

1. List and explain Java buzzwords. Which factors are making Java famous language.

Ans:- The Java Programming language is a high-level language that can be characterized by all of the following buzz words.

- \* Simple
- \* Object Oriented
- \* Distributed
- \* Interpreted
- \* Robust
- \* Secure
- \* Architecture neutral
- \* Portable
- \* High Performance
- \* Multithreaded
- \* Dynamic.

→ Simple :-

- Java was designed to be easy for Professional Programmer to learn and use effectively.
- It's simple and easy to learn if you already know the basic concepts of Object Oriented Programming.
- C++ Programmer can move to Java with very little effort to learn.

### → Object Oriented :-

- Java is true object oriented Language.
- Almost "Everything is an Object" Paradigm. All Program Code and data reside within Objects and classes.
- The object model in Java is simple and easy to extend
- Java Comes with an extensive set of classes, arranged in Packages that can be used in Our Programs through inheritance.

### → Distributed :-

- Java is designed for distributed environment of the internet. It's used for creating applications on networks.
- Java applications can access remote objects On internet as easily as they can do in local System.
- Java enables multiple Programmers at multiple remote locations to collaborate and work together on a single Project.

### → Compiled and interpreted :-

- Usually a computer language is either compiled or interpreted. Java Combines both this approach and makes it a two stage system.
- Compiled :- Java enables creation of a cross Platform Programs by Compiling into an intermediate representation called Java Byte Code.
- Interpreted :- Byte code is then interpreted, which generates machine code that can be directly executed by the machine that Provides a Java Virtual machine.

→ Robust :-

- It Provides many features that make the Program execute reliably in variety of Environments.
- Java is a strictly typed language. It checks code both at compile time and runtime.
- Java takes care of all memory management problems with Garbage Collection.
- Java, with the help of exception handling Captures all types of serious errors and eliminates any risk of crashing the system.

→ Secure :-

- Java Provides a "firewall" between a networked application and Your Computer.
- When a Java Compatible web browser is used ,downloading can be done Safely without fear of viral infection & malicious intent.
- Java achieves this Protection by Confining a Java Program to the Java execution Environment and not allowing it to access other parts of the Computer.

→ Architecture Neutral :-

- Java language and Java virtual machine helped in achieving the goal of "Write once; run anywhere , any time, forever".
- Changes and upgrades in operating systems, Processors and System resources will not force any changes in Java Programs

→ Portable :-

- Java Provides a way to download Programs dynamically to all the various types of Platforms connected to the internet.
- It helps in generating Portable executable code.

→ High Performance:-

- Java Performance is high because of the use of byte codes
- The bytecode was used, so that it was easily translated into native machine code.

→ Multithreaded:-

- Multithreaded Programs handled multiple tasks simultaneously which was helpful in creating interactive, networked Programs
- Java run-time system comes with tools that support MultiProcess synchronization used to construct smoothly interactive systems.

→ Dynamic :-

- Java is capable of linking in new class libraries, methods, and objects.
- It can also link native methods (the functions written in other languages such as C and C++)

Java has many factors. i.e., it is easy to learn, it is an Object Oriented Programming language.

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It has Rich API and Powerful development tools eg:- Eclipse, Netbeans. Java is free. So, this factors are making Java famous language.

2 what are the benefits of inheritance? Explain Various forms of inheritance with suitable code segments.

Ans:- Inheritance can be defined as the process where one class acquires the properties (methods and fields) of another.

Single Inheritance :- It refers to a child and parent class relationship where a class extends the another class.

Eg:- class A

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{

    public void methodA()

{

        System.out.println("Base")

Eg:- class A

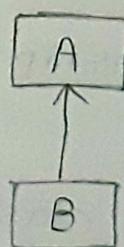
{

    int i;

    String A;

}

Class B extends A {



    Public void set values ()

{

        i = 5;

}

}

Multiple Inheritance:- It refers to the concept of one class extending more than one base class.

Eg:- Class X {

```
    Public void method() {
```

```
        System.out.println("Class X Method");
```

```
}
```

```
}
```

Class Y extends X {

```
    Public void methodY() {
```

```
        System.out.println("Class Y Method");
```

```
}
```

```
}
```

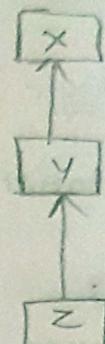
Class Z extends Y {

```
    Public void methodZ() {
```

```
        System.out.println("Class Z Method");
```

```
}
```

```
}
```



Hierarchical Inheritance:- It refers to a Super & Sub class relationship where more than one class extend the same class.

Eg:- Class A {

```
    ---
```

```
y
```

Class B extends A {

```
{
```

```
---
```

```
y
```

class C extends A

{

---

}

Hybrid Inheritance :- Combination of more than one type of Inheritance in a single Program.

Advantages of Inheritance:-

- (i) Inheritance promotes reusability
- (ii) Reusability enhances readability
- (iii) It helps reduce code redundancy & supports code extensibility.

3. Define a class named movie magic with the following description.

Instance variables /data members:

int year - to store the year of release of a movie

String title - to store the title of the movie.

float rating - to store the popularity rating of the movie.

(minimum rating = 0.0 and maximum rating = 5.0)

Member methods:-

(i) Movie Magic () Default Constructor to initialize numeric data members to 0 and string data member to "".

(ii) void accept () To input and store year, title and rating.

(iii) void display () To display the title of a movie and a message based on the rating as per the table below.

Rating      Message to be displayed

0.0 to 2.0      flop

2.1 to 3.4      semi-hit

3.5 to 4.5      hit

4.6 to 5.0      Super Hit.

write a main method to create an object of the class and call  
the above member methods.

Ans:- Program :-

```
import java.util.Scanner;  
  
class movieMagic  
{  
    int year;  
    String title;  
    float rating;  
    movie Magic ()  
    {  
        year = 0;  
        title = " ";  
        rating = 0;  
    }  
    void accept ()  
    {  
        Scanner sc = new Scanner (System.in);  
        System.out.Println ("Enter title");  
        title = sc.nextLine ();  
        System.out.Println ("Enter release year");  
    }  
}
```

```
year = sc.nextLine();
System.out.println ("Enter rating");
rating = sc.nextLine();

}

void display ()
{
    System.out.println ("Title: " + title);
    if (rating >= 0.0 && rating <= 2.0)
    {
        System.out.println ("Flop");
    }
    else if (rating >= 2.1 && rating <= 3.4)
    {
        System.out.println ("Semi hit");
    }
    else if (rating >= 3.5 && rating <= 4.5)
    {
        System.out.println ("Hit");
    }
    else if (rating >= 4.6 && rating <= 5.0)
    {
        System.out.println ("super hit");
    }
}
else
{
    System.out.println ("Rating should be b/w 0.0 and 5.0");
}
```

3

Public static void main (String arg [])

{

movieMagic ob = new movieMagic ();  
ob.accept ()  
ob.display ();

}

}

4. Write a class to overload a function num-calc () as follows:

i) void num-calc (int num, char ch) with one integer argument and one integer argument and one character argument, computes the square of integer argument if choice ch is 's' otherwise finds its cube.

ii) void num-calc (int a, int b, char ch) with two integer arguments and one character argument, it computes the product of integer arguments if ch is 'p' else adds the integers.

iii) void num-calc (String 1, String 2) with two string arguments, which prints whether the strings are equal or not.

Ans: Program:- Overloading function num-calc.

```
import java.io;  
import java.util.Scanner;  
Public class overloading{  
    void num-calc (int num, char ch){  
        int q=0;
```

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```
if (ch == 'S')  
{ q = num * num; }  
  
else  
{ q = num * num * num; }  
  
System.out.println(q);  
}'g'
```

```
Void num_calc (int a, int b, char ch) {
```

```
    int q;  
    if (ch == 'P')  
    { q = a * b; }  
  
    else  
    { q = a + b; }  
  
    System.out.println(q);
```

```
}
```

```
Void num_calc (String s1, String s2) {
```

```
    if (s1.equals(s2))
```

```
        System.out.println ("Both Strings Are equal");
```

```
    else
```

```
        System.out.println ("Both Strings Are Not equal");
```

```
}
```

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

```
    overloading obj = new
```

```
    overloading ();
```

```
    Scanner sc = new
```

```
    scanner (System.in);
```

```
    int num = sc.nextInt();
```

```
char ch1 = sc.next().charAt(0);  
int a = sc.nextInt();  
int b = sc.nextInt();  
char ch2 = sc.next().charAt(0);  
String s1 = sc.next();  
String s2 = sc.next();  
obj.num_calc(num, ch1);  
obj.num_calc(a, b, ch2);  
obj.num_calc(s1, s2);  
}  
}
```

Output:-

8  
S  
5  
3  
P  
tony  
Stark  
64  
15

Both strings are not equal.

Resources:-

- 1) <https://www.w3Professors.com> / Java buzzwords.
- 2) <https://beginnersbook.com> / inheritance in Java.