

OOP concepts and Class as Basis of All Computation

Define the following terms :-

OOP – Object Oriented Programming is an approach that provides a way for modularising programs by creating partitioned memory area for both data and functions. It overcome the traditional approach of programming.

Object – Object is an entity which includes data (characteristics) and functions (behaviour) together. It can be called as a software bundle of variables and related methods.

Abstraction – it is a feature of OOP which represents essential features of a system without going into background details.

Class – A class is a blueprint which represents a group of objects of the same kind. It defines the variables and methods common to all objects of a certain kind. For example class of car represents Maruti, Honda, Ford etc.

Encapsulation – It is the mechanism that binds and wraps up the data and methods together. It keeps them safe from being misused by outside access.

Inheritance – It is the process by which one object acquires the properties of another object. It ensures reusability of same code by defining only once.

The class whose property is acquired is called the **Base Class**. The class in which the property of the base class is acquired is called a **Derived Class**.

Polymorphism – ‘Poly’ means many, ‘morphism’ means phase. It means that the same operation/function may behave differently on different classes. Overloading and overriding are two types of polymorphism.

Keywords – Keywords are reserve words which convey a special meaning to language compiler. For example class, final, switch, void etc.

Literal – Literals are constant data values used in java programs. For e.g. 11, 29.7, ‘s’, “pincode” etc.

Identifiers – Identifiers are a named memory location in java programming which contains a value. These are also known as **variables** in java programming. The value of a variable can be changed depending upon the circumstances in a program.

Tokens – Each individual component of a program statement is referred as token. For e.g. literals, keywords, operators, identifiers etc.

Data types – It is a type of value stored in a variable which is used throughout a program as a constant to give meaningful result.

Operators – Operator are special symbols that perform specific operations such as arithmetical, logical operations etc.

Block – A block is a group of one or more statements between a pair of curly braces.

Comment – It is a remark statement in java to explain some aspect of the code to make it understandable to someone who is reading the program code. Comment lines are ignored by the compiler. It is of 3 types in java :-

- a) **Single line comments** – It is written using // symbol. E.g. // this is a comment
- b) **Multi line comments** – These are used when comments are written in many lines. They are written using /* and end with */

e.g. /* multi line comments are spread over many lines */

- c) **Documentation comments** – These are used to produce an HTML file that documents your program. They begin with /** and end with */

Q. What is Escape Sequence?

Ans. These are some non-graphic characters frequently used in java programs. An escape sequence starts with backslash(\) followed by one or more characters. For example :

\n new line character

\t horizontal tab

\r carriage return

\0 null character

Q. Write any 3 rules of naming a variable/identifier?

Ans

- i) It must start with a valid character/alphabet.
- ii) Variable must not contain any space.
- iii) We should not use any keyword a variable name.

Q. what is dynamic initialisation?

Ans. When a variable is initilised at the time of declaration then it is called dynamic initialisation.

E.g. int a = 90;

Double x=Math.sqrt(4);

Q. What is type conversion?

Ans. The process of converting one primitive type to another is called type conversion. It is of 2 types:

- a) Implicit conversion / Automatic conversion / Coercion
- b) Explicit conversion or Type casting.

Q. Explain implicit conversion?

Ans. In this type of conversion lower size data type is automatically converted to higher data type. This is done by java compiler without programmer's intervention. For example :

```
int a = 10;

double b=a;

System.out.println(b);

Output : 10.0
```

Q. What is type casting? Explain with example.

Ans. When any primitive type data is converted to another primitive type with programmer's intervention then it is called type casting or Explicit conversion. It is generally conversion of higher size data to lower data type. For example :

<pre>int x = 65; char a= (char)x; System.out.println(a); Output : A</pre>	<pre>double p=25.6; int s= (int)p; System.out.println(s); Output : 25</pre>
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Q. Differentiate between :

- a) '=' and '=='
- b) 'a' and "a"

'='	'=='
i) It is an Assignment Operator	i) It is a relational operator
ii) It is used to assign a value to a variable	ii) It is used to check the equality of 2 or more expressions.

'a'	"a"
i) It is a character literal ii) Only one character can be enclosed within single quotes	i) It is a String literal ii) One or more characters can be enclosed within double quotes to represent string.

Q. Write some examples of Relational, Arithmetic and Logical Operators.

Ans : Relational Operators – >, <, >=, <=, !=, ==.

Arithmetic Operators – +, -, *, /, %

Logical Operators – &&(and), ||(or), !(not)