number:2024
This is your integer number: 2024
```

Image-4.12

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 ‘ ’ or single quotes.

Now, let us 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 5 -Let us Perform Addition, Subtraction, Multiplication, Division, and Modulus with the 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, respectively.
/	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
```

Previously, we saw 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 in the following line:

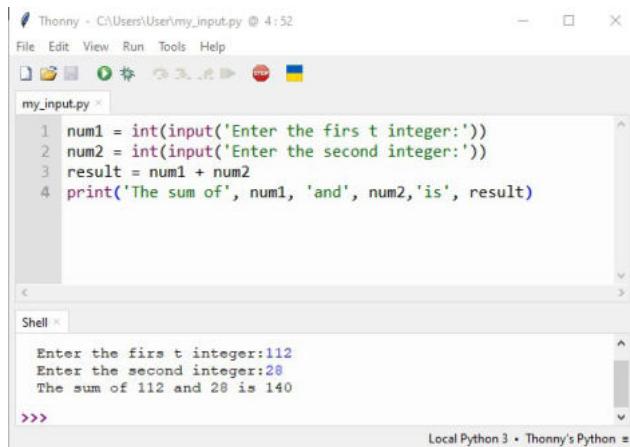
```
result = num1 + num2.
```

Lastly, 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 of addition?

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 inputting two numbers:



```
Thonny - C:\Users\User\my_input.py @ 4:52
File Edit View Run Tools Help
my_input.py
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)

Shell < ...
Enter the first integer:112
Enter the second integer:28
The sum of 112 and 28 is 140
>>>
Local Python 3 • Thonny's Python =
```

Image - 4.13

Can you design a programme of multiplication in a similar way? First, write the pseudocode below to take two input numbers and print their product.

Now, design a programme following your created pseudocode below 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.

### Session 6: Using Conditions in Python

From the previous sessions, we have got some basic ideas on Python programming and learned about variables. Now we will learn how to use different conditions in Python programme. At the end of this experience, we will solve various problems, and as preparation for that, we are learning these things about Python programming. So, let us start today's session.

Many times in real life there are some events where the result depends on some condition. Suppose there is a sports competition in our school. The first one to finish the 100-meter race will be the first. Then whoever comes next will be second. Then whoever comes next will be third. And then those who come after that will be encouraged to do better next time. So, there is a condition here. According to the condition, everyone cannot be first or among the best three.

The condition here can be written as follows-

If I finish the race first: Then I can be first

Or if I finish after that: Then I can be second

Or if I finish after that: Then I can be third

Otherwise: I will try harder next time



Image - 4.14

This is what we wrote - while writing a programme, the condition is initiated by the word ‘if’.

In the programme, if we give a condition by writing ‘if’, the programme will check whether the condition is met or not. If the condition is met, it will perform the tasks written under if.

For example, if we write such a programme –

```
if my_variable == 5:
```

```
print('Value is five')
```

It means that we have given a condition with if that my\_variable must be equal to 5. Only then will the condition of if will be met. If the condition is met, that we will print and tell Value is five

Here one thing to keep in mind is that when we want to store some information in a variable, we write like this-

```
my_variable = 5
```

Because = is an assignment operator, which assigns a value or stores it in a variable.

On the other hand, when we check whether the condition is met or not, we cannot check the condition by giving a = sign. Then we have to give == sign. == sign means that the values on the left and right of this sign are being checked for equality.

That means when we write my\_variable == 5, it is being checked whether the value of my\_variable is equal to 5 or not. Only when the value of my\_variable is equal to 5 will the condition of if be met and then the instructions written after : sign will be followed.

Again, if the condition of if is not met, it will look for whether there is any other different condition or not. For this, we will write elif to give a different condition.

We can give multiple elif conditions if we want.

For example, see the following programme –

```
my_variable = 3
if my_variable == 5:
    print('Value is five')
elif my_variable == 4:
    print('Value is four')
elif my_variable == 3:
    print('Value is three')
```

Here, first of all, the condition of if will be checked whether the value of my\_variable is 5 or not. If the value matches, then if will complete its task, but it will not check the next conditions. If the condition of if is not met, then it will go to the next elif and check whether the value of my\_variable is 4 or not. If the condition is met this time, it will not check the next elif but again, if the condition of elif is not met, it will go to the next elif. In this way, the condition checking will continue until the condition is met or all the conditions are checked but notice that after writing if my\_variable == 5: in the next line we did not start writing the next part right below if. We left some blank space. Actually, here are four blank spaces of equal size. Then the code was written. This is called Indentation. This is very important in Python. If we do not give proper indentation, the Python code will not run, and we will see an error. Whenever we write any line under if, they must be written after four blank spaces. That's why we wrote

```
if my_variable == 5:
    print('Value is five')
```

Instead of writing this, if we wrote-

```
if my_variable == 5:
    print('Value is five')
```

Then it would be wrong and the code would not work.

Similarly, indentation must also be followed at the time of elif. So we wrote-

```
elif my_variable == 4:
    print('Value is four')
```

Again, what will we do if none of the conditions are met in a programme? For that, we can keep an **else** if we want. If none of the conditions are met, the command given inside **else** will be accomplished. For example, if we write the following programme –

```
my_variable = 2
if my_variable == 5:
    print('Value is five')
elif my_variable == 4:
    print('Value is four')
elif my_variable == 3:
    print('Value is three')
else:
    print('No condition was true')
```

Notice that even after writing **else:** we had to maintain indentation. Thonny software will automatically take care of indentation as needed when we write Python programmes. We do not have to worry too much but when writing programmes on paper or in books, we must always pay attention and give indentation as needed.

Let us see how we can check conditions and get output at different steps of such a programme. For this, let us fill in the table below for this programme –

What is the actual value of the `my_variable`?

First condition verification -

Is the value of `my_variable` 5?

If the answer is yes, we will print -

Value is 5

Then we stop.

If the answer is no, we move on to the next step.

Second condition verification -

Is the value of my\_variable 4?

If the answer is yes, we will print -

Value is 4

Then we stop.

If the answer is no, we move on to the next step

Third condition verification -

Is the value of my\_variable 3?

If the answer is yes, we will print -

Value is 3

Then we stop.

If the answer is no, we move on to the next step.

If no condition is met, we will do the task within else

So, we will print – No condition was true

**Our final decision -**

In this way, we can solve real-life problems using if, elif, else.

Let us look at the following programmes and write down the output of the programmes in the table –

**Programme 1**

```
running_time = 40
if running_time >= 60:
    print('Great! Have a healthy routine like this everyday')
elif running_time >= 40:
    print('Good job! Keep running everyday')
else:
    print('You need to run more everyday!')
```

**Output:****Programme 2**

```
today_temperature = 15
if today_temperature >= 30:
    print('It is very hot today!')
elif today_temperature >= 20:
    print('Temperature is tolerable today')
else:
```

**Output:****Session 7 - Let us Create a Calculator Programme**

In the 5th session, we learned how to calculate the sum, difference, etc., of two input numbers.

We did these using various programmes. We approached it by thinking of different

programmes for addition and subtraction separately. Let us think of a calculator.



Image - 4.15

Have you ever seen a calculator that can only perform addition but cannot calculate subtraction or multiplication? To use it like this many calculators were needed!!! This is not a good solution. If we can design a calculator or device where we can perform all kinds of calculations; addition, subtraction, multiplication, division, etc., wouldn't that be great?

Similarly, it is better to have one programme where we can do all these tasks together instead of having many different programmes for each task.

That is why we are now thinking of designing a programme where we can perform all these tasks together.

We may recall how we created programmes in the previous sessions.

First, we took two numbers as input. We knew which operation we wanted to perform on the numbers, whether it was addition, subtraction, or multiplication. Then we did that calculation in another variable and finally printed the result of our calculation.

When we want to perform multiple operations like addition, subtraction, etc. in the same programme, we need another input that tells us what operation we want to perform at that moment, whether it is addition, subtraction, multiplication, or division. To do this task, we can write the following code:

```
op = input("Enter the arithmetic operator [+,-,*/, %] :")
```

In this line, we have taken a variable named op.

In the op.variable, we have given input on what operation we want to do among addition, subtraction, multiplication, division and modulus.

Since we have several options for performing calculations, we need to give a Condition in the programme. We have already seen in the 8th session how to check conditions using if, elif, and else in various steps.

Let us do a task. Let us create a pseudo code where we will first take two numbers as input and then take a symbol as input (which will help us understand what we want to do among addition, subtraction, multiplication, division, and modulus). Then, we will check the condition and get the result accordingly, and finally, we will print the result. Let us write a pseudo code in the following table:

A = First digit input

You have certainly kept the scope in your pseudo code to verify conditions, have not you? During programme designing, we have to verify conditions according to the following model:

```
if op == '+':
    result = num1 + num2
elif op == '-':
    result = num1 - num2
elif op == '*':
    result = num1 * num2
elif op == '/':
    result = num1 / num2
elif op == '%':
    result = num1 % num2
else:
    print('Operator is not correct. Result can not be printed.')
```

Every time it is verified here which sign is equal to the value of op.

```
if op == '+':
    result = num1 + num2
```

That is to say, it is first verified whether we have given + input in op. If the condition is fulfilled, we will calculate the sum of two numbers in the **result** variable. But if the condition is not fulfilled, we will go to the next condition. In this way, we will run our whole programme. On the other hand, if no condition is fulfilled, that will mean we cannot give the correct sign as input. Then, the line in the **else** will be printed.

Now, if we write the whole programme, it will take the following shape:

```
num1 = int(input('Enter the first integer: '))
num2 = int(input('Enter the second integer: '))
op = input('Enter the arithmetic operator [+,-,*,/,%,] : ')
if op == '+':
    result = num1 + num2
elif op == '-':
    result = num1 - num2
elif op == '*':
    result = num1 * num2
elif op == '/':
    result = num1 / num2
elif op == '%':
    result = num1 % num2
else :
    print('Operator is incorrect. Program will crash now.')
print(num1, op, num2, '=', result)
```

Take a look into how this programme is similar and dissimilar to your pseudo code.

Write a comparison between your pseudo code and this programme in the following table-

Have you understood what type of output will be found if you give different inputs every time while running the above programme? Verifying in this way, let us fill up the following table:

```
num1 = 12
num2 = 8
op = *
```

Verification of the first condition-

Is the value of op + ?

If the answer is yes, we will calculate the subtraction of the two numbers.

Then, we will print the result.

If the answer is no, we will go to the next step.

Verification of the second condition-

Is the value of op - ?

If the answer is yes, we will calculate the subtraction of the two numbers.

Then, we will print the result.

If the answer is no, we will go to the next step.

Verification of the third condition-

Is the value of op \* ?

If the answer is yes, we will get out the subtraction of the two numbers.

Then, we will print the result.

If the answer is no, we will go to the next step.

Verification of the fourth condition-

Is the value of op / ?

If the answer is yes, we will calculate the subtraction of the two numbers.

Then, we will print the result.

If the answer is no, we will go to the next step.

Verification of the fifth condition-

Is the value of op % ?

If the answer is yes, we will find out the modulus of the two numbers.

Then, we will print the result.

If the answer is no, we will go to the next step.

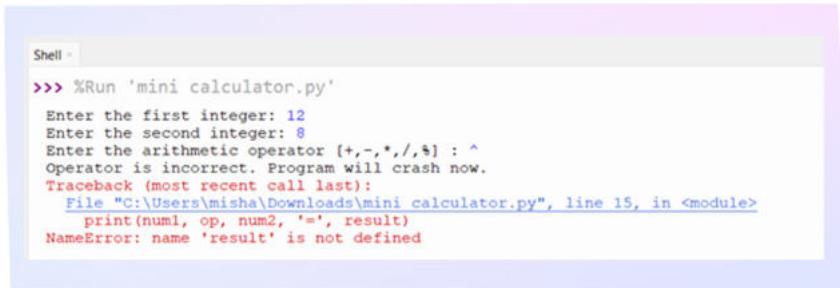
If no condition is fulfilled, we will work on the else.

So, we will print- Operator is incorrect. Programme will crash now.

Then our programme will crash.

Our final decision-

It is mentionable that correct input is the precondition for the right output. If we give the wrong input in op variable, our programme will crash and show the following word picture:



```

Shell >
>>> %Run 'mini calculator.py'
Enter the first integer: 12
Enter the second integer: 8
Enter the arithmetic operator [+,-,*,/,%] : ^
Operator is incorrect. Program will crash now.
Traceback (most recent call last):
  File "C:\Users\misha\Downloads\mini calculator.py", line 15, in <module>
    print(num1, op, num2, '=', result)
NameError: name 'result' is not defined

```

Image - 4.16

This is the risk when there is an error in the programme. Such kind of problems may arise if error happens in input or programme designing.

Is there any other risk while you are making this programme?

If there is risk, write down in the following table:

Around us, there are many real problems that can be solved on the basis of any condition. Suppose, you are making a garden. If there is enough water in the soil, you will not water the plants. But if the soil does not have enough water, you will water the plants. That is to say, watering plants depends on the proportion of water the soil has. This can be also written as pseudo code.

A = the amount of water in the soil

If A = small amount of water:

We will water the plants

Or If A = huge amount of water:

We will not water the plants

## Session 8: Let us Use Loop to Do Tasks Repeatedly

In the last few sessions, we learned a lot about Python programming. We Learned how to write programmes in Python, learned what variables are and how to use them, and learned to write programmes using conditionals. In this session, we will learn another new topic of programming which is loop. We do many kinds of work throughout the day. Is there any task in our life that we have to do over and over again? Sometimes we get bored if we do the same thing over and over again but we still have to do some work continuously.



Image - 4.17

For example, every day we have to brush our teeth, go to school, eat three meals, sleep and so much more. Now let us write a list of things in the table below that we have to do every day in a regular basis.

Works that are repeated in our lives
1. Brushing teeth

Do we have to learn to do the same thing every time when we do it over and over again? No, we do not. Once we learn to do one thing, we can do the same thing over and over again using that learning, can't we? Programming a machine follows the same process. If we have to do the same thing 50 times in a programme, there is no need to write that line in consecutive code 50 times. Once it is written, it is possible to run that line repeatedly according to certain conditions.

Suppose, we are asked to print every integer from 1 to 5.

```
print(1)  
print(2)  
print(3)  
print(4)  
print(5)
```

What if we are asked to write from 1 to 1000 in this way? To print a number every time, we have to write 1000 lines! We are only printing one number every time. So, we are doing the same thing 1000 times. In other words, the same thing is being repeated here. When the same work has to be done over and over again, it can be easily designed according to certain conditions in programming using loops. Loop means to happen again and again.

There are two types of loops more common in Python –

While loop

For loop

In this learning experience, we will learn about the while loop and in the next class learn about the for loop. There are basically two parts to the while loop:

- Condition - If a certain condition is met, we will enter the loop. If the condition is not met, we will skip the loop and move on to the next part of the programme.
- Task - All we will do inside the loop if the condition is met is our task.

We have worked with if before in Python. Even within if, we could do certain things if a certain condition was met. If the condition was not met, the action inside the if would not be done. If the condition of if was fulfilled, the task would be executed only once. Once the given condition of the while loop is met, the task will not stop. Our condition will continue to be verified over and over again. As long as our conditions are met, the work said inside the continuous loop will continue to be done. Whenever the conditions are not met, we will move from the loop to the next part of the programme.

Let us take a look at the steps on how to write a while loop:

1. First, we will assign a value to a variable.

For example, suppose,

`i = 1`

2. Then, we will write While and our specific condition and then put a : (colon)

Suppose, as long as the value of i is less than 5, our loop will run. Then we can write,

`while i<5:`

3. Then we will write the specific task we want to do. For example, if we want to print the current value of i every time inside the loop, we can write-

`print(i)`

4. Finally, we will change the value of the variable on which we have selected the condition in the loop. If we do not change the value of the variable, our condition of the loop will continue to be fulfilled forever. As a result, our loop will run indefinitely, and we will never be able to get out of the loop. So, we must change the value of the variable.

For example, suppose we want to increase the value of the variable by 1 every time. Then we can write-

`i=i+1`

Then our whole syntax of while loop will look like this –

```
i=1
while i<5:
    print(i)
    i=i+1
```

You have to be careful that in Python you have to maintain indentation while writing loops. So we wrote the lines under this loop with four spaces blank after writing **while i<5:**.

Now, let us do one thing. Fill in the table with our output in every step of this code.

Code line
i=1
Currently the value of i = 1
while i<5:
Currently the value of i = 1
Is the condition met : yes
print(i)
Printed the value of i: 1
i=i+1
Currently the value of i = 2
while i<5:
Currently the value of i =
Is the condition met :
print(i)
Printed the value of i:
i=i+1
Currently, the value of i =
while i<5:
Currently, the value of i =
Is the condition met :
print(i)
Printed the value of i:
i=i+1
Currently, the value of i =

while i<5:

Currently, the value of i =

Is the condition met :

Whenever the condition is not met, we will come out of the loop and not perform any task inside the loop.

So, what output have we got from the whole code? Let us write it in the following table-

Notice that we initialized the value of i to 1. We incremented the value of i by 1 each time and we gave the condition  $i < 5$ . So, our programme printed all the integers starting from 1 to 5.

We got the following outputs-

1

2

3

4

If we had specified  $i < 11$  then all integers less than 11 would have been printed.

Now, let us find out the output of the following programmes-

Programme	Output
<pre>i=4 while i&lt;20:     print(i)     i=i+4</pre>	
<pre>i= 2024 while i&gt;2018:     print(i)     i=i-1</pre>	

### Sessions 9 & 10: Finding Solutions to Problems

At the beginning of this experience, we knew that at the end of this experience, we would solve a problem with programming. To prepare ourselves for that task, we first got basic ideas about Python programming. In today's session and the upcoming session, we will try to identify a problem and solve it with Python.

First of all, we will select a problem, which can be solved by using inputs, variables, conditions, and loops. We will also work as a team in this case. Our teacher will divide us into a few groups. We can think about specific condition for a specific calculation. Again, we can think about a calculation which has to be done repeatedly. We can think of different situations like this and discuss them with our team. We will select one of these situations and then start working.



Image - 4.18

Before designing the programme, we will make a pseudo code to solve the problem

The fixed real problem for our team

The list of input that should be taken in the programme

What mathematical operations have to be done?

What mathematical operations should be done?

The pseudo code made by us

At this stage, we will design a Python programme according to the pseudo code. Of course, we have to use mathematical operations input(), print(), if, elif, else, while in our programme.



Image - 4.19

Let us write down the Python programme designed by us in the following table.

## Session 11-Identifying Risks for and Solutions to Different Wrong Inputs

If we give the wrong input 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 programme designing, we have to be careful about how we can identify different risks and provide solutions.



Image - 4.20

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

Let us 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
1		
2		
3		
4		
5		

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



Image - 4.21

Let us write down the main part 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 us change our programme according to the work plan and run our new programme on computer and also write it below:

### **Session 12-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 can solve the real problems fixed by other teams. Moreover, we will prepare a brief report on it and write it down in the following table:

The fixed problem of the team whose programme we are verifying-

The designed programme of the team for solving the problem-

The list of different inputs, conditions, and loops used in this programme-

The received outputs from the programme at different stages-

Identification of the errors in case of different inputs in the programme

Advice from our team to solve the errors-

Our opinion regarding the feasibility of the programme to solve the selected problem-

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



Image - 4.22

So, in this experience, we have gained the idea of programme designing. We have also got an idea of programme designing using various inputs, conditions, loops 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. Furthermore, we have studied the viability of the solution. Thus, we can solve different problems by using programming whenever we need.

## Learning experience 5



# Let Us Build a Network

We all know about network. The most common network we use nowadays is the Internet. As users, the information we want through the internet is available to us within moments. The computer (device) has to go through several steps to deliver this information to us. From this experience, we will learn about those stages of computer network. Then we will create a network between two computers in our school and share resources (files, hardware etc.).

### Session 1: Transferring Files from one Device to Another

We will start today's session by solving a problem. Let us read the following story and try to figure out a way to solve Jahin's problem.

Jahin, a student of class nine is making a school video report for the school's annual cultural program. The video was edited by him using a computer in his school's computer lab. Jahin has to take the video on the laptop kept in the school auditorium to present it in front of everyone on the day of the programme but the size of the video file has become so large that it is not possible to transfer it using any pen drive. Jahin does not have any hard drive to transfer the video to. Jahin is now thinking, how he will present the video in front of everyone!

What would we do in a situation like Jahin? Let us discuss in pairs and write what ways we could find out in table 5.1.

Table 5.1: Ways to transfer video from one computer to another

1.
2.
3.
4.
5

We could figure out several ways to solve Jahin's problem. How effective are these methods and what is the way to transfer videos or any other large files from one computer to another without a pen drive or hard drive?

The easiest way to exchange any file between different computers, laptops, mobile phones in our home or school is to connect the devices through a network. We will learn how to do that through this learning experience but what else can be done through the network? Let us try to determine through group discussion what are the necessities of network in our life and write in table 5.2-

Table 5.2: Necessity of network in our life

1.
2.
3.
4.
5

### **Session 2: Exchange of Information over a Network**

In the last session, we learned about network requirements and we also learned that information or files could be easily exchanged between devices connected through a network. Do we know how this network of computers or this digital network works? In today's session, we will try to get details about how computer network works step by step. This knowledge will be useful to us later in creating the network.

Let us first try to figure out how the network works by discussing ourselves and write our ideas in Table 5.3:

Table 5.3: Methods of exchanging information over networks

--

We follow different steps for the things we do in our daily lives. We reach our goal by working step by step. The process of exchanging information through network is also done in various steps. A network has certain layers through which information is exchanged over the network. Let us try to understand this layered design of network with the example of post office-

If we want to send a letter to any of our friends through postal communication, what will be our steps?

Our tasks will be –

Step 1. Putting the letter in an envelope and take it to the post office.

Step 2. Writing name, address of the sender and the recipient on the envelope.

Step 3. Reaching of the envelope to the recipient's address through various post offices.

Step 4. Handing over the envelope to the recipient.

Step 5. Opening of the envelope by the recipient and taking out the letter.

Here, the work of each step is dependent on the work of its previous step. If the sequence of steps is changed, the work of the postal department will not be completed properly. Note that the work of each step is determined separately, and even if there is a change in the work of one step, there will be no problem in the work of the other step. For example, whether an envelope or a jute bag is used for sending a letter has nothing to do with the post office authority's job of sending the bag. Again, whether the post office uses a train or a bus to send the bag has nothing to do with the recipient receiving the envelope.

Again, there are some specific rules for doing all the steps here. These rules are usually called protocols. For example, the sender's name-address should be written on the left side and the recipient's name-address should be written on the right side. There are even rules on what kind of string or rope to tie the packet depending on the size of the packet.

Network functions are similar to these functions of the postal department. Let us look at the table below and find out the meaning of two important words related to network functions and write in the right-hand column of table 5.4 which functions they relate to in the postal department in the above example:

Table 5.4 :

In case of network operation	In case of work of postal department
<p><b>1. Layer:</b> Each step in which data passes through the network from one device to another has specific responsibilities, and changes in any step do not disrupt the work of other steps.</p> <p><b>2. Protocol:</b> Rules for data exchange between devices connected to a network. Different protocols can be used at different layers as per requirement.</p>	<p>1.</p> <p>2.</p>

In the next class we will learn how information is exchanged through layer and protocol of this network

### Session 3: Different Layers of Network and Their Functions

In the last session, we got some idea about how the network works. Today we will learn about different layers of network and their functions. By knowing about these layers of the network, we can better understand the way information is exchanged through the network.

At the beginning of this session, we will learn about the OSI framework and the TCP/IP protocol that defines the network layer concept.

<p><b>OSI Framework:</b> Open Systems Interconnection or OSI is basically a conceptual framework for explaining the working of network systems. It is developed by the International Standards Organization (ISO) and is divided into 7 layers. These layers are – physical, data link, network, transport, session, presentation and application layers.</p> <p><b>TCP/IP Protocol:</b> Transmission Control Protocol/Internet Protocol or TCP/IP is basically a set of protocols that are actually used to connect various network devices to the Internet. TCP/IP is divided into 4 layers. These layers are – network access, network, transport and application layer.</p>
---

If we compare the working of layers of OSI framework with the work of postal department, we can easily understand the work of each layer.

Let us go back to the example of mailing a book to a friend from last session –

To send a letter to my friend, I would put the letter in an envelope, write the friend's address on the envelope, attach a postage stamp and drop it in the mailbox. The postman will take the letter from the mailbox to the post office. There, he will look at the address written on the envelope and decide how and by which means of transport, the letter should be sent to that address. After sending the letter, when it reaches the post office according to the recipient's address, the work will start again in reverse. The letter will be unloaded from the carrier, the address written on the letter will be looked at and a postman will be fixed to deliver the letter. The postman will then take the letter to my friend's address, my friend will receive the letter and open the envelope and read the letter.

In this example, letters, envelopes, postage stamps, post offices, recipient addresses, and the means and techniques used to send letters can be compared to the functions of a layer or layers of the OSI framework. We will get an idea about the working of layers from table 5.5.

Table 5.5: Comparison of sending letters through post office with the function of different layers of OSI framework

OSI layer	Work	Comparison with post office
Application	Helping applications (eg, messengers, browsers, etc.) use the network	Writing paper, pens and various tools
Presentation	Binary conversion of data, data compression, encryption, etc.	Various changes to the written letter as required. For example, if there is a fear that someone else might read the letter, code words instead of original words can be used.
Session	Management of continuous data exchange between two devices over a fixed period of time	Such arrangements are not generally observed in letters sent through the post office
Transport	Data exchange from process (application running on device) to process, error control, flow control, breaking data into segments etc.	Reaching of the letter at the friend's hand after reaching the friend's address from me

Network	Data exchange by determining the appropriate path between the sender and the receiver	The letter reaching the friend's address through proper route from my address
Data link	Data exchange from one device to another device included in the local network, error control, flow control, etc	Local contact in route, such as from the sender's address to the first post office, or from one post office to the next post office, or from the last post office to the recipient's address.
Physical	Connecting the devices by physical medium (wires, optical fibers etc.) and exchanging data, implementation of network topologies, etc.	Route (air/river/road etc.) and medium (aircraft, rail etc.) of the letter

Now let us look at a diagram of how information or data travels from one device to another through the layers of the OSI framework.

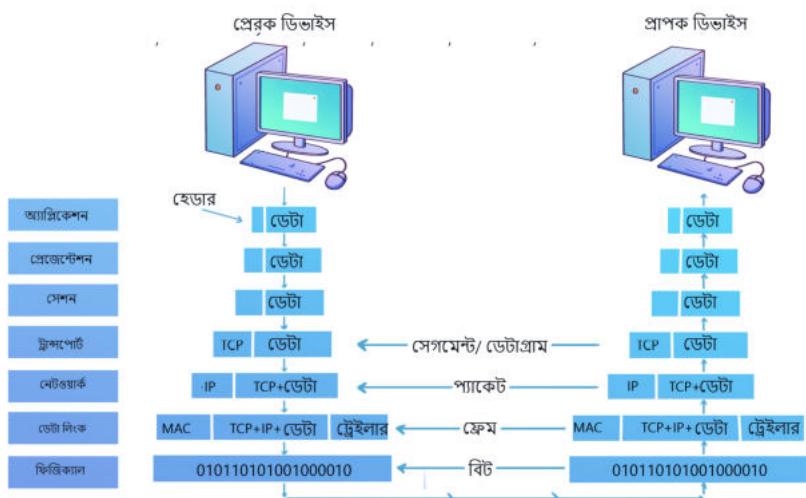


Image 5.1: Data flowing through the seven layers of OSI

What do we understand by looking at the image? What is happening in which layer here? Discuss in pairs what we understand and write it in Table 5.6:

Table 5.6: Data transfer from sender to receiver device through layers

Layer	Sending device	Receiving device
Application layer		
Presentation layer		
Session layer		
Transport layer		
Network layer		
Data link layer		
Physical layer		

Now let us know how the OSI layer actually works.

As the original data sent by the sender moves down the OSI layer, various headers or trailers are added. These headers or trailers are required for the functioning of protocols at different layers. Similar work is done in the post office. The sender writes the name-address as a header on the original letter or packet. The post office or the transport service provider seals it with various information or gives a tracking number. Thus, the data reaches the lowest layer i.e. physical layer.

At the physical layer, the binary bits are converted to analog, optical, etc. signals based on the connection medium. When this signal reaches the destination device, the exact opposite process occurs. The physical layer of the destination device converts the received signal back into binary bits. These bits then flow progressively through the upper layers to reach the receiver.

So, we got an idea about the working of layers of OSI model. The 4 layers of TCP/IP are equivalent to the 7 layers of the OSI model. The relationship between the layers of the TCP/IP and OSI models can be easily understood from Figure 5.2.

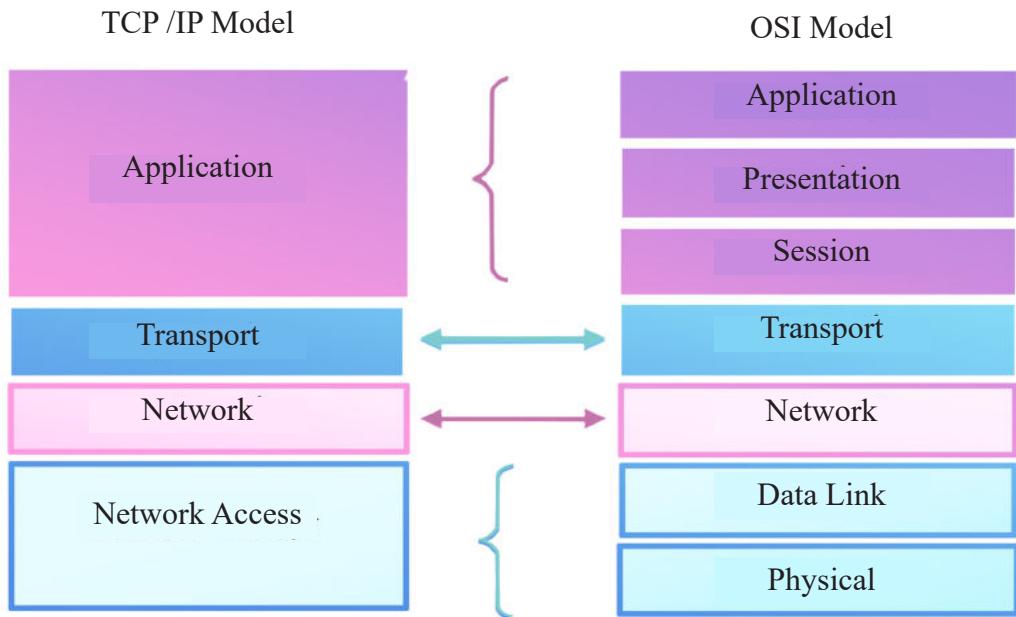


Image 5.2: Comparing various layers of OSI and TCP/IP models

In later grades we will get a detailed idea of the functions of OSI and TCP/IP layers.

### Session 4: Networking via cable

We know that connecting two or more devices to a network requires a physical medium which can be both wired and wireless. Besides, we need various types of addresses like IP address, MAC address etc. to identify these devices in the network. We will learn about these addresses in the next session. Now let us learn about data exchange through wired media.

Three types of cables are shown in the figure below. Among these, optical fiber can transmit data at the fastest speed, as it converts data into light signals and reaches the destination. Coaxial cable is the second fastest cable after optical fiber. Twisted pair cable is the slowest. Although both these cables convert data into digital signals. Again, in terms of cost, twisted pair cable is the cheapest and optical fiber is the most expensive.

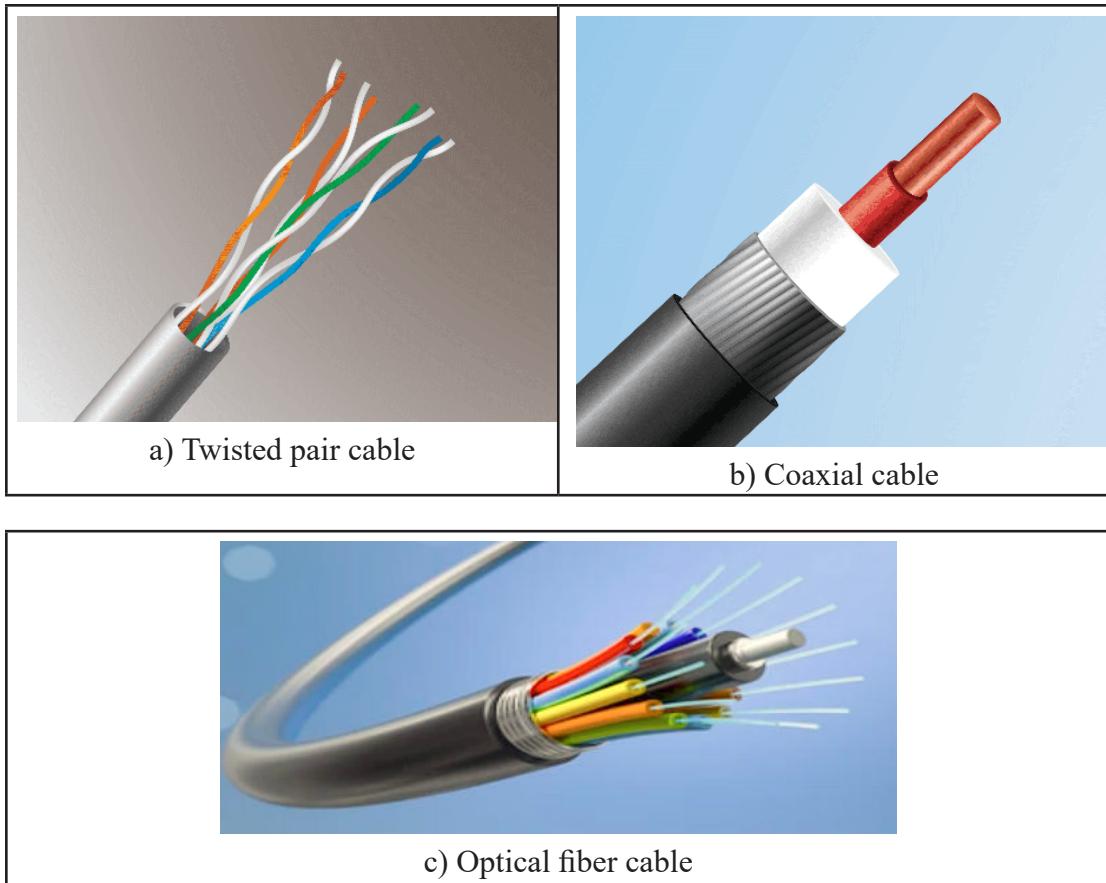


Image 5.3: Different types of cables used in networking

Now let us write in table 5.7 which type of cable is suitable where and why -

Table 5.7: Areas and reasons of use of different types of cables

Field	Suitable cable	Why suitable
1. On a relatively slow home LAN		
2. On a company high-speed LAN		
3. In the telephone network		
4. On CCTV		

Then we got some idea about different layers of network and cables used to exchange data through network. From the next session we will start the practical tasks of creating a network and in the last session of this experience we will create a network by connecting two computers.

### Session 5: Let Us Find the IP Address

Let us think about how we send a letter to a friend. As the recipient's address we provide his name, district, police station, village etc. Accordingly, the letter reaches the addressee i.e. our friend. Similarly, an address is required to exchange information from one device to another on a network. This address is the IP address.

In today's session, we will learn how to find out the IP address of our device.

An IP address is a numerical address used to uniquely identify each device or network connected to the Internet. It is usually assigned by an Internet Service Provider (ISP) and is used to identify a device on a global network (e.g., the Internet).

Let us find the IP address of our device.

We will find the IP address in case of Windows operating system. However, the task can be accomplished using similar commands on other operating systems as well.

Step 1: Pressing the Windows logo key from the keyboard to type something or clicking on search will bring up the search bar. First, type cmd in the Windows search bar and press Enter. This will bring up the command prompt on the screen. Note that the search bar may be different depending on the operating system.

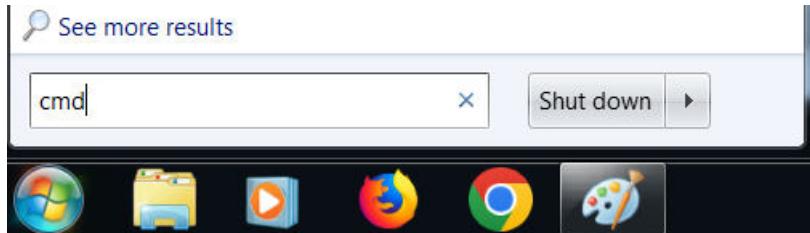
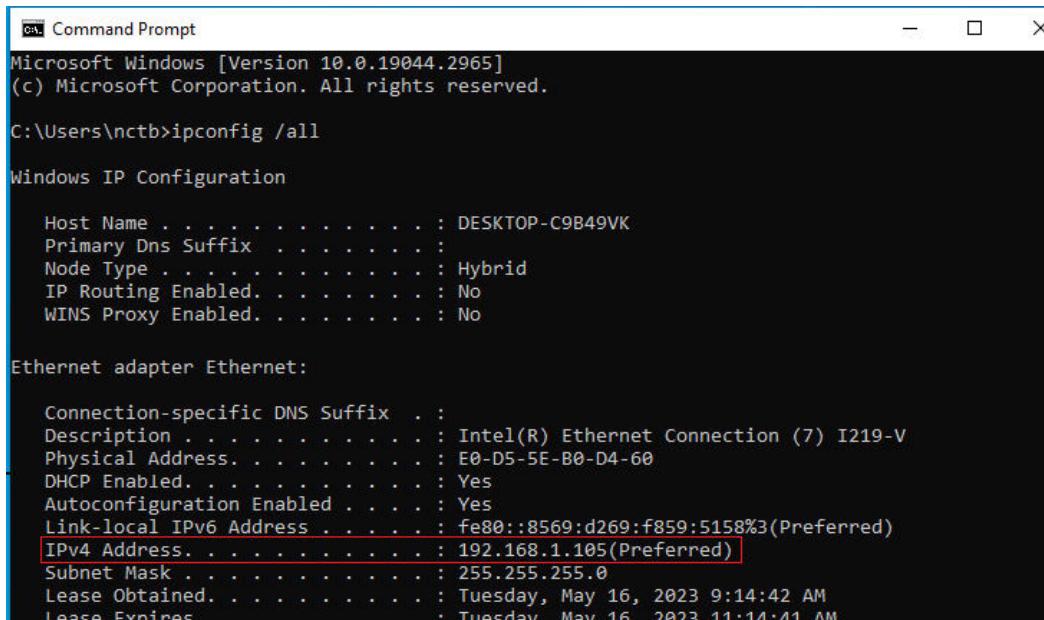


Image : 5.4

Step 2: In the Command Prompt window, type ipconfig /all and press Enter. This will result in an output similar to the following screen.



```

C:\Users\nctb>ipconfig /all

Windows IP Configuration

Host Name . . . . . : DESKTOP-C9B49VK
Primary Dns Suffix . . . . . :
Node Type . . . . . : Hybrid
IP Routing Enabled. . . . . : No
WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet:

Connection-specific DNS Suffix . . . . . :
Description . . . . . : Intel(R) Ethernet Connection (7) I219-V
Physical Address. . . . . : E0-D5-5E-B0-D4-60
DHCP Enabled. . . . . : Yes
Autoconfiguration Enabled . . . . . : Yes
Link-local IPv6 Address . . . . . : fe80::8569:d269:f859:5158%3(PREFERRED)
IPv4 Address. . . . . : 192.168.1.105(PREFERRED)
Subnet Mask . . . . . : 255.255.255.0
Lease Obtained. . . . . : Tuesday, May 16, 2023 9:14:42 AM
Lease Expires . . . . . : Tuesday, May 16, 2023 11:14:41 AM

```

Image : 5.5

The IPv4 Address in the Ethernet adapter Ethernet section of the output is the IP address of the device. Information on wireless connections can be found in the Wireless LAN adapter Wi-Fi section.

Following this process, let us write the IP address of our device in the box below –



We learned how to determine the IP address of our device. We can find out the IP address of a host in the same way. Let us learn how to find Google's IP address using ping command by following the steps below.

Step 1: Type cmd in Windows search bar and press Enter.

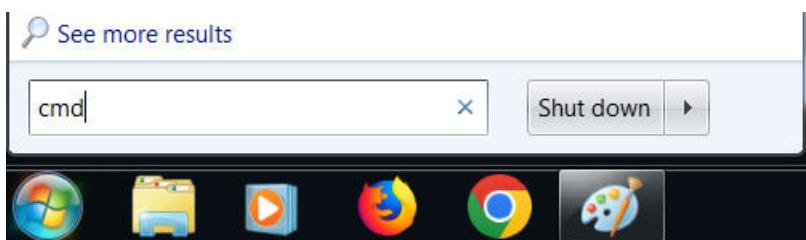
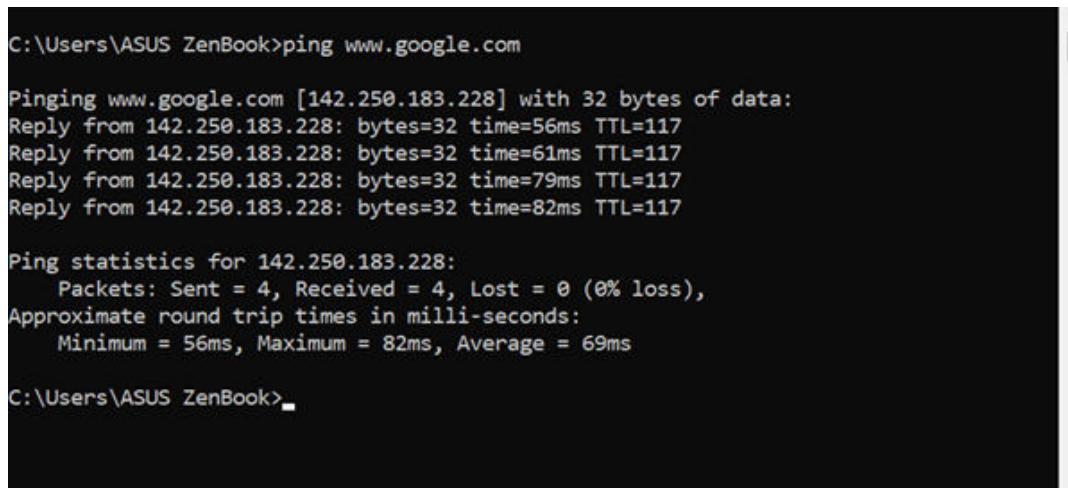


Image : 5.6

Step 2: In the command prompt window, type ping www.google.com and press Enter. This will result in an output like the screen below.



```
C:\Users\ASUS ZenBook>ping www.google.com

Pinging www.google.com [142.250.183.228] with 32 bytes of data:
Reply from 142.250.183.228: bytes=32 time=56ms TTL=117
Reply from 142.250.183.228: bytes=32 time=61ms TTL=117
Reply from 142.250.183.228: bytes=32 time=79ms TTL=117
Reply from 142.250.183.228: bytes=32 time=82ms TTL=117

Ping statistics for 142.250.183.228:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 56ms, Maximum = 82ms, Average = 69ms

C:\Users\ASUS ZenBook>
```

Image : 5.7

Step 3: The output shows that the IP address of www.google.com is 142.250.183.228. In addition to the IP address, information of how many data packets have been sent and how many of them have reached the recipient correctly, how long it took to arrive are also shown.

In this way we can find out the IP address of different websites by following the same steps. So, let us find out the IP addresses of some of our favorite websites.

Table 5.8: Determination of IP address

Website address	IP address
1.	
2.	
3.	

So, in this session, we learned what IP address is and how to find the IP address of a computer or a website. In the next session, we will create a network between two computers in our school.

## Session- 6: Let Us Make a Network

We must remember that in the first session we said we will create a network between two computers after this experience. We will do that in today's session. Let us make network by setting up IP between two computers in our school. Through this network, we can share a file between two computers in the next session.

Here, we will see the steps for Windows 11. We have to enter Windows as administrative user to complete these tasks but 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.

To make such network, we need two computers or laptops and one RJ45 cable. RJ45 cable is one Ethernet cable with two connectors at both ends. When the equipment is ready, we will follow the steps below.

Step-1: At first, we will check whether the two computers are well-functioning and all things are okay.

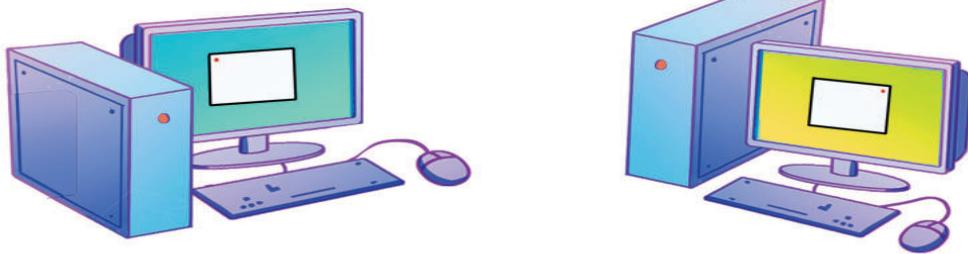


Image : 5.8

Step-2: Insert the RJ45 connectors at the two sides of the cable into LAN port of the two computers.

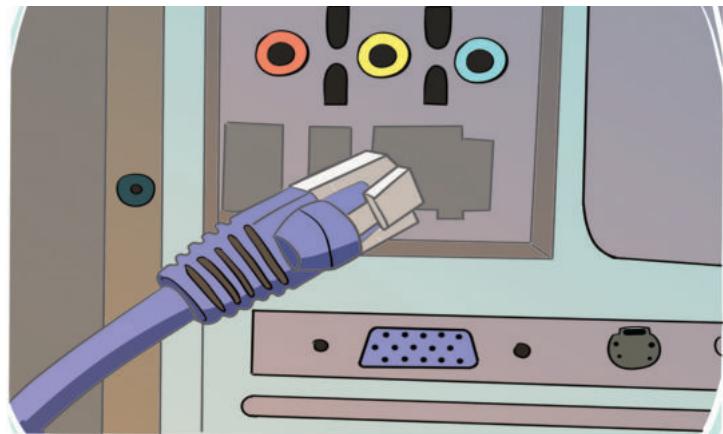


Image : 5.9

Step-3: Now let us set up the IP address. For this, we will type Control Panel on Windows search bar and press Enter. When Control Panel appears, we will click Network and Internet option.

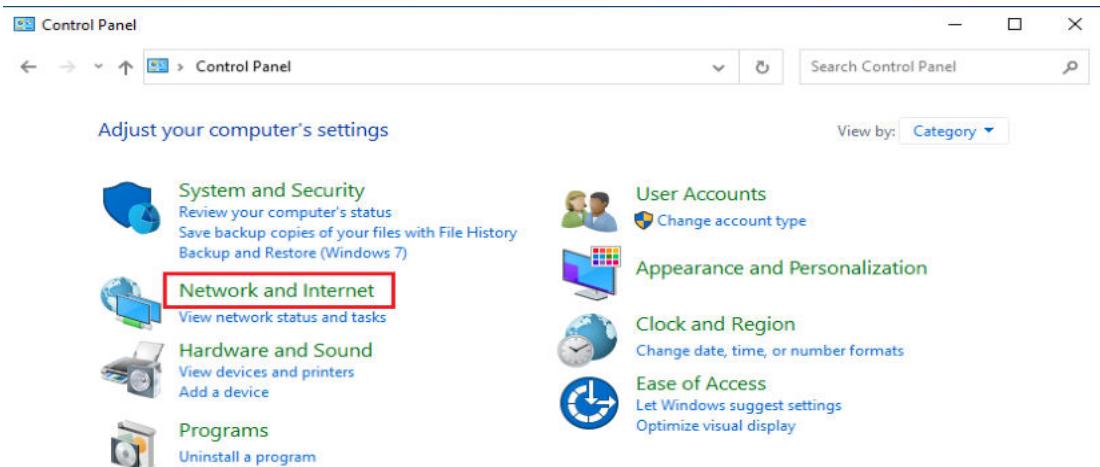


Image : 5.10

Step-4: Click Network and Sharing Center on the next window.

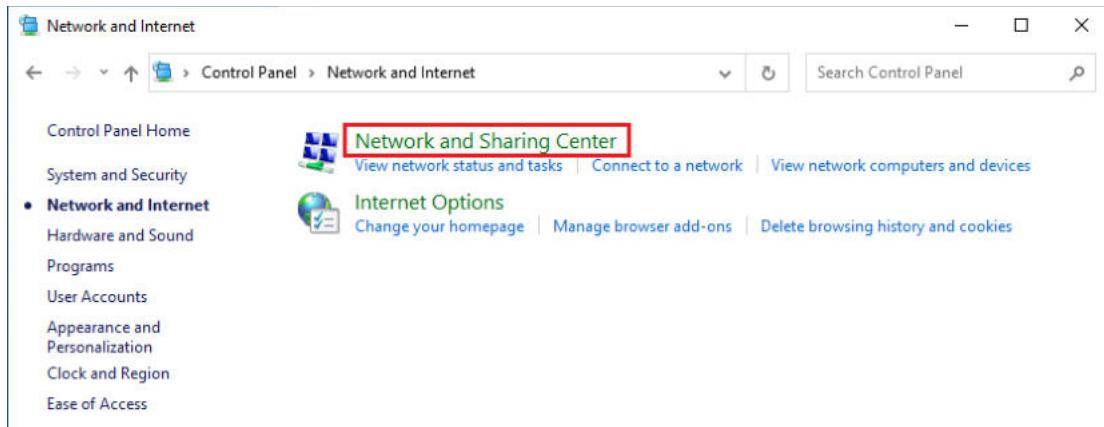


Image : 5.10

Step-5: At this step, click Change Adapter Settings from the left side of the window.

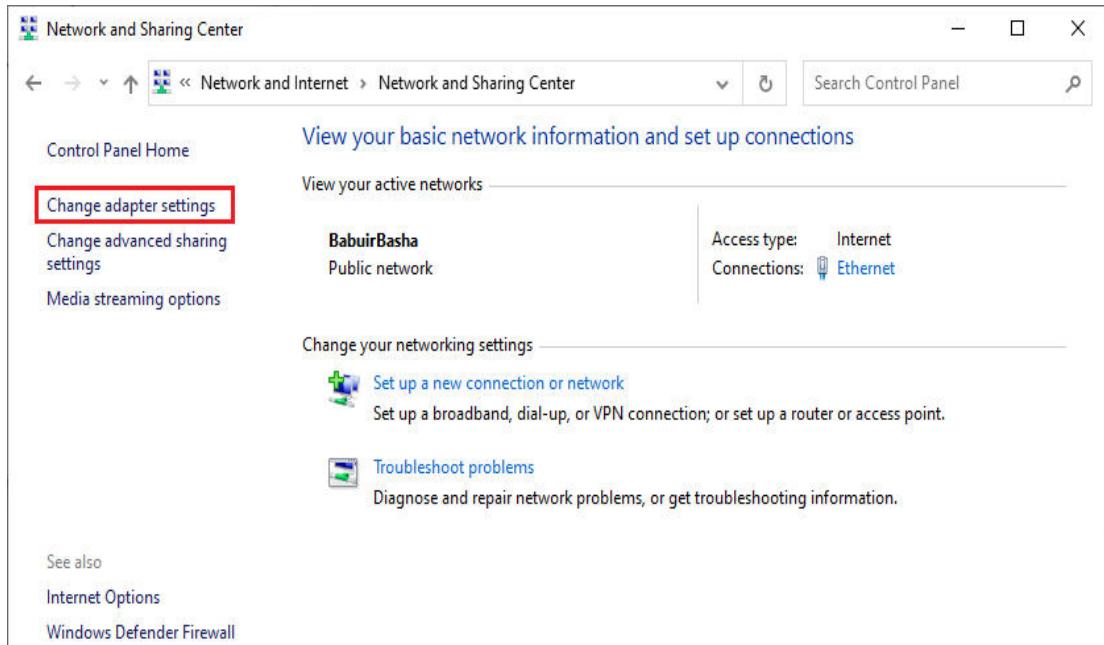


Image : 5.11

Step-6: Here we will find all the wireless (WiFi) or wired connection (Ethernet) on our computer. Now keeping your mouse on Ethernet click the right button and then click on Properties or double click on Ethernet.

It can be mentioned that there may be other name, for example, Local Area Connection, instead of Ethernet.

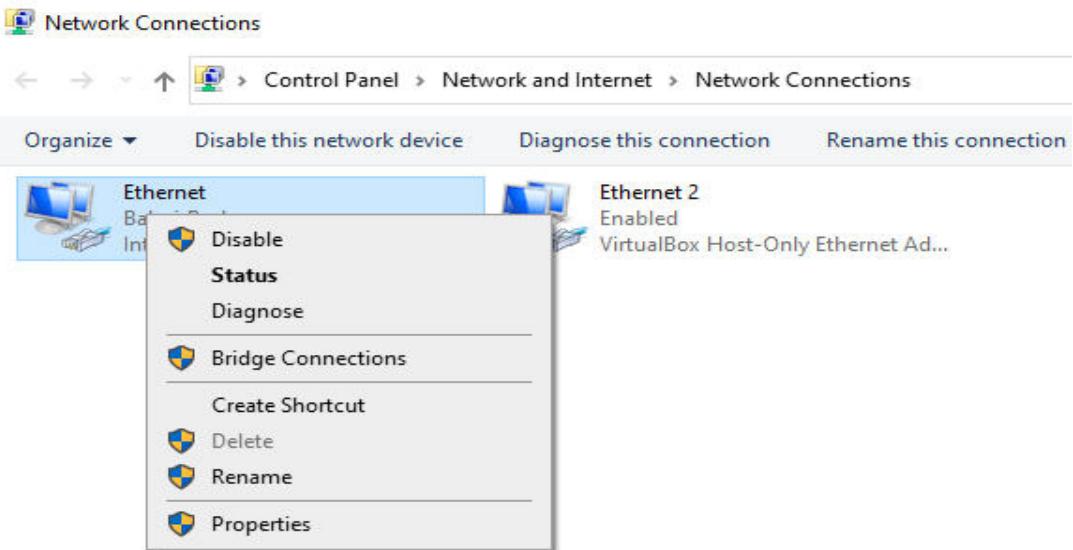


Image : 5.13

Step-7: Double-click on Internet Protocol Version 4 (TCP/IPv4) in the Ethernet Properties window.

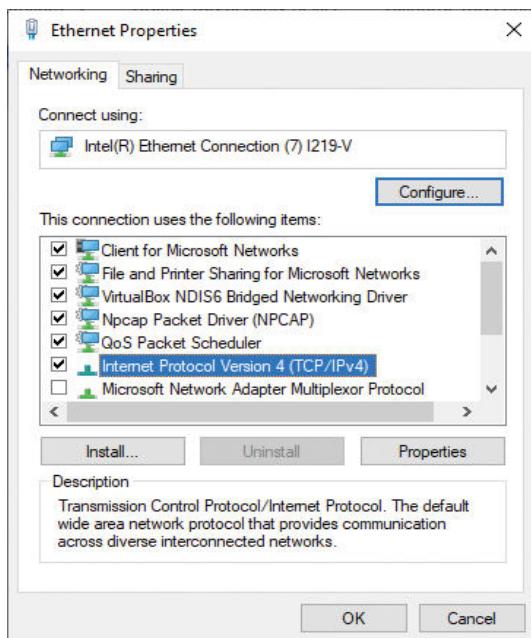


Image : 5.14

Step-8: After double-clicking on the Internet Protocol Version 4 (TCP/IPv4) of the Ethernet Properties page, the IP set interface will come in front of us. At this stage, click on the Use the following IP address: radio button.

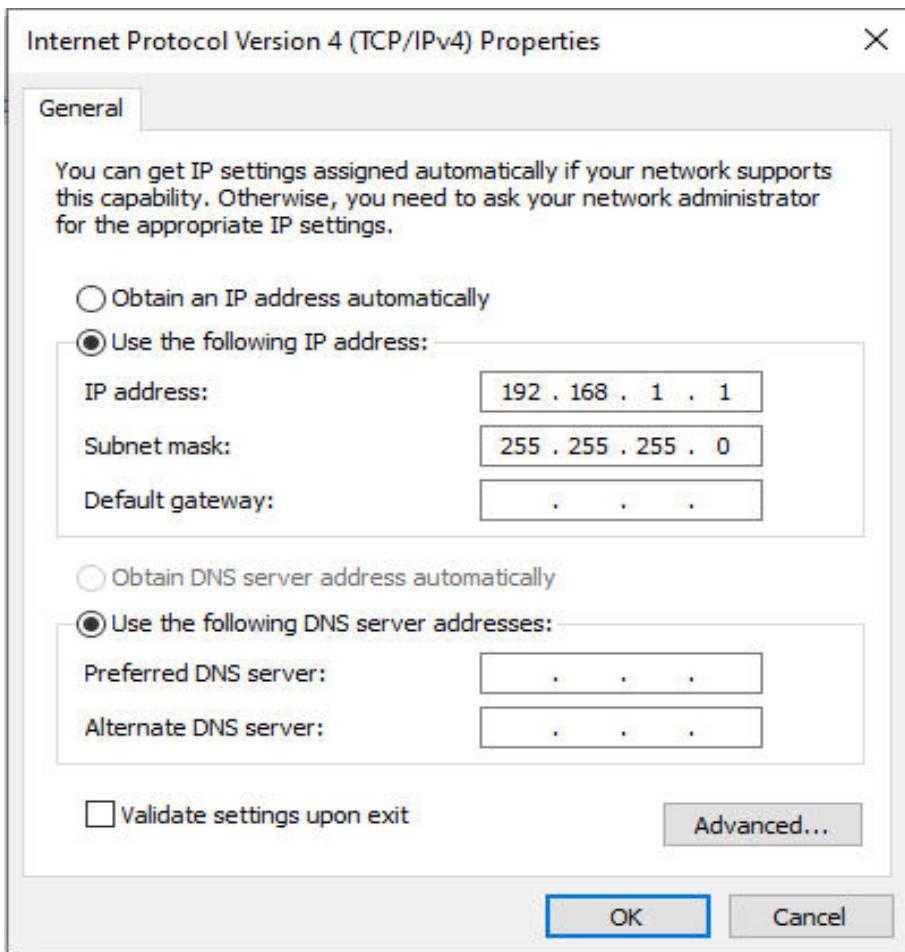


Image : 5.15

Step-9: Putting the 198.168.1.1 IP in the IP address box, click on the subnet mask room. Subnet mask IP will come automatically. Finally, click on the **Ok** button.

Step-10: In the same process, the IP address will also have to be set on the 2nd computer. However, it has to be from the IP given to the first computer. Set 198.168.1.2 as the IP address on the 2nd computer.

At this stage, a network is created between the two computers. In the next session we will see how to share files using this network. In that case, we have to remember that the work of the next session is dependent on the work of this session. That is, we

cannot start the next session without completing the work of this session. However, it should be noted that after completing the tasks, instead of Use the following IP address: described above, we have to click on Obtain an IP address automatically: radio button. Otherwise, we may have problems connecting to the Internet using this computer later.

The IP address used here is not from the ISP. It is called a private IP. Certain ranges of IPs have already been designated as private IPs. Devices can be connected to any local network using these IPs. Since there is no need to connect to the Internet, we do not need to give the ROUTER's IP (Default gateway). The Default gateway and DNS server IPs also need to be set to connect to the Internet. The DNS server contains information on IP addresses and their respective hostnames and provides that information if needed.

## Session 7: Sharing File

We built a network between our two computers/laptops in the previous session. Let us know how to share files or folders between two computers connected to our network.

Let us complete the following tasks step by step -

Step-1: Let us follow the first 5 steps of building the network described in the previous session. However, in step 5, instead of Change adapter settings, click on Change advanced sharing settings.

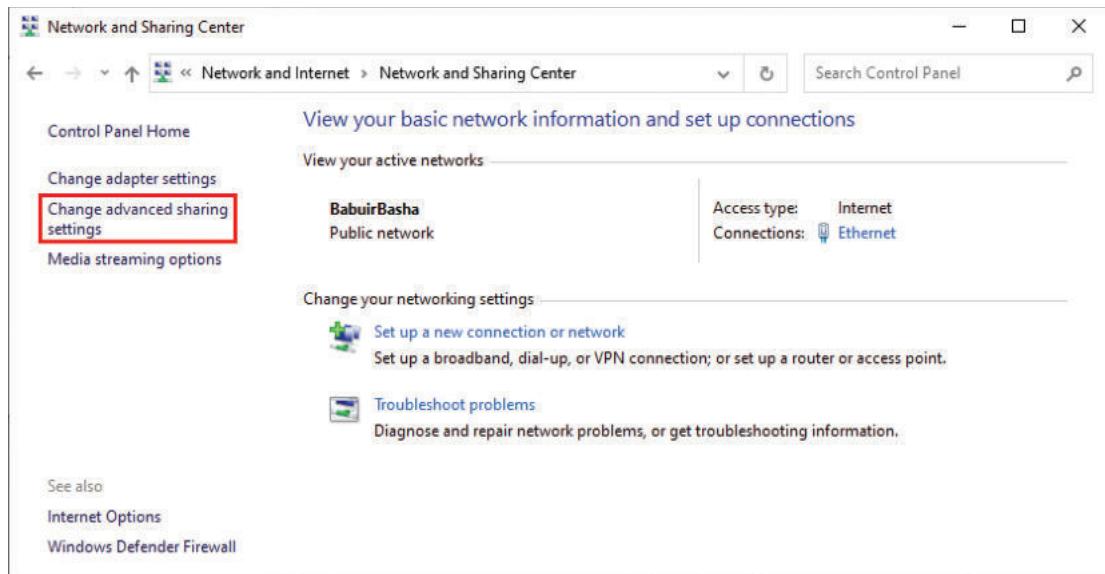


Image : 5.16

Step: -2 Click the Turn on network discovery and Turn on File and Printer Sharing Radio buttons like the picture in the Guest or Public Section.

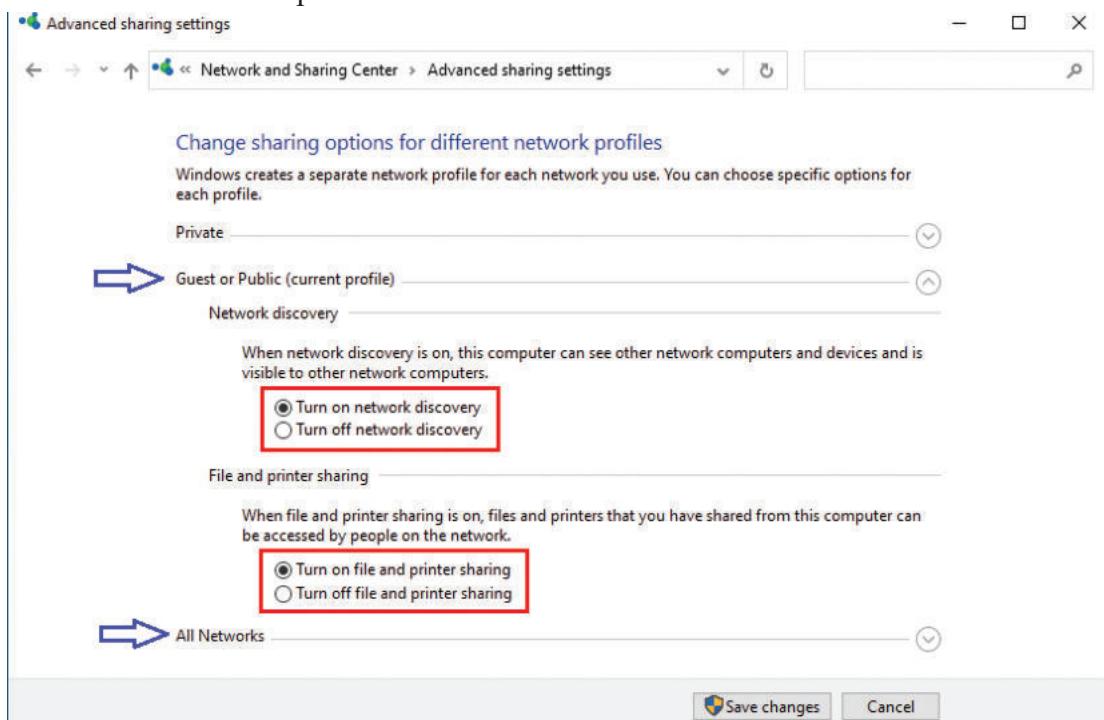


Image : 5.17

At this stage, we have to decide whether it will be necessary to give the password to enter the 1st computer to see the file or folder shared from this computer (1st computer) in order to see the folder from another computer (2nd computer).

If we do not need to give a password, click on the Turn off password protected sharing radio button in the All Networks section. Finally, click on the Save Changes button to go to the next step. Notably, depending on the version of the operating system, this option can also be in the Public section.

#### Password protected sharing

When password protected sharing is on, only people who have a user account and password on this computer can access shared files, printers attached to this computer, and the Public folders. To give other people access, you must turn off password protected sharing.

- Turn on password protected sharing
- Turn off password protected sharing

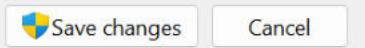


Image : 5.18

The tasks of step 2 completed above should also be completed on the 2nd computer.

Step 3: Enter the folder (or file) you want to share from the computer. Select the Share menu, click on Specific People and go to the next window. You can also click on Specific People with Give access to mouse by right-clicking on the folder. Instead of the Share menu depending on the version of the operating system, the task can be completed by clicking Share with at the top of the File Explorer window.

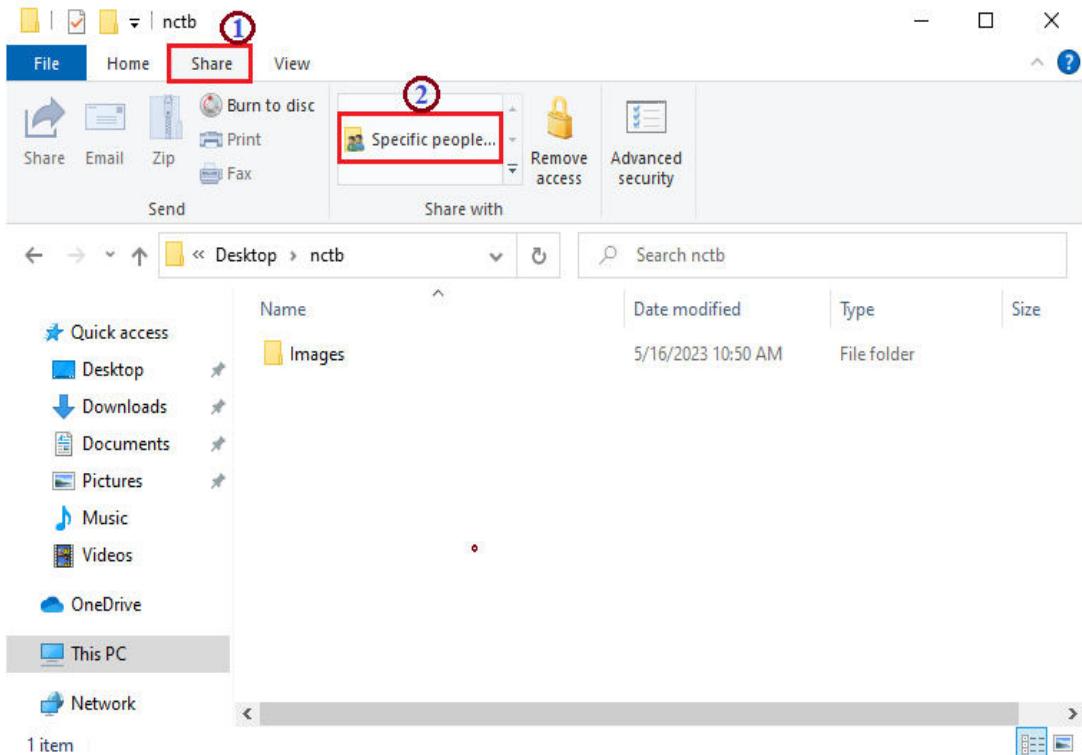


Image : 5.19

Step:-4 Select Everyone by clicking on the dropdown button with the downward arrow symbol. Then click on the Add button. After clicking Add, if you have to keep some files from another computer in the shared folder, click on the Permission level and select Read/Write instead of Read. If you ever want to withdraw the Permission, you have to click Remove.

After the Add is done, click the Share button. Then click on the Done button.

← Network access

### Choose people to share with

Type a name and then click Add, or click the arrow to find someone.

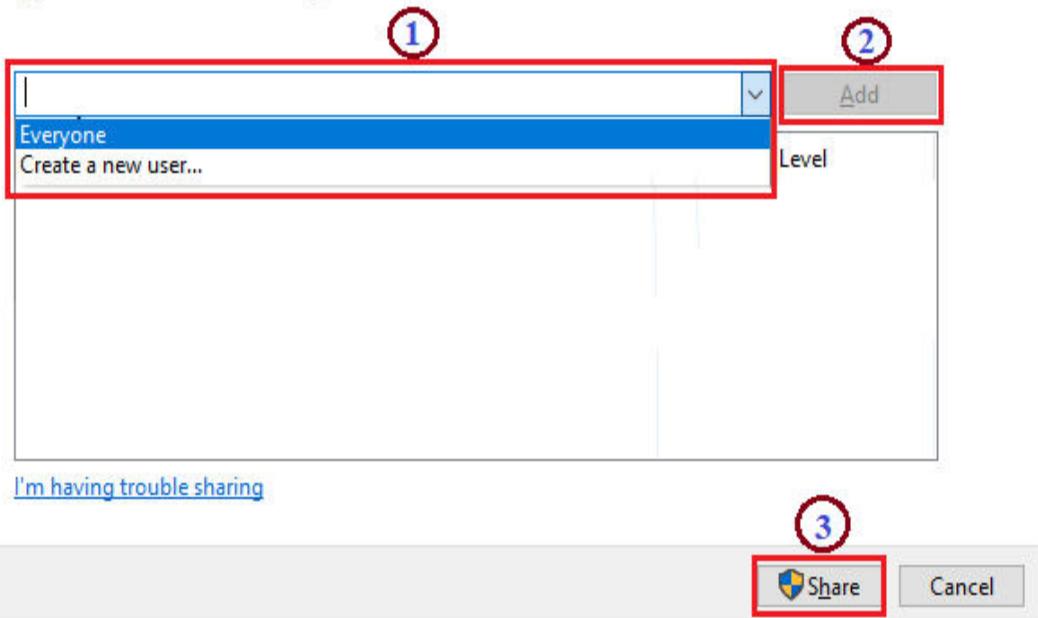


Image : 5.20

At this stage, the work of sharing from the first computer has been completed. Now to find the shared file from the second computer, you have to go to the next step.

Step: -5 Open the file explorer of the 2nd computer or go to any folder and click on Network at the bottom left. Since the name of the other computer connected to our network can be seen, by clicking on it, you can see the shared folders or files from that computer.

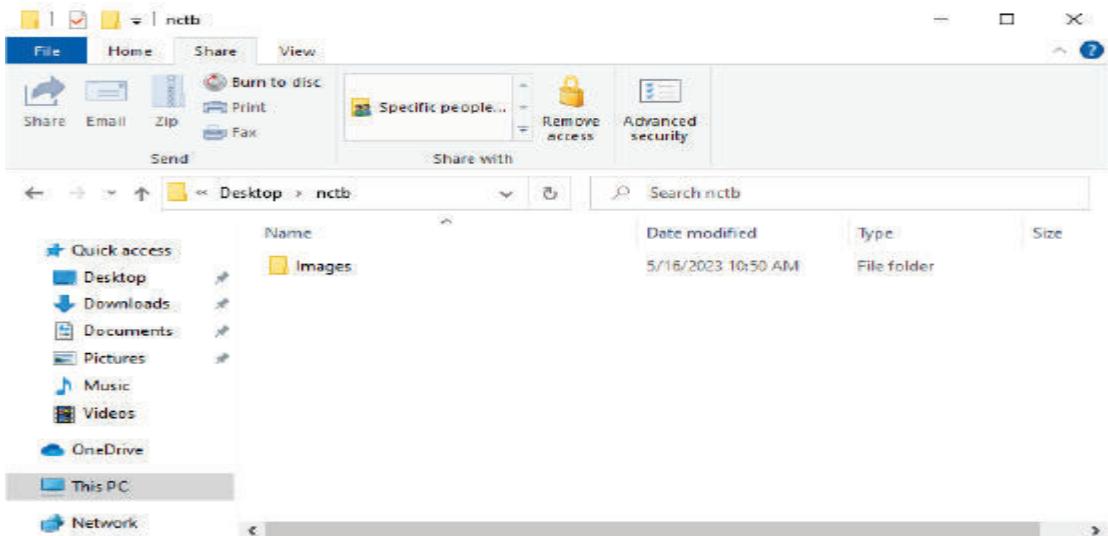


Image : 5.21

So, we learned to share files by connecting two computers in our school. If we have two computers or laptops at home, we can follow these same steps to create an effective network and share the necessary files or folders.



## Experience 6



# Digital Technology and Diversity

We are all familiar with digital technology in the present age. We use various types of digital technology in various tasks every day. From this experience, we will learn what kind of values we need to maintain and what rules we need to follow when working with digital technology. We will also discuss how digital technology is being used in different countries and how it is affecting our social and cultural structures. Finally, we will organize a seminar where we will present our multimedia work on the changes in the social and cultural fields due to the use of digital technology in different countries.

### Session 1: The Use of Digital Technology in Our Lives

We all know more or less about digital technology. Many of us may have used digital technology knowingly or unknowingly to do various tasks of daily life. At the beginning of this session, we will discuss the use of digital technology in various fields in our lives. Then we will read some stories and determine what kind of impact the use of digital technology has on our lives. In the last session of this experience, we will organize a seminar where we will present some multimedia presentations in groups. From the first session, we will start preparing ourselves for that session.

Let us first discuss the fields of digital technology use that we know about and fill in the following table.

**Table- 6.1:**

<b>Fields of Using Digital Technology</b>	<b>How Used</b>
1. In communication	Using various social media
2. In education	
3. In agriculture	
4. In entertainment	
5.	
6.	
7.	
8.	

So, we see that every day in our lives, we and the people around us use some kind of

digital technology. The use of digital technology is no longer limited to a few tasks in our daily lives. The impact of digital technology is significant in every field of our lives. Now, we will read the stories below and try to understand how the use of digital technology is changing our lives.

### Story 1:

Yesterday, Ankhi's mother took an appointment with an eye doctor on a hospital website. After that, she is seeing advertisements of various hospitals and doctors everywhere on all her social media and the website she visits.

### Story 2:

Shaon is always interested in learning something new. He buys various books to learn different foreign languages, communication skills, programming, etc. and reads them and takes various short courses alongside. However, nowadays he is learning new programming languages by watching various videos online and taking online courses without buying any books or enrolling directly in courses.

### Story 3:



Nishat's father will send some money to his friend in Chittagong from Dhaka. So, he told Nishat to withdraw money from his bank account and deposit it into his friend's bank account. But Nishat did not go to the bank and instead downloaded an app on his father's mobile and sent the money with just a few clicks.

### Story 4:



Rifat bought a new smart fridge last month. Today, when he went to the market, he did not remember what vegetables were in the fridge at home. So, he used his smartphone to see what was in the fridge. He saw that there was only one egg in the fridge. Then he bought everything else which were not in the fridge including eggs from the market and brought them home.

**Story 5:**

Bokul is a farmer. This year, the yield in his field has decreased a lot. He understands that the reason for this is the use of fertilizers and pesticides. But he cannot understand where the problem is. So, he took some pictures of his field and sent them online to get advice from agricultural experts.

Can we understand from the stories what kind of changes have come in our lives due to the use of digital technology? Let us discuss it in pairs and write down those changes in the table 6.2 below.

**Table 6.2**

Story	Types of Changes
Story 1	
Story 2	

	Story 3
	Story 4
	Story 5

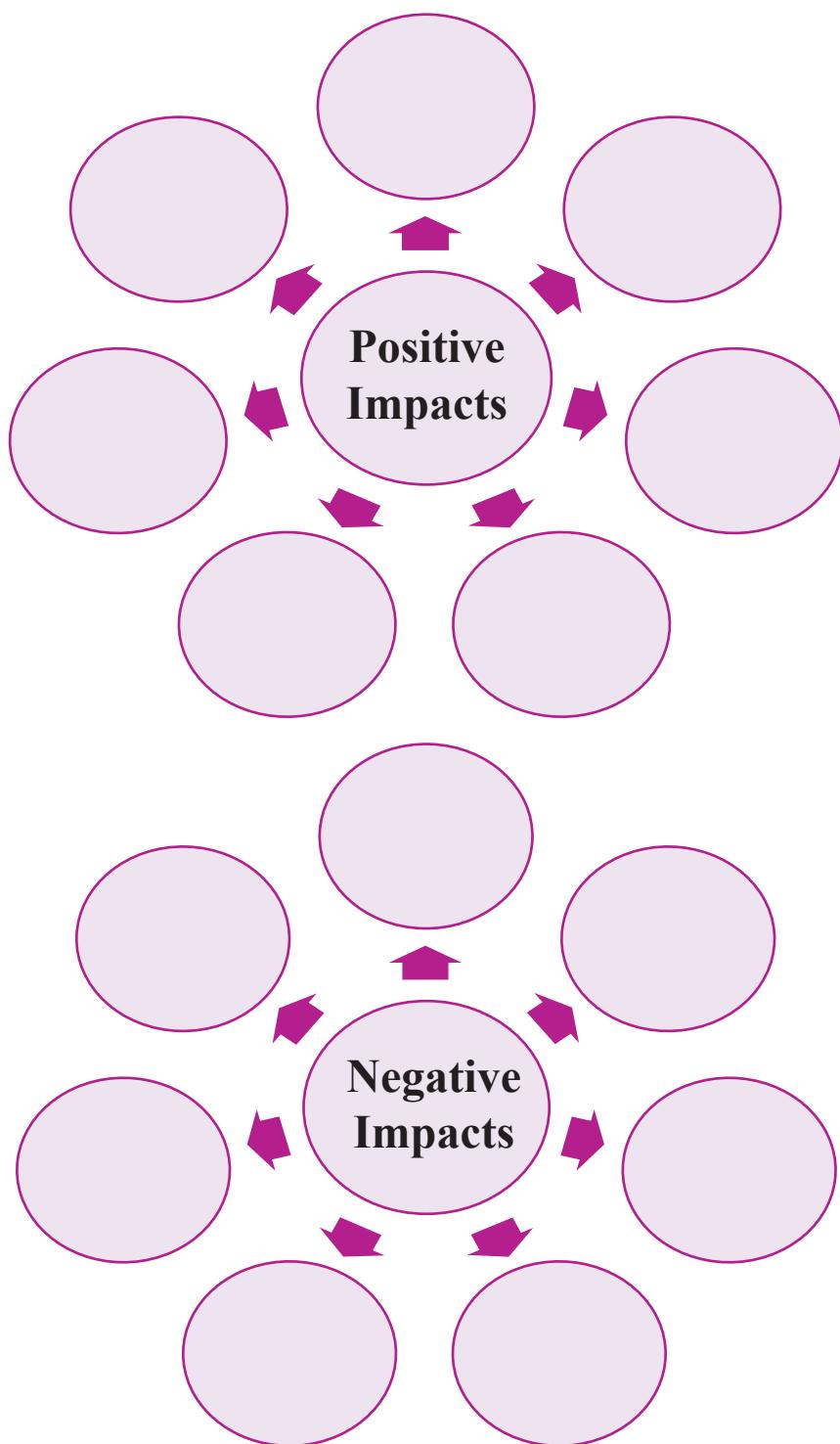
Preparation for the next session:

We will think about the impact of the use of digital technology in our lives and, if possible, discuss this topic with a family member or a friend.

## Session 2: The Impact of the Use of Digital Technology

In the last session, we learned about the various fields of the use of digital technology in the present time. We also discussed what kind of changes have come in our lives due to the use of digital technology. Now, let us join some groups with our friends and discuss what kind of impact the use of digital technology has on our lives. In this regard, we can discuss two types of impacts - Positive impacts and Negative impacts.

Let us then discuss and fill in the following boxes –



We will present the positive and negative impacts that we have learned through group discussion before our classmates. Next, we will prepare two lists of all positive and negative impacts collected from discussions of all groups and display them in the classroom so that we can work on them in the next session.

#### Preparation for the Next Session:

In this session, we will think about what we can do to protect ourselves from or prevent the negative effects of the use of digital technology that have come up in our discussion.

### Session 3: Ethics in the Use of Digital Technology

In the last session, we learned about the positive and negative effects of the use of digital technology. In this session, we will try to determine what we can do to prevent the negative effects of digital technology. Besides, we will analyze some incidents and learn which ones are ethical and which ones are not in the field of digital technology usage. We certainly remember that we have to do a multimedia presentation at a seminar, and we have been working on it as preparation in the previous sessions. The tasks in this session will also help us in our presentation.

So, let us identify two of the negative effects of digital technology that we discussed and determined in the last session. Now let us discuss as a group the ways to prevent those effects and write them down in the table below –

**Table 6.3**

The two negative impacts of digital technology that we will discuss	Remedy for the two negative impacts/ What to do to prevent impacts
1.	
2.	

Notice that it is very important to work responsibly maintaining ethics in the use of digital technology. Now, we will read some stories and from them analyse the ethical aspects of using digital technology. Let us read the stories with attention.

### **Photography competition**

A photography competition was organized by the photography club at Dipu's university. Many students participated in the competition and one of the photos was awarded as the winner among almost a hundred photographs. After the announcement of the winner, the photographer refused the award. He said that his submitted photo was not actually a photograph but a picture created by writing some commands with the help of artificial intelligence.

### **Website hacking**

Eidal872, a hacker, hacked a website of a country's foreign ministry one day for fun. There was many important information of the citizens of that country on that website, which could be used to harm them in various ways. Eidal872 did not misuse any of that information but instead contacted the senior officials of the ministry and informed them about the security flaw of their website. Later, with the help of Eidal872, the country was able to improve the security of all their important ministry websites.

### **Artificial Intelligence in Academic Work**

Students of class nine were asked to write a report on “Impact of digital technology in our lives”. All the students wrote the report by judging and analyzing the events of their own life. But one student used artificial intelligence (Chat GPT, Google Bird, Bing Chat etc) in writing the report.

What did we learn from reading these two stories? Let us analyse whether the work was done ethically in these two cases. Let us discuss with our partner and write our analysis in the box below -

Table 6.4

Story	My Analysis	Why I think ethics has been maintained/not been maintained in this story
Photography Competition	Ethics has been maintained <input type="checkbox"/>	
	Ethics has not been maintained <input type="checkbox"/>	
Website hacking	Ethics has been maintained <input type="checkbox"/>	
	Ethics has not been maintained <input type="checkbox"/>	

Artificial Intelligence in Academic Work	Ethics has been maintained <input type="checkbox"/>	
	Ethics has not been maintained <input type="checkbox"/>	

### Preparation for the Next Session:

In the light of today's session, we will try to identify, discussing with our family members and friends, the things we should refrain from in using digital technology.

### Session 4: Responsible Use of Digital Technology

We learned about what we should do to prevent the negative impact of digital technology in the previous session. We also learned what kind of morality we should preserve in the use of digital technology. We certainly remember that our last task in this experience will be to do a multimedia presentation in the seminar but at the beginning of the session, we will learn how can we act responsibly while using digital technology.

Let us remember that from the first and second experiences of the 9<sup>th</sup> grade digital technology subject, we have learned quite a few things about responsible behavior in the use of digital technology. Now let us see if we can verify the truth / falsehood of the following statements based on the knowledge gained from those experiences –

Table 6.5

Statement	True / False
1. It is appropriate to use images that are registered with copyright without the permission of the owner from the internet.	
2. It is necessary to buy the license from the appropriate authority before using any necessary software.	
3. It is not appropriate to share someone's picture on social media without permission	
4. It is appropriate to make abusive comments if I do not like something that someone shares on digital media.	

5. It is appropriate to verify the source and ensure the truth before sharing any information on digital media.	
6. It is not appropriate to share my mobile banking app's pin code with anyone in the case of mobile banking.	
7. It is appropriate to open an account on social media using someone else's name and picture to hide my identity.	
8. We should refrain from making any bad comments to anyone using digital media.	

So, we can see that we have learned a lot from the previous experiences on how to act responsibly while using digital technology. Now let us learn a few things by reading the following stories.

#### Digital footprint

1

A student from Bangladesh went to study at a prestigious university abroad with a scholarship. A month after going there, he suddenly found out that his admission with scholarship had been cancelled. When he asked why this happened, he was told that the university had cancelled his admission because of a negative report on his digital footprint. Three years ago, he had made a supportive comment on an online report written in favour of terrorists without understanding. His digital footprint caught the attention of the university administration and they cancelled his scholarship and admission.

2

A Bangladeshi citizen got a big job at a large international organization last month. He celebrated the good news by organizing a big programme for his neighbours and friends and greatly entertained them with food. But a few days later, he found out that he had lost his job. The organization told him that they had fired him because of a negative report on his digital footprint. Two days ago, he made a disrespectful comment on a post shared by one of his colleagues, which led to this decision by the organization.

After reading the stories, let us write down in the box below what we learned about responsible behaviour in the use of digital technology –

Table 6.6

1. We will be careful when sharing any information or making any comments on digital media.
2.
3.
4.
5.

### Session 5: Adapting to the Impact of Digital Technology and the Changes it Causes

We surely remember that our final task in this experience is to create a multimedia presentation in groups and present it at a seminar, but the question is, what will be the content of our presentation? In today's session, our teacher will provide us with guidance on that topic and at the same time, we will learn how to adapt to the changes that are happening around us due to the impact of digital technology.

First, let us learn about our multimedia presentation. Our teacher will divide us into groups for the presentation or, maybe, we already have some groups from working on other experiences before. Then we can work in those groups as well. Our presentation topic will be the impact of digital technology in two countries from among the global south countries. The teacher will assign which group will work on which two countries.

#### Global South

This includes most of the countries in Asia, Africa, and Latin America. Although most of the countries in the southern hemisphere are included in this list. It is not based on geographical location. These countries have some similarities in social, cultural and economic aspects, which is why they are grouped under a broader name.

So, we have learned about our presentation topic. Now, let us see some examples and learn what these countries have done and are doing to adapt to the impact of digital technology.

Ethiopia, a country in East Africa, is working regularly to develop their technological infrastructure so that their country's most exported product coffee can now reach more customers worldwide faster and easier.

Another country in East Africa, Rwanda, has launched a large digital literacy development programme to prepare their citizens for the future and introduce them to the changing technology. Under this programme, nearly 50 million citizens have acquired digital literacy.

Brazil, a country in Latin America, is conducting research activities regularly to improve their progress in artificial intelligence. As a result, in the last 8-10 years, the number of research teams working on artificial intelligence in Brazil has increased significantly. Along with that, the number of computer science and engineering centers has also increased.

Cambodia, a country in Southeast Asia, has made digital technology more accessible to their citizens by reducing internet costs.

India, the largest country in South Asia, has upgraded their 'Aadhaar card' (biometric ID card) to keep up with the rapid change in digital technology. With the help of India's Ministry of Electronics and Information Technology, all Aadhaar card holders now have access to one cloud account each. They can use this to get their necessary original documents and certificates (driving license, car registration documents, academic marksheets and certificates) from the issuing authority online and store them.

So, we have learned a lot of new things, haven't we? We will find many such examples while searching for information to prepare our multimedia presentation. Before that, let us make a list of what arrangements we can make to cope with this changed situation in Bangladesh due to the impact of digital technology, following the examples above.

Table 6.7

1.

2.

3.

4.

5.

6.

7.

### Preparation for the Next Session:

We now know which group we will work in and which group will work on which country for the multimedia presentation at the seminar. Our task is to collect and bring the following information about the countries. We can take the help of our family members, relatives and neighbours to collect information if we want. We can also collect information using the internet, TV news, books, magazines, newspapers, etc. If it is necessary, we can also take the help of the teacher in collecting information. As homework, we will each bring the following information:

- What kind of digital technology was used in these countries 15/20 years ago?
- What kind of digital technology is being used in these countries now?
- How and what kind of changes have occurred in the fields of food habits, education, health, transportation and daily life of the people in these countries as a result of using digital technology in the last 10 years?

### Session 6: Preparation for Seminar

Now we have to work with the information that we had to bring in our previous session as our “preparation for the next session”. First of all, we can collect all the information brought by all the members of the group and write them in one place. We have to make our group multimedia presentation using this information.

We will use our school’s computer lab today to make the presentation.

Our presentation will include –

- Various necessary information
- Images relevant to the information
- Short video clips

Using the knowledge we have learned from other experiences of class 9, such as making graphs, taking pictures from the internet and video editing, we will make our presentation.

Our session today will end with each group making a presentation.

### Session 7: Seminar

Today is our seminar and the last session on digital technology for this year.

We will present the multimedia presentations we made in the last session at our seminar today. In the presentation, we will ensure the participation of all the members of the group and try to answer any questions that anyone may have after seeing our presentation.

At the end of the seminar, we will fill in the form below and submit it to the teacher. Based on this, the teacher will sign our intercontinental diversity certificate.

Name:

Class:

School:

.....in the online fair has presented correct and important information about..... countries. I wish him/her success in future.

-----  
Signature of Teacher and Date

-----  
Signature of Headmaster and Date





কম্পিউটার ল্যাব

বর্তমান সরকার শিক্ষায় তথ্য ও যোগাযোগ প্রযুক্তির বহুমাত্রিক ব্যবহার বিষয়ে অধিকতর গুরুত্ব দিয়েছে। ফলে সামগ্রিক শিখন-শেখানো কার্যক্রমে অভাবনীয় সাফল্য এসেছে। শিক্ষার্থীদের হাতে-কলামে শিক্ষাকার্যক্রম পরিচালনা নিশ্চিত করতে দেশের বেশিরভাগ বিদ্যালয়েই কম্পিউটার ল্যাব স্থাপন করা হয়েছে। বিভিন্ন প্রকল্পের মাধ্যমে প্রতিটি বিদ্যালয়ে কম্পিউটার ল্যাব স্থাপন ও আনুষঙ্গিক উপকরণ সরবরাহের কাজ এগিয়ে চলছে।

# Academic Year 2024

## Class Nine

### 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 (টেল ফ্রি, ২৪ ঘণ্টা সার্ভিস) ফোন করুন



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