



### Classification of Computer



#### Micro Computers

Micro Computer is a computer, whose CPU (Central Processing Unit) is a microprocessor. All components of the microprocessor are on a single integrated circuit chip.



#### It can also be categorized as following:

- ❖ Desktop
- ❖ Programmable
- ❖ Workstation



#### Mini Computers

They are faster than micro computers. Basically these are mainly multi-user systems, where many users work on the systems. Generally these types of computers possess larger memories and greater storage capacity.



#### Mainframe Computers

They are large and expensive machines. Generally they handle huge volumes of information and data. In terms of speed, they are having significant processing capacity. More than hundred users can support at a time. The ICL39 and IBM 3090/ 4300 are the examples of mainframe computers.



### Types of Computer

There are three types of computer including digital computers/analog computers and hybrid computers.



#### Digital Computer

The digital computer stores data, such as text and picture in the form of numbers and proceed in discrete steps from one state to the next. The state of a digital computer involves binary (Os and Is) digit. All operations are carried out on those digits at extremely fast rates. Digital computer can be further classified in the purpose wise and size and performance wise.



#### Analog Computer

Analog computers use continuous physical properties for calculations. An analog magnetic tape, for example, manipulates magnetism to record sound. The magnetic imprint on the tape is a direct analog of the sound, and is read back by a reader. An analog computer uses physical properties in the same way. Analog computers have been built using mechanical, hydraulic, optical and electric principles.



#### Hybrid Computers

The hybrid computers combine the best quantities of both analog and digital computers. These types of computers operate by measuring rather than by calculating. It works with analog or continuous values. Computations are carried out with physical quantities such as temperature, length and voltage. These types of computers are used for measurement of patient's blood pressure, heart beat and the operation is carried out in digital to monitor patient's initial sign.

## Commonly Asked QUESTIONS

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**Which of the following statements is true about micro computer?**

- (A) Microcomputer is faster than minicomputers
- (B) Microcomputer is a computer whose CPU (Central Processing Unit) is a microprocessor
- (C) Microcomputer can be categorized as desktop, workstation and programmable
- (D) (B) and (C) are true
- (E) None of these

**Answer: (D)**

**Explanation**

**Correct Option:**

(D) The options (B) and (C) are true

**Incorrect Option:**

Rests of the options are invalid.

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**Computers are of three types: digital computers, analog computers and hybrid computers. Which one of the following types of computer is used for measurement of patient's blood pressure?**

- (A) Digital
- (B) Analog
- (C) Hybrid
- (D) All of these
- (E) None of these

**Answer: (c)**

**Explanation**

**Correct Option:**

(C) The hybrid computers are used for measurement of patient's blood pressure

**Incorrect Option:**

Rests of the options are invalid.

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**The precision of analog computers is limited to.....**

- (A) One
- (B) Two
- (C) Three
- (D) Five
- (E) None of these

**Answer : (c)**

**Explanation**

**Correct Option:**

(C) The precision of analog computers is limited to three, or at most, four digits of precision.

**Incorrect Option:**

Rests of the options are invalid.



## Introduction to Number System

The number of digits in the system determines the base of any number system, such as decimal and binary. Basically binary is a base-2 number system as it uses two basic digits. Thus it means that the whole Binary number system depends on the two basic digits. Whereas Decimal is a base-10 system since it uses ten digits, and these are 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9.



## Decimal Number System

A system with base-10 is a decimal number system. Thus it means that there are ten basic digits on which the decimal number system depends. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8 and 9. By using these ten digits all the numbers in decimal number system are written. Thus the place value of a digit in a number increases the power from right to left. For example, the following are the place value of each digit of number 5471:

The place value of 1 is:  $1 \times 10^0 = 1$

The place value of 6 is:  $7 \times 10^1 = 70$

The place value of 3 is:  $4 \times 10^2 = 400$

The place value of 5 is:  $5 \times 10^3 = 5000$



## Binary Number System

A number system with a base-2 is known as binary number system. The whole binary number system depends on two digits these are 0 and 1, respectively. By using these two digits the numbers in binary number system are written. Thus the place value of a digit in a number increases in the power of 2 from right to left. The following example shows the place value of each digit in the number 101010 should be 010101

The place value of 1 is:  $1 \times 2^0 = 1$

The place value of 0 is:  $0 \times 2^1 = 0$

The place value of 1 is:  $1 \times 2^2 = 4$

The place value of 0 is:  $0 \times 2^3 = 0$

The place value of 1 is:  $1 \times 2^4 = 16$

The place value of 1 is:  $0 \times 2^5 = 0$



## Hexadecimal Number System

The hexadecimal number system is based on 16. It means, there are 16 basic digits on which whole hexadecimal number system depends. The digits are 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14 and 15, where as the numbers 10, 11, 12, 13, 14 and 15 are also represented as A, B, C, D, E and F. By using these 16 digits all the numbers in Hexadecimal number system are written. Thus the place value in hexadecimal system is increased in the power of 16 from right to left. The following example shows the place value of each digit in the number 121FA:

Place value of A is:  $10 \times 16^0 = 10$

Place value of F is:  $15 \times 16^1 = 240$

Place value of 6 is:  $1 \times 16^2 = 256$

Place value of 2 is:  $2 \times 16^3 = 8192$

Place value of 1 is:  $1 \times 16^4 = 65536$



## Introduction to ASCII

ASCII (American Standard Code for Information Interchange) is a seven bit code which includes 128 characters. Basically it is a method of character encoding. In 128 characters, 33 are printable characters and 94 are non printable characters.

### Commonly Asked QUESTIONS



ASCII (American Standard Code for Information Interchange) is a seven bit code. An ASCII code includes.....printable character.

- (A) 94
- (B) 33
- (C) 128
- (D) 31
- (E) None of these

**Answer: (b)**

Explanation

**Correct Option:**

(C) An ASCII is a seven bit code which includes 33 printable characters and 94 non printable characters.

**Incorrect Option:**

Rests of the options are invalid.



The hexadecimal number system is based on 16. In hexadecimal number system 15 is represented by?

- (A) A
- (B) B
- (C) E
- (D) F
- (E) None of these

**Answer: (d)**

Explanation

**Correct Option:**

(D) In hexadecimal number system 15 is represented by F.

**Incorrect Option:**

- (A) In hexadecimal number system 10 is represented by A.
- (B) In hexadecimal number system 11 is represented by B.
- (C) In hexadecimal number system 14 is represented by E.



A number system with a base-2 is known as binary number system. The whole binary number system depends on two digits. These are.....

- (A) 1 and 2
- (B) 0 and 1
- (C) 2 and 10
- (D) 1 and 16

(E) None of these

**Answer: (b)**

**Explanation**

Correct Option:

(B) The whole binary number system depends on two digits these are 0 and 1, respectively.

**Incorrect Option:**

Rests of the options are invalid



## Introduction to Programming Language

Computer programs are set of instructions that enable a computer to interact with the user, peripherals and information. These instructions are written in a language called computer programming language. The process of writing computer programs is called computer programming. Before writing a computer program first you develop an algorithm. An algorithm is a group of logical instruction that generates the output according to given input. These algorithms are written in Pseudo code. Pseudo code is an informal description of a computer program that is written in simple English.

While writing a program using a computer programming language, such as C, you need to follow the syntax of that language. A programming language also provides operators that enable you to perform various tasks, such as computing and manipulating values of variables, comparing values of different variables of same data types and testing multiple conditions. After developing algorithm you need to develop flowchart.



## Low Level Languages

A type of programming language that provides little or no abstraction from computer microprocessor is known as Low Level Language. Assembly language and Machine are the common examples of low level programming language. Low-level programming languages are sometimes divided into two categories these are 1 GL and 2 GL. The following are the features of low level programming language:

- ❖ The CPU (Central Processing Unit) which is the "brain" of computer understands easily.
- ❖ A low level program needs time and clear understanding of inner working of the processor.
- ❖ This programming language is used mainly for very small programs or for segments of code which are highly critical.



## Machine Language

The machine language is also called 1GL. This language is directly processed by microprocessor. There is no need to any translator.



## Assembly language

The assembly language is also called 2GL. This language is not directly processed by microprocessor. A translator namely Assembler converts it into machine language. The machine code is directly understood by microprocessor. Main features of assembly languages are:

- ❖ Allows symbolic designation of memory locations.
- ❖ Assembly language is very fast. The critical sections of programs written in higher level languages can be written in assembly to speed up sections.

- ❖ Changes should first be made in the source code of assembly language and then reassemble it to create a new object program.



## High Level Languages

High Level Programming language is a type of advanced computer programming language. FORTRAN, C, Common Business-Oriented Language (COBOL), Prolog and PASCAL are some of the common examples of High Level Language.



### Main features of High Level Languages are the following:

- ❖ Helps in development of large programs faster.
- ❖ Provides OOP (Object-Oriented Programming) features.
- ❖ Provides string handling routines.
- ❖ Provides file Input /Output as well.



## System Software

Software is a computer program which gives the instruction to computer to produce desire output. Basically there are two types of software. They are application software and system software. Application software, such as banking system only takes input by user and generates output. System software, such as compiler, DOS (Disk Operating System), Windows and drivers, is a kind of software that controls the working of hardware and help in execution of a general user's application. System software performs various types of functions, such as storage management, file editing, resource accounting, I/O management and database management. System software can be further categorized into three types.



### They are the following:

- ❖ System Management Software (operating systems, DBMS, operating environments)
- ❖ System Development Software (language translators, application generators, CASE tools)
- ❖ System Software Utilities



## Skinware

The outermost parts of the computer are called Skinware, such as cabinet of CPU. The main difference between hardware and skinware is that hardware can be an internal or external part of computer while skinware is only the mounted part. You can directly see the skinware without opening or removing any other part.



## Liveware

Liveware is also called humanware. The persons, such as computer programmer, operators and service engineers are directly or indirectly related with the computer are called liveware.



## Firmware

The combination of hardware and software is called firmware. For example, programs are software and CDs are hardware but program loaded CDs are called firmware.

## Commonly Asked QUESTIONS

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An algorithm is a group of logical instruction that generates the output according to given input. These algorithms are written in Pseudo code. Pseudo code is an informal description of a computer program that is written in simple .....

- (A) 'C' language
- (B) English language
- (C) Machine language
- (D) Assembly language
- (E) None of these

**Answer: (b)**

**Explanation**

**Correct Option:**

(B) Pseudo code is an informal description of a computer program that is written in simple English.

**Incorrect Option:**

Rests of the options are invalid

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Software is a computer program which can be categorized as application software and system software. Which one of the following is an example of system software?

- (A) Banking system
- (B) MS Word
- (C) DOS
- (D) All of these
- (E) None of these

**Answer :(C)**

**Explanation**

Correct Option:

(C) DOS is system software.

**Incorrect Option:**

(A) Banking system is application software.

(B) MS Word is application software.

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Computer programmer is responsible for developing computer program. Programmer is also called.....

- (A) Skinware
- (B) Firmware
- (C) Liveware
- (D) Analyzer
- (E) None of these

**Answer: (c)**

**Explanation**

**Correct Option:**

(C) The persons, such as computer programmer, are directly or indirectly related with the computer are called liveware

**Incorrect Option:**

(A) The outermost parts of the computer are called Skinware.

(B) The combination of hardware and software is called firmware.

(D) Rests of the options are invalid.

## You Must KNOW

- ❖ Former Prime Minister of India Mr. Rajiv Gandhi encouraged the use of computer in India.

## IMPORTANT TERMS

- ❖ **Digital Computer:** The digital computer stores data, such as text and picture in the form of numbers and proceed in discrete steps from one state to the next.
- ❖ **Super Computer:** The storage capacity of super computer is in pixabytes.
- ❖ **Assembly language:** This language is not directly processed by microprocessor.
- ❖ **Firmware:** The combination of hardware and software is called firmware
- ❖ **Liveware:** The persons, such as computer programmer, operators and service engineers are directly or indirectly related with the computer are called liveware.

## SUMMARY



- ❖ The microprocessor whose all components are on a single integrated, circuit chip
- ❖ The ICL39 and IBM 3090/4300 are the examples of mainframe computers.
- ❖ The analog computers are very fast. They solved most complex equation so quickly.
- ❖ ASCII is a method of character encoding.
- ❖ Computer programs are set of instructions that enable a computer to interact with the user, peripherals and information.
- ❖ Pseudo code is an informal description of a computer program that is written in simple English.
- ❖ The hybrid computers combine the best quantities of both of analog and digital computers.
- ❖ ASCII is a seven bit code which includes 128 characters.
- ❖ The outermost parts of the computer are called Skin ware, such as cabinet of CPU.
- ❖ Liveware is also called humanware.



## Abbreviations

ASCII	–	American Standard Code for Information Interchange
COBOL	–	Common Business Oriented Language
OOP	–	Object-Oriented Programming



# Self Evaluation **TEST**



Duration  
15 Minutes



**ASCII is a method of character encoding. The full form of ASCII is .....**

- (A) American Standard Code for Interrelated Information
- (B) All world Standard Code for Information Interchange
- (C) All world Standard Code for Interrelated Information
- (D) American Standard Code for Information Interchange
- (E) None of these



**ASCII is a ..... bit code which includes 128 characters.**

- (A) Six
- (B) Seven
- (C) Eight
- (D) Nine
- (E) None of these



**Software is a computer program which cannot be touched. Which one of the following is the example application software?**

- (A) Paint
- (B) MS Word
- (C) Power point
- (D) All of these
- (E) None of these



**System software can be further categorized into three types. Which of the following is system development software?**

- (A) Language translator
- (B) Application generator
- (C) CASE tools
- (D) All of these
- (E) None of these



**An outermost part of computer is called skin ware. Which one of the following is an example of skin ware?**

- (A) Hard disk
- (B) RAM
- (C) SMPS
- (D) Cabinet of CPU
- (E) None of these



**The combination of hardware and software is called.....**

- (A) Live ware
- (B) Firmware
- (C) Skin ware
- (D) System software

(E) None of these

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**Live ware is also called human ware. Which of the following is human ware?**

- (A) Computer operator
  - (B) Programmer
  - (C) Service engineers
  - (D) All of these
  - (E) None of these
- 



**System software performs various types of functions such as.....**

- (A) Storage management
  - (B) File editing
  - (C) Resource accounting
  - (D) All of these
  - (E) None of these
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**A translator converts code into machine code. That machine code is directly understood by microprocessor. Which of the following is translator?**

- (A) Interpreter
  - (B) Compiler
  - (C) Assembler
  - (D) All of these
  - (E) None of these
- 



**Match the following:**

**A**

- 1. Software stores in IC is an example of
- 2. Cabinet of CPU
- 3. CD of MS Word
- 4. Railway Reservation System

**B**

- A. Application software
- B. System software
- C. Skin ware
- D. Live ware
- E. Firmware

- (A) 1 - B, 2 - A, 3 - E, 4 - DB.
  - (B) 1 - D, 2 - C, 3 - E, 4 - AC.
  - (C) 1 - B, 2 - C, 3 - D, 4 - ED.
  - (D) 1 - B, 2 - D, 3 - A, 4 - EE.
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# Self Evaluation Test

## SOLUTIONS



### Explanation for Selected Questions

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**1. Correct Option:**

(D) American Standard Code for Information Interchange (ASCII)

**Incorrect Option:**

Rests of the options are invalid

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**2. Correct Option:**

(B) American Standard Code for Information Interchange (ASCII) is a seven bit code.

**Incorrect Option:**

Rests of the options are invalid

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**3. Correct Option:**

(D) Paint, MS Word, and PowerPoint all are application software.

**Incorrect Option:**

Rests of the options are invalid

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**4. Correct Option:**

(D) Language translators, application generators and CASE tools are all system development software.

**Incorrect Option:**

Rests of the options are invalid

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**5. Correct Option:**

(C) The outermost parts of the computer are called Skinware, such as cabinet of CPU. Skinware is only the mounted part.

**Incorrect Option:**

Rests of the options are invalid because all are hardware.

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**6. Correct Option:**

(B) The combination of hardware and software is called firmware. Incorrect Options:

(A) The persons who are directly or indirectly related with the computer are called live ware.

(C) The outermost parts of the computer are called Skin ware.

(D) System software is a type of software.

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**7. Correct Option:**

(D) The persons who are directly or indirectly related with the computer are called liveware or humanware.

**Incorrect Option:**

Rests of the options are invalid.

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**8. Correct Option:**

(D) System software performs various types of functions, such as storage management, file editing, resource accounting, I/O management and database management.

**Incorrect Option:**

Rests of the options are invalid.

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**9. Correct Option:**

(D) Assembler, Interpreter and compiler are all translators.

**Incorrect Option:**

Rests of the options are invalid.

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**10. Correct Option:**

Option (B) shows the correct match.

**Incorrect Option:**

Rests of the options are invalid.

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**Answers**

1.	D	2.	B	3.	D	4.	D	5.	D	6.	B	7.	D	8.	D	9.	D	10.	B
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