

Class VI

Lesson - 1 Who did Patrick's homework?

Chapter highlights

- Patrick always disliked doing his homework. Instead of doing his homework, he used to play basketball and football. His teachers were fed up with him.
- One day, he found his cat playing with a little doll but he later found it was not a doll but a tiny man wearing a woolen shirt with old-fashioned trousers and a long hat.
- The man told Patrick to save him from the cat. He promised to fulfil Patrick's wish if he saves him.
- Patrick became happy because the tiny man was the solution of his problems. He asked the tiny man to do the homework till the end of the semester which was of 35 days duration.
- The elf started doing Patrick's homework, but he faced lot of difficulties. → So he needed Patrick's help and told Patrick to find the meaning of words in dictionary.
 - He also found it difficult to solve mathematical problems
 - He did not have idea about human history and finds it mysterious.
- The tiny man got irritated and ordered Patrick to visit a library as he needed more and more books.

- As a result Patrick was working very hard and was studying till late nights.
- Finally the last day of the school arrived and there was no homework left. So the tiny man was free according to the agreement.
- Patrick got 'A' grade in all the subjects. The teachers were happy and appreciated his efforts.
- His parents and people witnessed a sea change in Patrick's behaviour.
- Patrick became a model child as he started cleaning his room, did other work and was cheerful. Thus he had developed a whole new attitude.
- Concluding, I would like to say that it was not the elf but Patrick himself who did his work. The elf just propelled him to do everything.

Word Meanings

1. Nintendo - a video game
2. Ignoramus - an ignorant person
3. Hamper - a basket with a carrying handle and a hinged lid, used for food, cutlery and plates on a picnic
4. Grimaced - an ugly, twisted expression on a person's face, typically expressing disgust or pain
5. Elf - a small creature with pointed ears who has magic powers.
6. Slyly - secretly

Answer the following questions

Q1. What did Patrick think his cat was playing with? What was it really?

Ans Patrick thought that his cat was playing with a little doll. It was not a doll but a tiny man (elf) wearing woolen shirt with old-fashioned trousers.

Q2. Why did the little man grant Patrick a wish?

Ans The little man granted Patrick a wish because he had saved the tiny man from the cat.

Q3. What was Patrick's wish?

Ans Patrick wanted the little man to do all his homework till the end of the semester for 35 days.

Q4. In what subjects did the little man need help, to do Patrick's homework?

Ans The little man needed help in finding the meaning of a word from the dictionary. He needed help in English, Mathematics and History.

Q5. How did Patrick help the elf?

Ans Patrick worked harder and visited the library several times. He was working till late nights and was going to school with his eyes puffed.

Q6. Who do you think did Patrick's homework - the littleman or Patrick himself?

Ans Patrick himself did his homework because the tiny man made him to do it. He told Patrick to find the meaning of a word from the dictionary and help him in completing assignment of History and solving mathematical problems.

Homework

I Give the meaning and frame sentences of the following words.

1. Nag
2. Weary
3. Strucked
4. Scowled
5. Glitch

II In the story Patrick does difficult things he hates to do, because the elf pretends he needs his help. Have you ever done something difficult or frightening by pretending about it in some way? Write your experience.

[Dear students,

Kindly write down word meaning, Question and answers + Homework in a notebook, if you have otherwise do it on ruled sheets.]

Class – VI
Chapter – 1 (History)
What, Where, How and When?

What is History?

- The word, 'history' is derived from the Greek word, 'historia' which means inquiry or research.
- History is a study of the past.
- History is a record of the people, places and events of the past arranged in a chronological order.

What can we know about the past?

There are several things we can know about our past such as:

- What people used to eat, the type of clothes they used to wear. The houses in which they lived.
- How were the lives of hunters, herders, farmers, rulers, merchants, priests, crafts person, artists, musicians, and scientists?
- The games children used to play, the stories they have heard, the songs they sang.

Where did people live?

- People have lived along the banks of the Narmada river for several hundred thousand years. These people stayed on the bank of Narmada river as they knew about the vast wealth of plants in the surrounding forests. They used to collect roots, fruits and other forest produce for their food They were skilled gatherers .Sometimes they also hunted animals.
 - The areas where women and men first began to grow crops such as wheat and barley was about 8000 years ago.
 - People also began to look after animals like sheep, goat, and cattle and used to live in villages.
 - The places where rice was first grown are to the north of the Vindhya.
 - About 2500 years ago, cities developed on the banks of the Ganga and its tributaries, and along the sea coasts.
- In ancient times, the area along the Ganga and its tributary rivers, to the south of the Ganga was known as Magadha which is now lying in the state of Bihar. Men and women moved in search of livelihood and also to escape from natural disasters like floods or droughts. These movements of people enriched our cultural traditions. People have shared new ways of carving stone, composing music, and even cooking food over several hundreds of years.

Names of the land

- Our country is known by both words i.e India and Bharat.
- The word **India** comes from the Indus, called Sindhu in Sanskrit. The Iranians and the Greeks who came through the northwest about 2500 years ago called it the Hindos or the Indos, and the land to the east of the river was called India.
- The name **Bharata** was used for a group of people who lived in the northwest, and who are mentioned in the Rigveda, the earliest composition in Sanskrit (dated to about 3500 years ago). Later it was used for the country.

Finding out about the past

- There are several ways of finding out about the past. One is to search for and read books that were written long ago. These are called manuscripts, because they were written by hand (this comes from the Latin word 'manu', meaning hand).
- These were usually written on palm leaf, or on the specially prepared bark of a tree known as the birch, which grows in the Himalayas.
- Many of these were written in Sanskrit, others were in Prakrit (languages used by ordinary people) and Tamil.

Inscriptions

- These are writings on relatively hard surfaces such as stone or metal. Sometimes, kings got their orders inscribed so that people could see, read and obey them.
- Process of reading and understanding the script used in inscriptions is called 'decipherment'.
- There are other kinds of inscriptions as well, where men and women (including kings and queens) recorded what they did. For example, kings often kept records of victories in battle.

Archaeologists

- An archaeologist is a person who studies the people and what they did in the past by the things they left behind.
- They look for artefacts, which are the things made by the people and these artefacts reveal more about the past. They also carry on excavations (Digging the surface of the earth)
- Archaeologists also study bones of animals, birds and fish to find out the food habits of the people of past. They even study the plant remains, but the plant remains barely survive for so long.
- The evidences found by the Archaeologists are called Sources.

Historians

- Historians are scholars who study the past.
- They gather information from historical sources.

One past or many

- The word 'pasts' in plural is used to draw attention to the fact that the past was different for different groups of people. For example, the lives of herders or farmers were different from those of kings and queens, the lives of merchants were different from those of crafts persons, and so on. It is even true today as people followed different practices and customs in different parts of the country.
- Archaeology did not help us to know more about the ordinary people in the past because they did not keep records of what they did. Whereas, kings used to keep the records of their victories and the battles they fought.

Why did people travel?

- People in the past travelled for one part of the subcontinent to another for following reasons:
 - For livelihood : People travelled to different places in search of livelihood.
 - To escape from Natural Disasters like; droughts or floods.
 - To capture land : At times, men marched in groups and armies to conquer lands of the others.
 - For Trade : The merchants also made their trips carrying valuable goods in caravans or ships from place to place.
 - To Preach : Religious teachers moved from village to village, town to town and stopped on the way to guide and advise people.
 - For Adventure : Some People travelled with a spirit of adventure. They wanted to discover new and exciting places.

What do dates mean?

- CE (Common Era) or AD Anno Domini, means in the year of Lord. BCE (Before Common Era) or BC-Before Christ.
- All the dates before the birth of the Christ are counted Backwards.

Q. *Answer the following questions:*

1. Define Archaeologists, Historians.
2. Differentiate between Inscriptions and Manuscripts?
3. Why did people travel in the ancient times?
4. Mention some archaeological sources of history?
5. What is AD and CE?
6. Why was it so that ordinary men and women did not generally keep records of their deeds?

CLASS VI GENERAL SCIENCE

LESSON 2 COMPONENTS OF FOOD(Continuation)

DIETARY FIBRE (ROUGHAGE)

Dietary fibres do not provide any nutrients to our body but it's an important component of food. They help in easy absorption of food, helps in movement of bowel and prevents constipation. It helps our body to get rid of undigested food. Cereals, fruits and vegetables are some of the roughage rich foods.

Functions of roughage

- # It provide the bulk to the food. This helps our body to get rid of undigested food.
- # It prevents constipation and ensures proper bowel movements.
- # It helps in retaining water.

WATER

Water performs the essential function of absorbing nutrients from our food. It also helps in releasing water from our body in form of sweat and urine.

Functions of water in our body

- # All the chemical reactions in the body, like digestion, occur in the dissolved or solution state.
- # Water helps to carry digested food around the body.
- # It also carries wastes, which are thrown out of the body in the form of sweat and urine. As a constituent of blood, it help in carrying chemicals and gases throughout the body.
- # Water also regulate the body temperature through sweating.

BALANCED DIET

A balanced diet is one that contains a variety of food items providing different types of nutrients in adequate amounts necessary for maintaining good health. The diet should contain a good amount of dietary fibre and water as well.

A balanced diet includes a combination of protein rich pulses, sprouted seeds etc. with combination of various flours and cereals for carbohydrates and fats along with fruits and vegetables which provide the necessary vitamins and minerals.

Things to remember

- # In addition to make sure that the right amount of food is eaten, it should also be ensured that food is properly cooked so that it does not end up losing its nutrients.
- # Repeated washing of fruits, vegetables, pulses, rice etc. can results in the loss of essential vitamins and minerals
- # Throwing away excess water which is used for cooking vegetables can result in the loss of considerable amount of important proteins and minerals present in them.
- # It's a well-known fact that vitamin C gets destroyed in the heat while cooking.

OBESITY

Fat is an energy source food for the body, but if we consume more fat than the body uses, it collects in our body and results in an imbalance. **The condition of accumulation of excess fat in the body due to over-consumption is called obesity.** Obesity harms the body in various ways. Obesity can lead to a number of diseases like heart diseases, diabetes etc.

DEFICIENCY DISEASES

Lack of one nutrient or more in the diet over a period of time can bring about undesirable changes in the structure and function of the body. **The disorder or disease caused due to lack of nutrients in the body is called deficiency diseases.**

The following table shows the details of deficiency diseases caused due to lack of nutrients.

Nutrients	Deficiency diseases	Symptoms	Sources
Vitamin A	Night blindness	Vision problem in low light	Green leafy vegetables, carrots, fish liver oil
Vitamin B	Beri beri	Tiredness, muscle ache, limb pain and swollen joints	Green vegetables, eggs, milk, whole cereals
Vitamin C	Scurvy	Swollen and bleeding gums, Loose teeth	Citrus fruits (lemon, orange), tomato, guava
Vitamin D	Rickets	Bones are soft and bent resulting in bowlegs and pigeon chest	Milk, egg yolk, fish liver oil, sunlight
Calcium	Bone and tooth decay	Tooth decay, weak bones, muscle and cramps	Milk, cheese, egg, meat, green vegetables, cereal
Iodine	Goitre	A lump or swelling in the neck, mental disability and retarded growth in children	Iodized salt, sea food,
Iron	Anaemia	Weakness, loses weight and pale appearance, brittle nails and irritability	Green leafy vegetables, legumes, spinach, jiggery, egg yolk, groundnut

ASSIGNMENT – 2

Q1. Raju was having difficulty in seeing things in dim light. The doctor tested her eyesight and prescribed a particular vitamin supplement. He also advised her to include a few food items in her diet.

- a. Which deficiency disease is she suffering from?
- b. Which nutrient may be lacking in her diet?
- c. Suggest some food items that she should include in her diet.

Q2. Choose the correct answer from the options given

- a. Goitre occurs due to the deficiency of _____
 1. Iron
 2. Potassium
 3. Iodine
 4. Calcium
- b. The role of roughage in our body is to _____
 1. Provides bulk to faecal matters
 2. Prevents constipation
 3. Helps in water retention
 4. All of these
- c. A balanced diet is the one which consists of adequate proportions of :
 1. Proteins, fats and carbohydrates
 2. Vitamins and minerals
 3. Roughage and water
 4. All of these
- d. Which one is an example of junk food
 1. Glucose
 2. Fruit juice
 3. Roti
 4. Pizza
- e. Which vitamin helps our body to absorb calcium?
 1. Vitamin C
 2. Vitamin A
 3. Vitamin D
 4. Vitamin B
- f. Which of these food ingredient is not obtained from plants or animals?
 1. Salt
 2. Milk
 3. Minerals
 4. Vitamins

g. Fats are:

1. Body building food
2. Energy giving food
3. Protective food
4. Needed of proper eye sight

Q. 3. Answer the following: -

- a. What are the role of carbohydrates and fats in our body.
- b. Which nutrient is the richest source of energy?
- c. What are the sources of vitamin A and B?
- d. List the functions of food.
- e. Why is water essential for our body

Q. 4. Name the following: -

- a. The diseases caused due to the lack of nutrients in our body a long period of time'
- b. The term given to the useful components of food.
- c. disease caused due to the deficiency of vitamin B
- d. one method to destroy vitamin C
- e. Disease leading to bow legs

Q. 5. Match the following: -

1. vitamins protect our body from	a. night blindness
2. Obesity is caused by	b. eyes
3. Sugar are potato are rich in	c. over eating
4, protective food	d. Diseases
5.Vitamin A deficiency causes	e. carbohydrates
6.Salads are good source of	f. protein
7.egg yolk is a good source of	g. vitamins and minerals

Answer to the practice questions

Ans. 1 Food constituents which are needed by us for growth and maintenance are called nutrients

Ans. 2. We need nutritious food for the proper growth and functioning of the body,

Ans 3. Rice, Rice and potato

Ans 4. Iron

Ans. 5. Protein

Ans. 6. Activity ----> To test the presence of fat in a food sample.

Things needed:- The food stuff (peeled ground nut) and a piece of white paper

Method:- Take some peeled ground nuts, wrap them in a piece of clean paper and crush it. Take care that paper does not tear. Remove the crushed ground nut and straighten the paper. Hold the paper against a light source.

Observation :- We can see an oily patch on the paper. This patch shows that the presence of fat in the given food sample

Ans 7. Pulses, Almond, egg, fish, meat

Ans.8 Fat

Ans. 9. Calcium is essential for the formation and hardening of bones and teeth.

Ans.10. Activity: To test the presence of starch in a food stuff.

Things needed: The food stuff (raw potato), Iodine solution and a dropper

Method:- Take a piece of raw potato and put a few drops of dilute iodine solution on its surface using a dropper.

Observation:- When we add dilute iodine solution to the cut raw potato, a blue black colour appears where the iodine drops fall. This shows that the potato contain starch.

ANSWER TO ASSIGNMENT – 1

1. Thermosphere
2. Air pollution
3. One-sixth
4. Pumice
5. Petroleum
6. Chlorofluorocarbons
7. Boiling and using modern purifying systems like RO system
8. Valentina Tereshkova
9. Helium
10. Obsidian

ASSIGNMENT -3 (class 6)

1. How night-blindness is caused?
2. What happens to vitamin C, when it gets heated during cooking?
3. Why it is necessary to take balanced diet for everybody?
4. How anaemia is caused?
5. How obesity is caused?
6. In which form, the main carbohydrates are found in our food?
7. What is meant by balanced diet?
8. Name two foods each rich in:-
 - (a) fat
 - (b) Protein
 - (c) Roughage
 - (d) Carbohydrates
9. Fill in the blanks:-
 - a. _____ is caused by vitamin D
 - b. Deficiency of _____ causes a disease known as beri beri.
 - c. Ricket is caused due to deficiency of _____ in our body.
10. Why should we not wash rice and pulses repeatedly?
11. Why do some people become lean and thin?
12. Do you think it is better to eat a bowl of fat than a bowl of carbohydrate? Why?
13. What kinds of symptoms are caused in our body by the deficiency of calcium?
14. Name the major nutrients in our food.
15. Match the items of column A with those in column B

COLUMN – A	COLUMN - B
Vitamin A	Scurvy
Vitamin B	Anaemia
Vitamin C	Ricket
Vitamin D	Goitre
Iron	Beri beri
Iodine	Night blindness
Calcium	Weak bone

16. Why do we cook food? (write four points)
17. Write any five methods of cooking food.
18. Why glucose is given to sports persons?
19. What are the harmful effects of obesity?
20. What happens when we eat lots of junk food?

CLASS – VI

COMPUTERS

ASSIGNMENT-1

PT-2

Instructions:-

- **This is the assignment for the students of class-6, based on chapter-1, “Introduction to Computers”.**
- **Students are suggested to go through the chapter enclosed in the form of PDF and do the back exercise.**
- **Students can use a separate notebook (Computers revision notebook) for the given assignment.**
- **Solved computers worksheet (based on PT-2 syllabus) will be provided later.**

Introduction To Computers

LEARNER'S OUTCOMES

After completing this chapter, you will be able to :

- ❖ list the characteristics of computers
- ❖ differentiate between the five generations of computers
- ❖ mention examples of each generation of computers
- ❖ list the different number systems
- ❖ convert decimal to binary number
- ❖ perform binary addition, subtraction, multiplication and division
- ❖ transfer data from a disk drive of a computer to a storage device
- ❖ list the limitations of computers
- ❖ define Artificial Intelligence
- ❖ convert binary to decimal number

CHARACTERISTICS OF COMPUTERS

A computer is a very useful machine. It has many characteristics. Some of its characteristics are superior even to human beings.

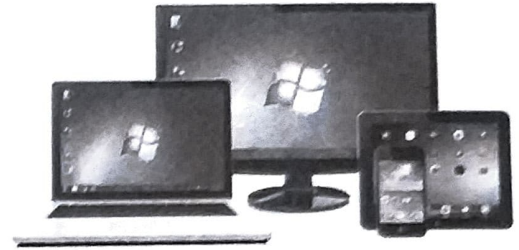
Let's discuss the common characteristics of a computer.

Speed

A computer is a very fast machine. It performs complicated calculations in a few seconds that a human being does in many years. It processes Millions of Instructions Per Second (MIPS).

Accuracy

A computer performs its tasks accurately. It never commits a mistake while calculating. When the input data and the set of instructions are correct, the result produced is accurate.



Remember

The errors in calculations arise due to incorrect input given by the users.

Large Memory

A computer has a large memory. It stores a large amount of data in its memory and retrieves them whenever required.

Diligence

A computer works tirelessly for a long time. Unlike human beings, it never feels bored or gets tired. When ten million calculations are to be performed, a computer performs the ten millionth calculation exactly with the same accuracy and speed as it performed the first one.

Do You Know

Some computers in scientific laboratories are working for many years without being shut down.

Versatility

A computer does a variety of tasks. Suppose, a computer is busy, preparing the result of a particular examination. The next moment, it gets the task of solving sum and all along it may also be used for playing songs. Briefly, a computer is capable of performing almost any task, provided the task is reduced to a set of instructions.

☐ LIMITATIONS OF COMPUTERS

A computer is a wonderful machine but it also has certain limitations :

No Intelligence

A computer is a machine. It does not possess intelligence of its own. It is dependent on the user for performing a task. It cannot take its own decision. Everything must be given as a set of instructions. It does only what it is told to do by a command.

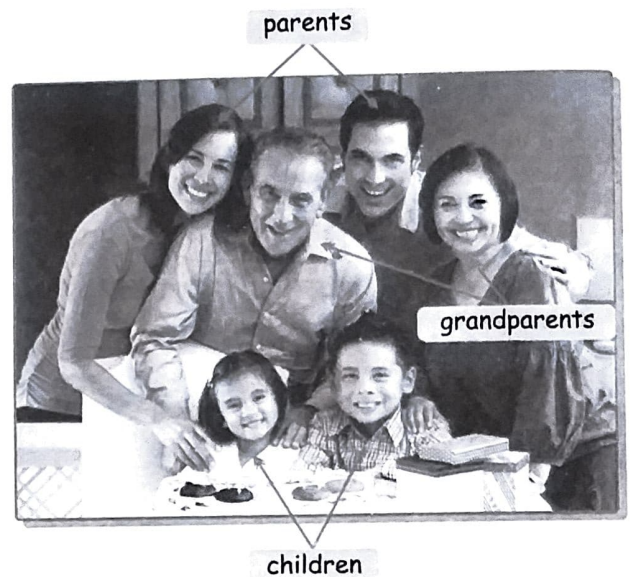
No Feelings

A computer does not have feelings or emotions. Based on our feelings, taste, knowledge and experience, we often make decisions in our day to day life. But, a computer cannot make judgements and decisions by itself. It is a machine.

☐ GENERATIONS

Do you know what the term **generation** means? In terms of time, it means **age group**. For example, you are your parent's child. Similarly, your father is your grandparent's child. So, your parents are in the first generation of your grandparents and you are in the second generation of your grandparents.

Hence, in this case of your grandfather, father and you, there are three generations. Similarly, the computer also has different generations.




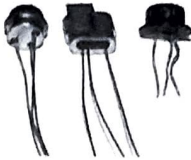
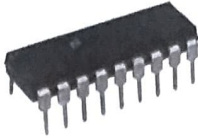

Multiple Choice Questions

Tick (✓) the correct option.

1. A computer is a very machine.
(a) fast (b) inefficient (c) slow
2. A computer processes of instructions per second.
(a) thousands (b) lakhs (c) millions
3. Generation means
(a) time machine (b) age group (c) blood group

Generations Of Computers

Computers are classified into five generations based on the technology used, the way they work and their size.

Generation	Period	Technology	Features	Examples
First	1940-1956	Vacuum Tubes 	<ul style="list-style-type: none"> ❖ Very heavy and large in size ❖ Very expensive ❖ Slow in speed ❖ Generates a lot of heat ❖ Limited commercial use as they were difficult to program 	ENIAC EDVAC UNIVAC
Second	1956-1964	Transistors 	<ul style="list-style-type: none"> ❖ Smaller, cheaper, faster than first generation computers ❖ Wider commercial use as they were easy to program than first generation computers 	ENIAC 1401 IBM 700 CDC 160
Third	1964-1975	Integrated Circuits (ICs) 	<ul style="list-style-type: none"> ❖ Smaller, cheaper, faster than second generation computers ❖ More accurate than second generation computers ❖ Increased storage capacity ❖ Known as general-purpose computer as they were able to execute any type of application 	IBM 360 ICL 1900 VAX 750
Fourth	1975-Present	Microprocessor 	<ul style="list-style-type: none"> ❖ Smaller, cheaper and faster than third generation computers ❖ More reliable and accurate than third generation computers ❖ Very easy to handle ❖ Greater storage capacity ❖ Popularly used at homes and offices 	IBM 4300 ICL 2900 HP 9000
Fifth	Present and Beyond	Artificial Intelligence	<ul style="list-style-type: none"> ❖ Intelligent like human beings ❖ Able to think and take decisions like us ❖ Used in areas such as robotics and defence 	Robots

Thus, each new generation resulted in the following changes :

- ❖ Decrease in size and cost
- ❖ Increase in the speed, reliability and storage capacity

Do You Know

- ❖ Transistors and Integrated Circuits (ICs) are electronic devices used in many machines, such as TV, radio, computer, mobile phone and washing machine.
- ❖ Microprocessor was first invented by Intel Corporation in the late 1970s. They revolutionised the computer system completely.
- ❖ Scientists are trying to develop Artificial Intelligence (AI) in computers. Active research work is going on all over the world.

Remember

Artificial Intelligence is the technique with which a machine is made to think and take decisions like human beings.

ICT Update

- ❖ **NEXI** is the next generation robot. It is able to show various human-like facial expressions such as 'slanting its eyebrows in anger' or 'raise them in surprise' while communicating with people.
- ❖ **Milo** is a two-foot-tall humanoid robot that interacts using children's voices and facial expressions with children suffering from autism (who tend to avoid eye contact and are uncomfortable interacting with humans)



Milo

➡ NUMBER SYSTEM

Suppose, you want to know the number of students in your class, what will you do? You will simply count the number of students one by one. The number system you use here is known as **decimal number system**. This is the most common number system. You know how to use it and how to do the mathematical operations such as addition, subtraction, multiplication and division in it.

There are 10 digits in a decimal number system. These 10 digits from 0 to 9 are used to represent a number or quantity. Any quantity greater than 9 is represented by a combination of two or more digits. For example, if we add 8 and 5, then the result is 13, which is a combination of 1 and 3.

Besides decimal number system, there are other number systems too. Some of them are :

- binary number system – It has two digits 0 & 1.
- octal number system – It has eight digits 0 to 7.

- ② hexadecimal number system – It has sixteen digits 0 to 9 and A, B, C, D, E, F where A represents 10, B represents 11 and so on.

All these number systems are used in computers. Let us learn about the most commonly used number system, the binary number system.

Binary Number System

Binary means composed of two. Binary number system uses only two digits, 0 and 1. Binary number system is used widely in computers.

You know that the decimal number system has ten digits from 0 to 9. As decimal number system has ten digits, it is called **Base 10 System**. Similarly, as the binary number system has only two digits, 0 and 1, it is called **Base 2 System**.

Remember

A digit in binary number system is called a bit. Bit stands for binary digit.

Look at the decimal numbers and their equivalent binary numbers.
(Binary numbers are represented here using **four bits**)

Decimal Number System	0	1	2	3	4	5	6	7	8	9
Binary Number System	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001

⇐ CONVERSION

You can convert binary numbers to decimal numbers and decimal numbers to binary numbers very easily.

Conversion From Binary To Decimal Number

Since, binary number system is based on two digits, 0 and 1, we take 2 as its base. Any binary number has positions starting from the decimal point.

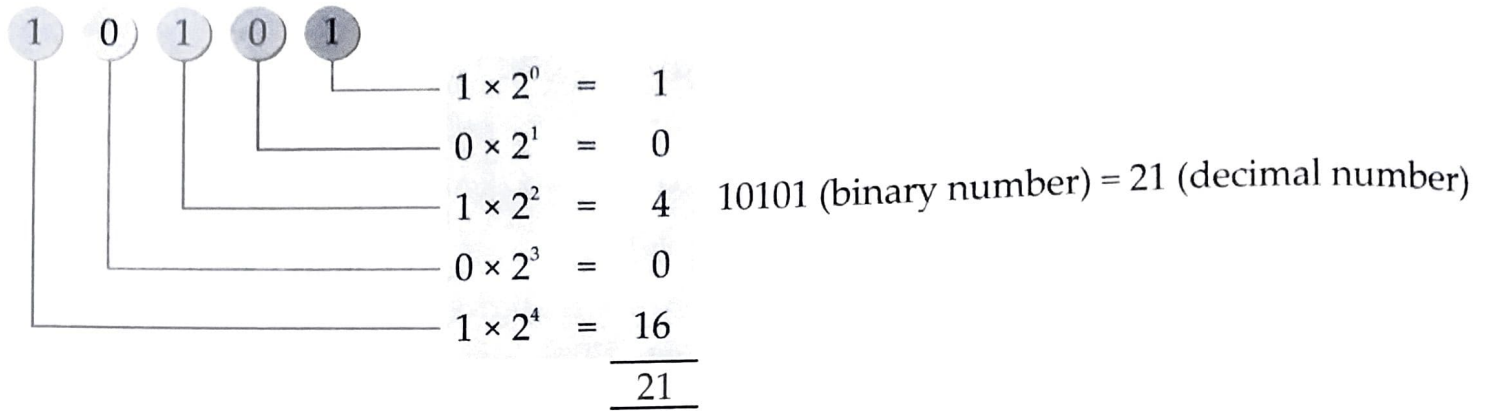
For example: 10101.011

The positions of the digits are :

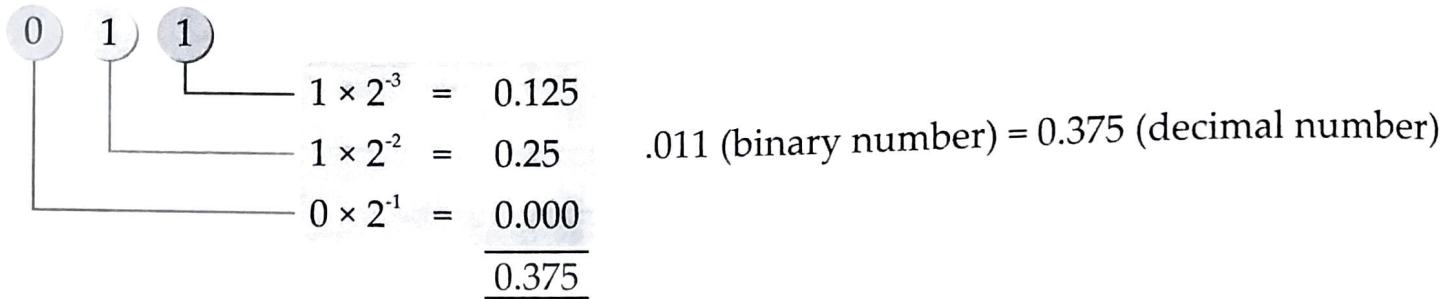
Digit	:	1	0	1	0	1	.	0	1	1
Position	:	4 th	3 rd	2 nd	1 st	0 th		-1 st	-2 nd	-3 rd

You can increase the position in both sides accordingly.

So, to convert **10101.011** into decimal number you have to add the product of the binary digit and its position in power base 2 as shown :



Similarly, for numbers after decimal point



Thus $(10101.011)_2 = (21.375)_{10}$

Conversion From Decimal To Binary Number

To convert a decimal number into binary number, follow the given steps:

STEP-1 Divide the decimal number by 2 continuously.

STEP-2 After each division write the remainder on the right hand side.

STEP-3 Arrange the remainder from bottom to top.

For example :

(a)

2	7	
2	3	1
2	1	1
2	0	1

Thus $(7)_{10} = (111)_2$

(b)

2	16	
2	8	0
2	4	0
2	2	0
2	1	0
	0	1

Thus $(16)_{10} = (10000)_2$

• PRACTICE TIME

1. Convert 1101.11 into its equivalent decimal number.
2. Convert the given decimal numbers into their binary equivalents: 8, 26, 47, 79, 84.

COMPUTER ARITHMETIC

You know addition, subtraction, multiplication and division of decimal numbers. You can perform the same operations with binary numbers too.

Let us now learn binary addition, subtraction, multiplication and division.


Binary Addition

Binary addition is similar to decimal addition. In binary, if sum of two numbers exceeds 1, a carry over is generated.

Rules					Example	
Bit1	Bit2	Addition			Add 101 with 101 $\begin{array}{r} 1 \quad 1 \leftarrow \text{carry over} \\ 1 \quad 0 \quad 1 \\ (+) \quad 1 \quad 0 \quad 1 \\ \hline 1 \quad 0 \quad 1 \quad 0 \end{array}$	
0	+	0	=	0		no carry over
0	+	1	=	1		no carry over
1	+	0	=	1		no carry over
1	+	1	=	0		carry over = 1

Binary Subtraction

Binary subtraction is also similar to subtraction of decimal numbers. You need to borrow from next higher bit in order to subtract a higher bit from a lower bit.

Rules					Example	
Bit1	Bit2	Subtract			Subtract 11 from 101 borrow from left  $\begin{array}{r} 0 \cancel{1} \quad 0 \quad 1 \\ (-) \quad \quad 1 \quad 1 \\ \hline 0 \quad 1 \quad 0 \end{array}$	
0	-	0	=	0		no borrowing
0	-	1	=	1		borrow from left
1	-	0	=	1		no borrowing
1	-	1	=	0		no borrowing

Binary Multiplication

Binary multiplication is similar to multiplication of decimal numbers.

Rules					Example
Bit1	Bit2	Multiply			Multiply 1001 with 11 $\begin{array}{r} 1 \quad 0 \quad 0 \quad 1 \\ (*) \quad \quad 1 \quad 1 \\ \hline 1 \quad 0 \quad 0 \quad 1 \\ 1 \quad 0 \quad 0 \quad 1 \quad * \\ \hline 1 \quad 1 \quad 0 \quad 1 \quad 1 \end{array}$
0	*	0	=	0	
0	*	1	=	0	
1	*	0	=	0	
1	*	1	=	1	

Binary Division

Binary division is similar to division of decimal numbers.

Example

Divide 1101 with 10

$$\begin{array}{r} 110 \longrightarrow \text{Quotient} \\ 10 \overline{) 1101} \longrightarrow \text{Dividend} \\ \underline{10} \\ 10 \\ \underline{10} \\ 001 \longrightarrow \text{Remainder} \end{array}$$

PRACTICE TIME

Perform the arithmetic operations on the following:

- | | |
|-----------------------|------------------------|
| (a) $11011 + 00100$ | (b) $01101 + 10111$ |
| (c) $11010 - 01000$ | (d) $10010 - 01000$ |
| (e) $1111 * 111$ | (f) $1100 * 100$ |
| (g) $100011 \div 110$ | (h) $1111001 \div 011$ |

FILE MANAGEMENT

File management is the process of managing files and folders stored in a computer. **Windows Explorer** is a file manager program available in Windows operating system. **ES File Explorer** is a file manager application that you can use on a tablet. You will learn more about file management in the next class.

Transferring Of Data

You can easily transfer the data from the hard disk of a computer to any storage device or vice-versa. Let us learn how to transfer data from the **Local Disk (D:)** drive of a computer to a pen drive.

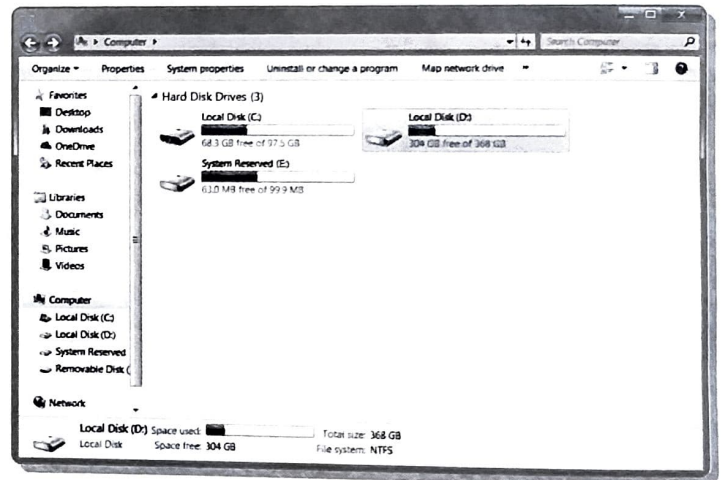
STEP1 Double-click the **Computer** icon on the desktop. A new window appears.

STEP2 Double-click on the **Local Disk (D:)** drive. A new screen appears.

STEP3 Select the files/folders you want to transfer and right-click on them. Click **Copy** option.

STEP4 Click **Back** button on the window, to go back to the previous screen.

STEP5 Insert a pen drive in the USB port of a computer. Select **Removable Disk (F:)** and right-click on it. Click **Paste** option.



More Fun In Lab



Collect the pictures of the things you see daily that signify speed, storage, accuracy, versatility and diligence. Insert these pictures in Microsoft Word 2010 as shown.

Speed	Accuracy	Storage	Diligence	Versatility

Key Points

- ❖ A computer is a very useful machine.
- ❖ Speed, accuracy, large memory, diligence and versatility are the common characteristics of a computer.
- ❖ Limitation of a computer is that it does not have intelligence and feelings.
- ❖ Computers are classified into five generations.
- ❖ Binary number system is widely used in computers.
- ❖ Conversion of binary numbers to decimal numbers and vice-versa can be done very easily.
- ❖ Arithmetic operations can be performed with decimal numbers as well as binary numbers.

Assignment-1

A. Answer the following:-

Q.1 Why do computer have no intelligence?

Q.2 What do you mean by versatility?

Q.3 What is Binary number system?

Q.4 Who invented the microprocessor?

Q.5 What was the time period of third generation computers?

Q.6 What are the limitations of a computer?

Q.7 Define Artificial Intelligence.

Q.8 List the characterstics of a computer.

Fill in the blanks:-

1. IC stands for _____
2. A computer has no _____
3. A computer does calculations _____ than human beings.
4. _____ generation computers used transistors.
5. Use of _____ revolutionised the computer system completely.
6. As binary number system has only two digits 0 and 1, it is called _____ system.

C. Convert the following binary numbers into decimal numbers.

1.) $(1110)_2$

2.) $(10010)_2$

3.) $(11010)_2$

4.) $(11101)_2$

D. Convert the following decimal numbers in to binary numbers.

1.) $(58)_{10}$

2.) $(75)_{10}$

3.) $(180)_{10}$

4.) $(121)_{10}$

E. Solve the following:-

1.) $10001+01010$

2.) $11101+10110$

3.) $1101*101$

4.) $1100111+111$
