

Assignment Solutions:- Computer basics.

1. Computer is an electronic device that can store , retrieve and process data. It performs various task according to the set of instruction called programs. Modern computers are highly versatile, capable of execution a wide range of operation of programs, from word processing to complex scientific calculation.

2. RAM (random access memory) is a type of computer memory that can be accessed randomly. It is used by the system to store data and machine code currently being used. RAM is volatile, meaning it losses its data when power is turned off.

3. Data in a computers stored in various location depending on its use and the type pf data. Primary storage location include the hard drive (HDD), solid-state drive (SSD) , and RAM .Long term data is usually stored on HDDs, SSDs,while data being used actively used or processed in RAM.

4. The input device used to type text and number on a document in the computer system in the keyboard.

5.Output device are peripherals that receive data from the computers and present it to the user. Common output devices include monitors, printers, amnd speakers.

6. Mouse

7. Machine code or machine level language , binary language , 0,1.

8. Peripherals used to provide data and controls signals to a computers. Keyboard, mice,scanners,microphones.

FUNDAMENTALS OF JAVA ASSIGNMENT SOLUTION

1. **A programming language is a formal language comprising a set of instructions that produce various kinds of outputs, it is used by programmers like me, to communicate with computers and write programs that control the behaviour of a machine.**

2. Why do we need a Programming Language?

Programming languages are necessary for several reasons:

- **Communication:** They provide a way for humans to communicate instructions to a computer in a form that the computer can understand and execute.
- **Automation:** They allow for the automation of tasks, ranging from simple calculations to complex system management.
- **Efficiency:** They enable efficient data processing, which is essential for modern applications.
- **Problem Solving:** They provide tools and structures to solve problems in various domains, including science, engineering, and business.
- **Software Development:** They are essential for developing software applications, systems, and utilities that improve productivity and user experience.

3. What are the Features of Java?

Java is a widely-used programming language known for its several key features:

- **Object-Oriented:** Everything in Java is an object. It is based on the principles of classes and objects.
- **Platform-Independent:** Java code is compiled into bytecode that can run on any machine with a Java Virtual Machine (JVM), making it platform-independent.
- **Simple:** Java is designed to be easy to learn and use. Its syntax is clean and simple.
- **Secure:** Java provides a secure environment for developing and running applications, with features like bytecode verification and sandboxing.
- **Robust:** Java emphasizes checking for possible errors, as it has strong memory management and exception handling.
- **Multithreaded:** Java supports multithreading, which allows for the concurrent execution of two or more threads for maximum CPU utilization.
- **High Performance:** Java's performance is enhanced through the use of Just-In-Time (JIT) compilers.
- **Distributed:** Java is designed for the distributed environment of the internet.

- **Dynamic:** Java can adapt to an evolving environment. It supports dynamic memory allocation, ensuring efficient use of memory.

4. What is an Object?

An object is a basic unit of Object-Oriented Programming (OOP) that represents a real-world entity. It has:

- **State:** Represented by attributes or fields.
- **Behavior:** Represented by methods or functions.
- **Identity:** A unique identity that distinguishes it from other objects.

5. What is a Class?

A class is a blueprint or prototype for creating objects. It defines the fields (properties) and behaviors (methods) that the created objects will have. In Java, a class encapsulates data for the object and methods to manipulate that data.

6. Explain about the `main()` method in Java?

The `main()` method is the entry point of any Java application. It is always written as:

```
public static void main(String[] args) {
```

```
    // code to be executed
```

```
}
```

- **public:** The method is accessible from anywhere.
- **static:** The method can be called without creating an instance/object of the class.
- **void:** The method does not return any value.
- **main:** The name of the method that the JVM looks for as the starting point of the application.
- **`String[] args`:** An array of `String` arguments that can be passed to the program from the command line.

Java Variables and Data types

1. What is statically typed and Dynamically typed Programming Language?

- Statically Typed: In a statically typed language like Java, the type of each variable is known at compile time, and it cannot change.
- Dynamically Typed: In a dynamically typed language like Python, the type of a variable is determined at runtime, and it can change.

2. What is the variable in Java?

- In Java, a variable is a named memory location used to store data. It has a data type that specifies what kind of data it can hold.

3. How To Assign a Value To Variable?

- In Java, you can assign a value to a variable using the assignment operator =. For example:

```
int x = 10;
```

4. What are Primitive Data Types in Java?

- Primitive data types in Java are basic data types built into the Java language. They represent single values and are not objects. Examples include `int`, `double`, `boolean`, `char`, etc.

5. What are the Identifiers in Java?

- Identifiers in Java are names given to classes, methods, variables, and other elements in a program. They must follow certain rules, such as starting with a letter, underscore, or dollar sign, and can contain letters, digits, underscores, and dollar signs.

6. List the Operators in Java:

- Java operators include arithmetic operators (+, -, *, /, %), relational operators (==, !=, <, >, <=, >=), logical operators (&&, ||, !), assignment operators (=, +=, -=, *=, /=, %=), bitwise operators (&, |, ^, ~, <<, >>, >>>), etc.

7. Explain about Increment and Decrement operators and give an example:

- Increment (++) and decrement (--) operators are used to increase or decrease the value of a variable by one, respectively. They can be used as prefix (++i, --i) or postfix (i++, i--) operators.

```
int i = 5;
```

```
i++; // Increment i by 1
```

```
System.out.println(i); // Output: 6
```

