Chapter One — Information and Communication Technology: Global and Bangladesh Perspective

At a Glance: What's in This Chapter

Information Technology, Global Village, Virtual Reality, Artificial Intelligence, Robotics, Robot, IoT, Cryosurgery, Space Exploration, ICT-Based Production System, Biometrics, Bioinformatics, Genetic Engineering, Nanotechnology, Ethics of Information and Communication Technology, Hacking, ICT in the Development of Bangladesh: Digital Bangladesh.

Information Technology

The English word is Technology, which is derived from the Greek words Techne and Logia. Imagine you are sending a parcel to someone through a nearby courier service. Before the recipient receives it, they get a message with the parcel's tracking ID. Later, using that ID, the recipient collects the parcel. That ID is a piece of information delivered through a system, and that system is referred to as technology. In simple terms, when information is exchanged through technology, it is called Information Technology.

Claude Elwood Shannon was named the Father of Information Technology in 1916.

Contributions of Information Technology:

The contributions of information technology today are limitless. There is hardly any field where IT has not made an impact.

Video Lecture on Information Technology and Global Village

1. We can now access all types of information from home.
2. We can get news from any part of the world.
3. Wastage is reduced.
4. Saves time.
5. Many official tasks can be done from home.
6. Education can be acquired online from home.
7. Products can be ordered and purchased from home.
8. Various bills—water, electricity, gas, telephone, broadband—can be paid from home.
9. Food can be ordered.

There are many such unimaginable tasks that can now be easily done through IT.

Components of Information Technology: 1. Mobile. 2. Telephone. 3. Computer. 4. Fax. 5.Radio. 6. Television. 7. Satellite. 8.Terrestrial. 9. Tower and all electronic communication devices

Concept of Global Village

The global village is essentially a concept where people around the world are connected through electronic communication, forming a single community. The global village is a social or cultural system based on information and communication technology, where people from every corner of the world live as one unified society. Canadian philosopher and English professor Marshall McLuhan brought this concept to the forefront in 1964, describing the entire world as a Global Village. He is considered the pioneer of the Global Village. He envisioned a world under one umbrella where people would exchange cultures and share information easily. The global village primarily refers to the internet system.

Advantages of the Global Village:

1. Communication with anyone in the world within a very short time.
2. Geographic distances feel reduced in communication

Knowledge-Based Questions and Answers

1. What is Information Technology?
Information technology is the exchange of information using electronic technology.

2. What is Telemedicine?
Telemedicine is a method of receiving medical care from home. It refers to providing medical services via mobile phone or video conferencing.

3. What is Electronic Fund Transfer?
EFT stands for Electronic Fund Transfer. It's a system that allows money to be transferred or exchanged through websites or electronic banking.

4. What is CAD?
CAD stands for Computer-Aided Design. It's specialized software used in engineering for various tasks like graphics, drafting, design, or simulation.

5. What is a Barcode?
A barcode is a type of scanner that can read barcodes (a series of parallel lines) and send the data to a computer.

6. What is Nanotechnology?
Nano is a unit of length measurement. The word "nano" means tiny, and "technology" means technology. Technologies developed at the nanometer scale are referred to as nanotechnology.

7. What is a 'Smart Home'?
A smart home is a living space where various essential systems, including security control, heating, cooling, fans, lights, TVs, ACs, air coolers, windows and window coverings, room doors, house gates, and the main gate system, can be controlled remotely from anywhere.

8. What is Bioinformatics?
Bioinformatics is the branch of technology that interprets and analyzes problems and biological data in biology, and develops various methods, software, or tools for this interpretation and analysis.

9. What is Genetic Engineering?
Genetic engineering, or gene engineering, involves extracting a specific gene from a living cell using biotechnology, inserting it into another living cell and making it functional, or modifying an organism's DNA to create new characteristics.

10. What is a Robot?
A robot is a computer-program-controlled electronic device that operates autonomously or under human instruction.

11. What is Artificial Intelligence?
Artificial Intelligence (AI) is the ability of machines to perform tasks that typically require human intelligence, such as learning, reasoning, and problem-solving.

12. What is an Expert System?
An expert system is a computer-controlled system that combines human problem-solving capabilities and thinking skills.

13. What is a Neural Network?
A neural network is an advanced computing architecture designed to mimic the neurons found in the human brain.

14. What is Office Automation?
Office automation refers to a system for managing one or more offices with the help of a computer system.

15. What is Hacking?
Hacking involves accessing another person's computer or computer network without permission to delete information, steal information, alter information, or introduce viruses.

16. What is a Cryoprobe?
A cryoprobe is an extremely fine, needle-tipped instrument used in cryosurgery to apply cryogenic agents (gases) to diseased areas.

17. What are Cryogenic Agents?
Cryogenic agents are liquid gases used in cryosurgery to bring the diseased area to a specific cold temperature. liquid nitrogen,
liquid argon gas, liquid carbon dioxide gas,
dimethyl ethyl propane,
nitrous oxide, ethyl chloride, fluorinated hydrocarbons, etc.

Comprehension-Based Questions and Answers

01. Explain: "The technology-based world is a global village."

The global village is essentially a concept where people around the world become a community through communication, transportation and electronic connectivity. The global village refers to a technology-dependent social or cultural system in which people from all corners of the world live together as a single society.

02. Describe the method of identifying a person through behavioral characteristics.

With the help of biometric technology, a person is identified based on behavioral characteristics using behavioral data such as voice recognition systems, signature verification methods, and typing keystroke recognition systems. The system takes a person's behavioral traits as input data and compares them to previously stored data for identification.

03. Explain how training is possible through simulator and modeling software.

Simulator and modeling software create an imaginary 3D environment, known as virtual reality. It is a simulated setting where experiences feel real. Nowadays, training is made possible through virtual reality. For example, soldiers can receive advanced and precise training by simulating real battlefields. Similarly, in driving, sailing, or flying training, the trainees can easily learn the necessary rules and procedures as if they were in real-life situations.

04. Which technology enables mango production throughout the year? Explain.

Through genetic engineering, completely new crop varieties are being produced from existing ones. Using recombinant DNA technology, genes responsible for nutrition, fruit growth, photosynthesis efficiency, and year-round productivity are collected from various plants and inserted into mango saplings. As a result, it is possible to grow mangoes throughout the year.

05. Explain Artificial Intelligence.

If a computer or machine can make decisions on its own, it is called Artificial Intelligence (AI). Artificial Intelligence is a type of computer-controlled intelligence that mimics human thinking through computer programs or software. It attempts to simulate human intelligence and decision-making abilities.

06. Explain the top-down approach technology.

In the top-down approach, larger structures are created without using atomic-level nano-objects. In this method, a larger object is cut down into smaller parts to give it a specific shape. Our current electronics follow this top-down approach, whereas nanotechnology generally follows a bottom-up approach.

07. Explain how Information Technology and Communication Technology complement each other.

Collecting information using any technology is called Information Technology, while the process of transferring that information from one place to another is Communication Technology. Just collecting data is not beneficial if it cannot be transmitted. One is incomplete without the other. Therefore, it is said that information technology and communication technology complement each other.

08. Explain why hacking is an unethical activity.

At present, hacking is considered one of the major unethical activities. Those involved in hacking are called hackers. They access others' computers or networks without permission, delete data, steal or alter information, and insert viruses. These activities are known as hacking. Hackers are often identified by "hat" categories.

Important MCQ Board Exams 2025

1. What is the design or layout of biological characteristics called? [Dhaka Board-2025]
(A) Gene (B) Genome
(C) Nucleus (D) Chromosome
Ans: B

2. Which one is an interdisciplinary science? [Dhaka Board-2025]
(A) Robotics (B) Biometrics
(C) Bioinformatics (D) Genetic Engineering
Ans: C

3. What is the term for visualization using both hardware and software? [D.B: 2025]
(A) Robotics
(B) Biometrics
(C) Virtual Reality
(D) Artificial Intelligence
Ans: C

4. Which technique allows a computer to speak and listen? [Mymensingh Board-2025]
(A) Machine Learning
(B) Image Processing
(C) Speech Processing
(D) Natural Language Processing
Ans: C

5. Which of the following technologies is used in creating national ID cards? [M.B-2025]
(A) Biometrics
(B) Digital Land Service
(C) Geographic Information
(D) Optical Fiber
Ans: A

Answer questions 6 and 7 based on the following stimulus:
Scientist Suman and Dr. Shefa are conducting experiments on molecular scale technology and simulated surgery respectively.

6. Which field is related to Scientist Suman's activities? [Comilla Board-2025]
(A) Cryosurgery (B) Nanotechnology
(C) Robotics (D) Biometrics
Ans: B

7. What is a feature of Dr. Shefa's experimental subject? [Comilla Board-2025]
(A) Application of low temperature
(B) Use of cold argon gas
(C) Use of telepresence
(D) Use of fine needle tubes
Ans: C

8. Which technology is used to increase the durability of tennis balls? [J.B: 2025]
(A) Artificial Intelligence (B) Robotics
(C) Nanotechnology (D) Bioinformatics
Ans: C

9. Which is the technology of the hidden layer? [Jessore Board-2025]
(A) Genetic Engineering (B) Biometrics
(C) Artificial Intelligence (D) Robotics
Ans: C

10. In the low-temperature treatment method— [Jessore Board-2025]
i. Side effects are less
ii. Patients do not need prior preparation
iii. Patients do not have to stay long in the hospital after treatment
Which of the following is correct?
(A) i & ii (B) i & iii
(C) ii & iii (D) i, ii & iii
Ans: A

11. Which is used for sterilization purposes? [Chittagong Board-2025]
(A) Nanotechnology (B) Genetic Engineering
(C) Robot (D) Cryosurgery
Ans: A

12. How many layers are there in a neural network? [Chittagong Board-2025]
(A) 2 (B) 3 (C) 4 (D) 5
Ans: B

13. Which of the following is an outsourcing marketplace? [Barisal Board-2025]
(A) Facebook (B) Myspace
(C) Upwork (D) Digg
Ans: C

Important multiple choices selected from multiple choices

1. What is the meaning of online interaction? (S.Bo-24)

(A) E-Study (B) E-Learning
(C) On Learning (D) Interactive Classes
Ans:B

2. What is the process of working like the human brain? (Ch. Board-24)

(A) Deep Learning (B) Neural Network
(C) Machine Learning (D) Neural Path
Ans:B

3. Which of the following is used in cryosurgery medical procedures? (J.B-23)

(A) Cryogenic agent (B) Surgery
(C) Radio therapy (D) Chemotherapy
Ans:A

4. The cryogenic agent is- (D. Bo-24)

I. Liquid nitrogen
II. Liquid hydrogen
III. Oxygen

(A) I ও II (B) I ও III
(C) II ও III (D) I , II ও III
Ans:A

5. What is needed to make product design? [R.Bo-24]

(A) PAT (B) PLC (C) NAT (D) CAD
Ans:D

6. Capture, Extraction Comparison and Matching are used in which technology? [C.Bo, M.Bo-23]

(A) Robotics
(B) Biometrics
(C) Artificial Intelligence
(D) Genetic Engineering
Ans:B

7. What is the technology to uniquely identify individuals? (R. Board 17)

(A) Bioinformatics (B) Biometrics
(C) Nanotechnology (D) Robotics
Ans:B

8. Biometrics are used- (D.B-23)

I. DNA Mapping
II. Gene Finding
III. Machine Learning

(A) I & II (B) I & III
(C) II & III (D) I , II & III
Ans:A

9. Scientist Maksudul Alam gained fame in the world court by researching on which subject? (Ch.Bo-24)

(A) Corn (B) Rice (C) Rice (D) Jute
Ans:D

10. What is the shape of a nanoparticle? (D. B-23)

(A) 1 to 100 nm (B) 1 to 200 nm
(C) 1 to 300 nm (D) 1 to 400 nm
Ans:A

11. How many methods is nanotechnology used? (Ch.Bo-23)

(A) 2 (B) 3 (C) 4 (D) 5
Ans: A

12. What is the technology used to make sunscreen and moisturizer? (B.Bo-23)

(A) Bioinformatics (B) Cryosurgery
(B) Genetic Engineering (D) Nanotechnology
Ans:D

13. Which technology is used to decontaminate the waste of tannery industry? [D.Bo-24]

(A) Virtual reality (B) Bioinformatics
(C) Nanotechnology (D) Genetic engineering
Ans:C

14. Which of the following is required to operate computer related equipment properly? [B.B.19]

(A) Hardware (B) Software
(C) The Internet (D) The Internet
Ans:B

15. Which is the most important element in the case of a global village ? [H. Bo-2017]

(A) The Internet (B) Newspapers
(C) The television (D) The mobile
Ans:A

16. What is the name of the book written by Marshall Mcluhan in 1964?

(A) Understanding Media
(B) Engins of Creation

(C) Tha Gutenberg Galaxy
(D) Tha Global Village
Ans:A

17. What is outsourcing? [D.B.-16]
(A) Working at specific working hours
(B) Internet-based work
(C) Special Browsing Facility
(D) Worldwide network system

Outsourcing is the work of a third person or organization with the help of technology without doing the work of an organization itself.

Ans:B

18. What is the field of application of computer simulation ?
(A) Cryosurgery (B) Virtual Reality
(C) Internet (D) Video conferencing

Morton L. Helgi made the first virtual reality debut with a device called the Sensorama Stimulator.

Ans:B

20. What is the technology of expressing human thoughts through machines ? [C.Bo.-19]
(A) Biometrics (B) Bioinformatics
(C) Artificial Intelligence (D) Virtual Reality

Artificial Intelligence (AI) is a type of **computer-controlled** knowledge that controls human thinking through computer programs or software.

Ans:C

21. What is robotics? [K.B.-16]
(A) Robot science
(B) Robot activity
(C) Robots used in industry
(D) Language used in making robots

Robotics is a branch of technology that discusses the design, construction, structure, operation and application of robots.

Ans:A

22. What is the technology of human difficulty? D.B.-2017]
(A) Robotics (B) Virtual Reality
(C) Nanotechnology (D) Artificial intelligence

Robots are used as an alternative to humans for dangerous work and to defuse bombs.

Ans:A

23. What is the function of a robot ? [R.B.16]
(A) In complex surgical treatment
(B) Recognizing the person's signature
(C) Production of new varieties of seeds
(D) To make the shape of a tennis ball
Ans:A

24. Actuators are used in- [Ch.B.-17]
(A) Robotics (B) Biometrics
(C) Virtual Reality (D) Bioinformatics

The actuator is called the robot that can move in different directions and manage its activities.

Ans:A

25. Main ingredients used in cryosurgery- [J.B-19]
(A) Oxygen (B) Nitrogen
(C) Hydrogen (D) Methane

In this method, the following cryogenic agents or gases are used to freeze diseased parts – liquid nitrogen, liquid argon gas, liquid carbon dioxide gas, dimethyl ethyl proprene, nitrous oxide, ethyl chloride, fluorinated hydrocarbons etc.

Ans:B

26. Cryosurgery is used in the medical procedure-
(A) Argon (B) Carbon monoxide
(C) Solid nitrogen (D) Dimethanol ethane
Ans:A

27. Which one is related to cryosurgery? [D.B.-16]
(A) Fuzzy Logic (B) Special type of gloves
(C) Nitrogen (D) Navigation
Ans:C

28. Cryosurgery is used- [J.B.-16]
(A) Plastic surgery (B) Heart bypass
(C) Eye lens replacement (D) Liver cancer

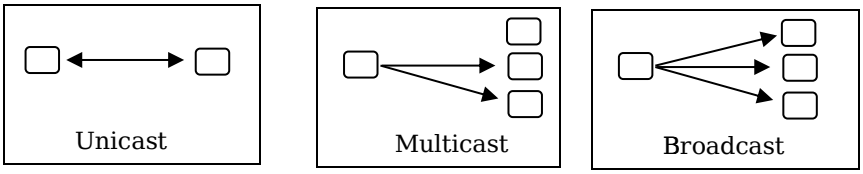
This mode is the fastest mode of communication. The disadvantage is that data exchange is more complex. Both transmission mediums must be active simultaneously.

Examples: Mobile phone, telephone communication systems.

Based on the receiver and data reception rights, data transmission modes can be divided into three types.

As follows:

1. Unicast
2. Multicast
3. Broadcast



Unicast:

The data transmission method in which data exchange happens only between one sender and one receiver is called the Unicast data transmission mode. This transmission can occur in Simplex, Half-Duplex, or Full-Duplex modes. Unicast is also called Point-to-Point or One-to-One transmission mode. Examples of Unicast data transmission mode include fax, mobile phone, telephone, toy car, walkie-talkie, single SMS etc.

Multicast:

The data transmission mode where only authorized recipients can receive the data is called the Multicast data transmission mode. Multicast is known as Point-to-Selected-Multipoint transmission system. Examples: Mobile conference, audio and video conferences, chatting, group SMS etc.

Broadcast:

The data transmission method where one sender exchanges data with multiple receivers is called the Broadcast data transmission mode. It is also called Point-to-Multipoint transmission system. Examples: Radio, television communication systems.

Data Communication Medium:

A medium is required to transfer data from sender to receiver. The channel or link through which data is sent from sender to receiver is called the Data Communication Medium or Channel or Link.

Video lectures of wire medium

This medium can be of two types:

1. Wired Medium
2. Wireless Medium

Wired Medium (Wirebase):

When data is transmitted from one place to another through wires, it is called Wired or Cable Medium. It is also called Guided Media. Wired media types include:

1. Telephone Cable
2. Twisted Pair Cable
3. Co-axial Cable
4. Optical Fiber or Fiber Optic Cable

Telephone Cable:

The first widely known medium was the telephone cable, which was very popular for telephone and internet connections. Over time, its use has almost disappeared.

Co-axial Cable:

The cable we see for TV or dish connections at home is a Co-axial cable. It is made using two conductive and two non-conductive layers. This cable mainly consists of three parts: the innermost part is a solid copper conductor; surrounding it is a white foam insulator separating the inner

Conversion of numbers

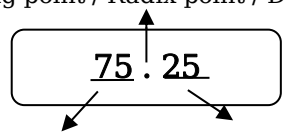
Lecture on Conversion of Number System

A number primarily consists of two parts:

1. Integer part. 2. Fractional part

And it typically has three components:

Floating point / Radix point / Decimal point



Integer Conversion The conversion of integers follows three rules:

- D to any => (Division method)
- any to D=>(Multilication method)
- B, O, H =>(Bit method)

B= Binary
O= Octal
D= Decimal
H=Hexadecimal
Any= Any Number System

D to any => (Divison System)

To convert a number **D** to **any other base**, you need to **divide D by the target base**. You'll then **save the remainder** from each division. When writing the answer, you should list these remainders from **bottom to top**.

Q-1. $(75)_{10} \longrightarrow (\ ?\ )_2$

2	75		LSB
2	37	→ 1	
2	18	→ 1	
2	9	→ 0	
2	4	→ 1	
2	2	→ 0	
2	1	→ 0	
	0	→ 1	MSB

Ans: $(1001011)_2$

Q-2. $(175)_{10} \longrightarrow (\ ?\ )_8$

8	175		LSB
8	21	→ 7	
8	2	→ 5	
	0	→ 2	MSB

Ans: $(257)_8$

Q-3. $(380)_{10} \longrightarrow (\ ?\ )_{16}$

16	380		LSB
16	23	→ 12/C	
16	1	→ 7	
	0	→ 1	MSB

Ans: $(17C)_{16}$

Creative Questions and Answers

Creative Questions – 1.

$Y = (A+B)(A+\overline{B})(\overline{A}+C)$

A. What is Boolean constant?

B. How many NAND gates are required to implement five inputs and gates? Explain.

C. Create a truth table of the logic function given to the stimulus.

D. Simplification of "Y" with Boolean algebra has made circuit implementation easier" - Analyze and verify the statement.

Creative Question 1 Solution

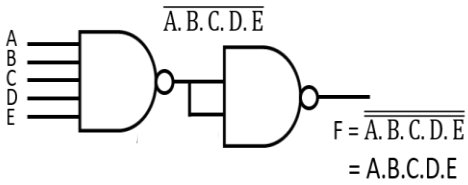
A. Answer:

The mathematical quantity that remains unchanged in Boolean algebra is called the Boolean constant.

For example , Y=A+0+1, where 0 and 1 are Boolean constants.

B. Answer:

Two NAND gates are required to implement five inputs and gates. It is explained below with the help of logic diagrams-



C. Answer:

The logic function given to the stimulus is,

$Y = (A + B)(A + \overline{B})(\overline{A} + C)$

The truth table of the logic function is given below-

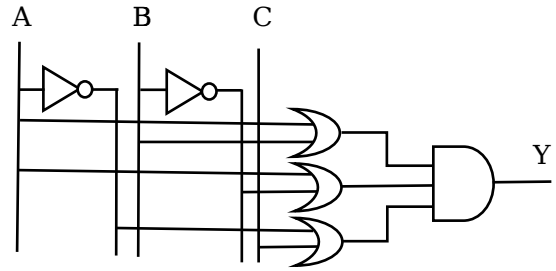
A	B	C	$\overline{A}$	$\overline{B}$	A+B	A+$\overline{B}$	$\overline{A}$+C	(A+B)(A+$\overline{B}$)($\overline{A}$+C)
0	0	0	1	1	0	1	1	0
0	0	1	1	1	0	1	1	0
0	1	0	1	0	1	0	1	0
0	1	1	1	0	1	0	1	0
1	0	0	0	1	1	1	0	0
1	0	1	0	1	1	1	1	1
1	1	0	0	0	1	1	0	0
1	1	1	0	0	1	1	1	1

D. Answer:

The logic function specified in the stimulus is,

$=(A+B)(A+\overline{B})(\overline{A}+C)$

The logic circuit of that function is as follows:



Six gates will be required to draw the circuit of that function. Now, simplifying Y we get,

$=(A+B)(A+\overline{B})(\overline{A}+C)$

$= (A.\ A+A.\overline{B}+AB+B.\overline{B})(\overline{A}+C)$

$=(A+A.\overline{B}+AB+0)(\overline{A}+C)$

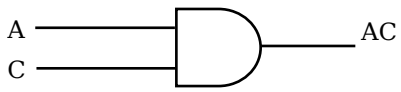
$=A(1+\overline{B}+B)(\overline{A}+C)$

$=A\cdot 1\cdot(\overline{A}+C)$

$=A\cdot\overline{A}+AC$

$=AC$

The circuit of the simplified function is as follows-

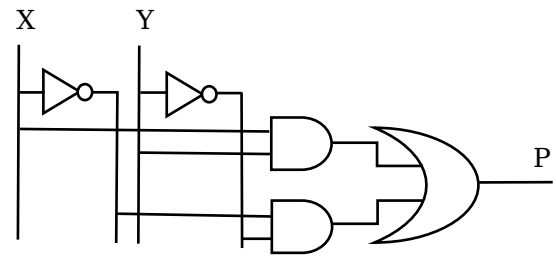


Thus, simplification of "Y" with Boolean algebra has made circuit implementation easier.

Creative Question 2.

Scenario 1:$PQR+P\overline{Q}R+P\overline{Q}R+\overline{P}\,\overline{Q}\,R$

Scenario 2:



A. What is a counter?

B. If all the inputs of NAND gate are the same, it is converted to the basic gate - explain.

B. Find the simplification value of scenario-1.

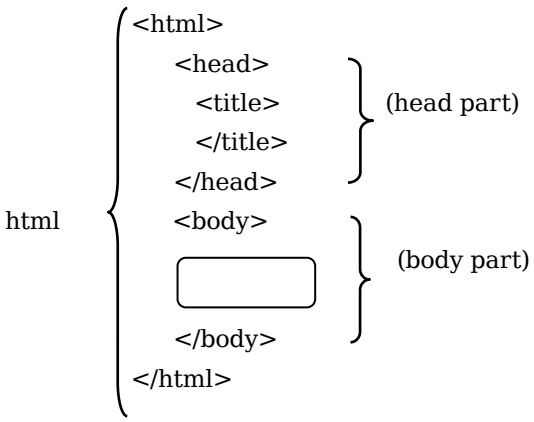
D. Implement the gate that the output of scenario-2 is similar to the NAND gate.

Structure of HTML:

HTML can be divided into two parts.

1. Head Part
2. Body Part

video lecture on **HTML Structure**



Four basic or fundamental HTML tags are: 1. <html> 2. <head> 3. <title> 4. <body>

Usage of Some Important Tags:

Paragraph Tag: This tag is used to write any text content.

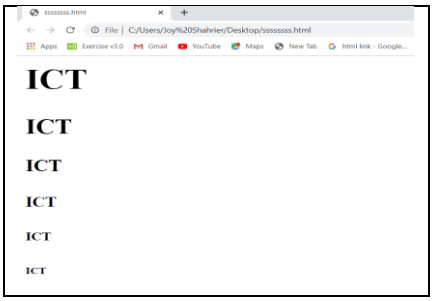
 I am a student

Heading Tags: In HTML, six types of heading tags are used, from <h1> to <h6>. <h1> is the largest heading, and < h6> is the smallest heading.

HTML Code:

```
<html>
   <boby>
      <h1> ICT </h1>
       <h2>ICT</h2>
       <h3>ICT</h3>
       <h4>ICT</h4>
       <h5> ICT </h5>
       <h6>ICT</h6>
     </boby>
</html>
```

Output:



Font <font> Tag: The <font> tag is used to set the color, size, and face (style) of text, and it can also be used for writing Bengali text.

```
<html>
   <boby>
      I am a <font color=”red”>student</font>
      I am a <font size=”20”>student</font>
      I am a <font face=”arial”>student</font>
      I am a <font face=”sutonnyMJ”>বাংলাদেশ </font>
   </boby>
</html>
```

Output:

I am a student

I am a student

I am a student

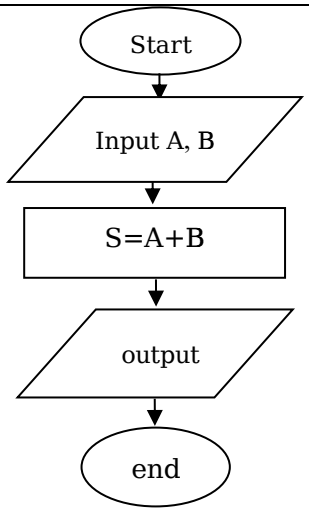
বাংলাদেশ

Some important algorithms, flowcharts, and C

Scan the QR code beside you to learn programming easily

1. Write the algorithm, flowchart, and C program to calculate the sum of two numbers.

Algorithm	Flowchart	C program

Step-1: Start
Step-2: Input A, B.
Step-3: S = A + B
Step-4: Result.
Step-5: End.
 	
Problem 1 video Lecture
		#include<stdio.h>
		#include<conio.h>
		main( )
		{
		int A, B, S;
		printf("Enter the value of A:");
		scanf("%d",&A);
		printf("Enter the value of B:");
		scanf("%d",&B);
		S=A+B;
		printf("Sum=%d",S);
		getch( ) ;
		}

2. Write the algorithm, flowchart and C program to calculate the **difference** of two numbers.

Lecture on 2 to 6

3. Write the algorithm, flowchart and C program to calculate the **product** of two numbers.

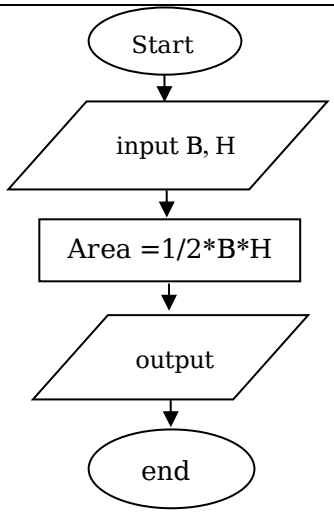
4. Write the algorithm, flowchart and C program to calculate the **quotient** of two numbers.

5. Write the algorithm, flowchart and C program to calculate the **sum of three numbers**.

6. Write the algorithm, flowchart and C program to calculate the **average of three numbers**.

7. Write the algorithm, flowchart and C program to calculate the **area of a triangle**.

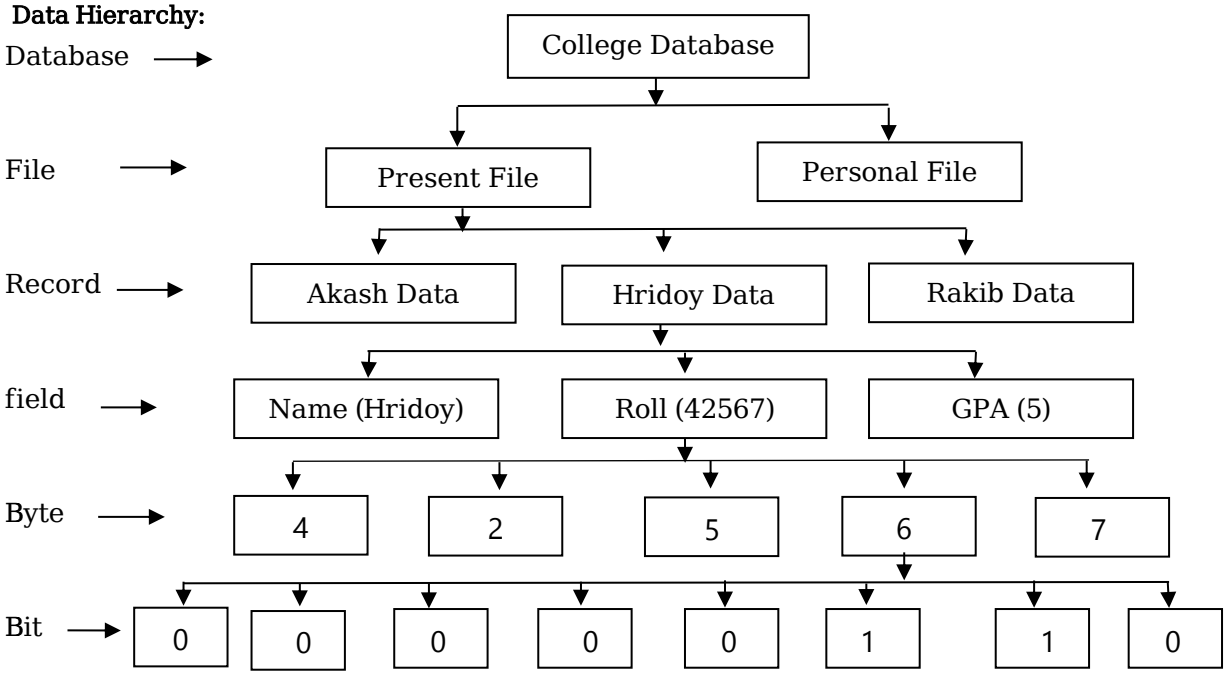
Algorithm	Flowchart	C program

Step-1: Start
Step-2: Input B and H
Step-3: CalArea =1/2×B×H
Step-4: Display the result
Step-5: End
 	
Lecture on 7 & 8
		#include<stdio.h>
		#include<conio.h>
		main ( )
		{
		float Area, B, H;
		printf("Enter Base:");
		scanf("%f",&B);
		printf("Enter Height:");
		scanf("%f",&H);
		Area =1/2*B*H;
		printf("Area= %f", Area);
		}

Data Hierarchy:

Data hierarchy is a structure composed of various components of a database such as bit, byte, field, record, file, etc. In other words, the sequential organization from database to file, record, field, byte, and bit is called a hierarchy.

Data Hierarchy:



Data Hierarchy Sequence: Database > File > Record > Field > Byte/Character > Bit

Entity: An entity is a being that can represent an object. The name given to represent a data table is called an entity. For example, if a student table is created, then "student" is the entity.

Entity Set: Similar types of entities are called an entity set.

Attribute: The fields or items or elements used to express the characteristics of an entity are called attributes. For example, a student's name, roll, address, etc., are each attribute.

Value: The value of each attribute used in an entity is called a value. For example – *Name* is an attribute whose value may be *Anjon*, *Roll* is an attribute whose value may be *840*

Entity	Attribute	Value
Student	Name	*Anjon*
	Address	Dhaka, Dhanmodi
	Roll Number	840
	Group	Science

Table: Students' Data

Field: A field is the smallest part of a file, where the user names similar types of data under one category.

Roll	Name	Class	Group	GPA
105	Emon	XI	H	4.50
108	Rakib	XI	S	5.00
114	Nazim	XI	S	5.00

Here, Roll, Name, Class, Group, GPA are fields.

Final Model Test

Creative Question-1.

Mr. Shihab is an aviator. He bought a 1 terabyte hard disk from the computer fair. He was surprised to see that it was quite small. With the advancement of technology, the size of different devices is getting smaller. The system of aviation training has also changed. Now they are trained to operate aircraft in a computer-controlled environment without using real aircraft.

A. What is a global village?

B. Explain the ethics of using information and communication technology.

C. Describe the technology being used to increase the capacity of small size hard disks in the stimulus.

D. Current technology used in aviation training can be used in the field of urban planning. Explain.

Creative Question-2.

Mr. 'A's' mobile works in LTE standard. Mr. 'A' sent some of his mobile photographs to the mobile phone of his friend Mr. 'B' using a special protocol of IEEE 802.15 standard.

A. What is Demodulation?

B. Explain the efficiency of the switch more than the hub.

C. Which generation is Mr. A' s mobile? Write down its characteristics.

D. The type of network used to transmit the images mentioned in the stimulus is effective at short distances but not suitable for long distances.

Creative Questions-3.

The total marks obtained in Jhumi and Rumi test examinations are $(920)_{10}$ and $(920)_8$ respectively. Their class rolls are $(37)_8$, and $(3A)_{16}$ respectively.

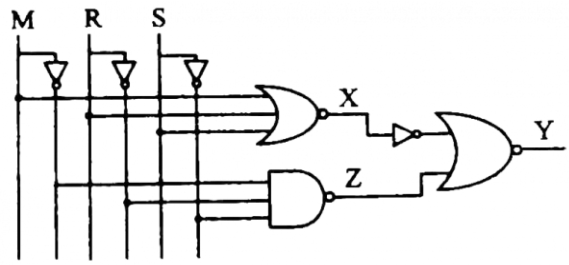
A. What is the binary number system?

B. Explain the code of 4 bits.

C. Convert the two roll numbers mentioned in the stimulus to conventional numbers.

D. Is it possible to determine the difference between the two numbers obtained by Jhumi and Rumi? Analyze.

Creative Question 4.



A. What is a register?

B. Simplify F=AB+AC+BC.

C. Determine the simplified value of Y in the stimulus.

D. Implement the simplified value of Y by the NAND gate.

Creative Question 5

A website of Chandana Model College is created using HTML only. The home page of the site has an image of ict.jpg name 200×300px in size. Below the image is a link to the notice page named notice.html. The text "Welcome to Chandana Model College" is displayed in blue above the image. There is no system to give visitors feedback on the site.

A. What is a web portal?

B. "Web browser and search engine are not the same" – Explain.

C. Write HTML code to create the home page mentioned in the stimulus.

D. Analyze the necessary steps taken to receive the views of visitors on the website.

Creative Questions 6

```
#include <stdio.h>
void main ( )
{
int i, s, n;
printf ("Enter Last Term ");
scanf("%d", &n);
s = 0;
for (i=1; i<=n; i=i+3)
s = s + i;
printf("Summation = % d'', s)
}
```

A. What is the program?

B. Why is C called a mid-label language?

C. Draw the flowchart of the program.

D. The program of the stimulus can also be done through the do. while group -explain with coding.

SELF TEST & MODEL TEST ANSWER SCRIPT

Chapter	Answer									
1	1.B	2.C	3.A	4.A	5.D	6.C	7.D	8.A	9.B	10.C
	11.C	12.B	13.B	14.C	15.A	16.C	17.B	18.D	19.B	20.B
2	1.D	2.B	3.B	4.B	5.D	6.B	7.D	8.A	9.D	10.D
	11.D	12.A	13.C	14.A	15.A	16.B	17.A	18.C	19.A	20.C
3.1	1.B	D	3.C	4.B	5.C	6.A	7.C	8.B	9.C	10.C
	11.D	12.C	13.A	14.B	15.A	16.C	17.C	18.A	19.C	20.B
3.2	1.D	2.B	3.B	4.C	5.C	6.C	7.D	8.A	9.B	10.B
	11.C	12.C	13.C	14.C	15.B	16.A	17.D	18.D	19.C	20.A
4	1.B	D	3.C	4.C	5.A	6.B	7.B	8.C	9.B	10.C
	11.C	12.B	13.B	14.B	15.B	16.B	17.A	18.A	19.B	20.A
5	1.D	D	3.D	4.A	5.D	6.B	7.D	8.A	9.D	10.C
	11.A	12.C	13.D	14.D	15.A	16.D	17.C	18.C	19.C	20.B
6	1.C	2.C	3.A	4.D	5.D	6.A	7.B	8.D	9.A	10.D
	11.C	12.A	13.A	14.D	15.A	16.C	17.D	18.A	19.A	20.A
Model test	1. D	2. B	3. B	4. A	5. A	6. A	7. A	8. A	9. B	Art. 10. T
	11. D	12. D	13. B	14. A	15. C	16. B	17. C	18. C	19. B	20. D
	21. B	22. B								