

CSE-D

JAVA-ASSIGNMENT-I

SET-4

19BQ1A05P1

1. what are the components of java platform? Explain.

write a java program to illustrate the using conditional statements and looping statements.

A Platform is the hardware or software Environment in which a program runs. the java platform differs from most other platform in that it's software - only platform that runs on top other hard-ware platforms that runs on top of other hard-ware platforms

The Java program has platforms are two components

→ Java Virtual Machine(JVM)

→ Java application Programming Interface (API)

1. Java virtual machine (JVM) :

JVM is an abstract machine. It's a specification that provides runtime Environment in which java byte code can executed. JVM is platform independent. The JVM performs following operation.

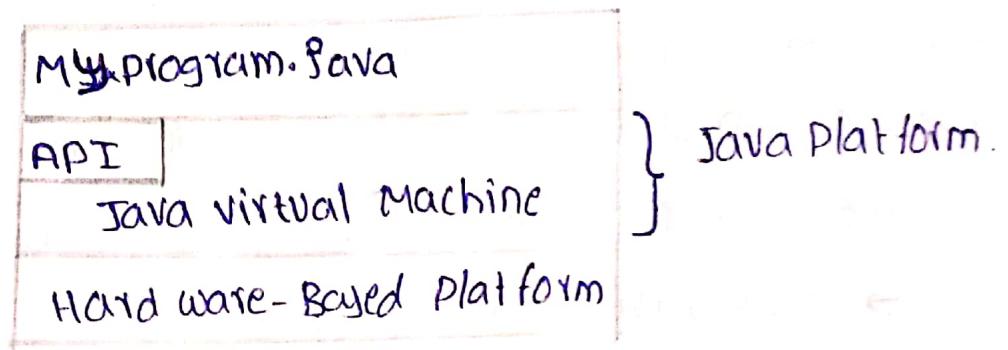
- * Loads code
- * verifies code
- * executes code

* provides run-time environment

In contains class loader, memory, Area, Execution Engine etc..

2. Java Application Programming Interface (API):

An API is a large collection of ready-made software components that provides many useful capabilities. It is grouped into libraries of related classes & interfaces. These libraries are known as packages.



The library contains components for managing input, database programming & much more.

program displaying prime numbers:

```
import java.util.Scanner;  
import java.lang.Math;  
public class Prime {  
    public static void main (String [] args) {  
        Scanner sc = new Scanner (System.in);  
        System.out.println ("Enter a number");  
        int a = sc.nextInt();  
        for (int i=1; i<a; i++) {  
            if (i<=10) {  
                int count = 0;  
                for (int j=1; j<=i; j++) {
```

```
if (count == 2)
    System.out.println(i);
}
else {
    if (i%2 == 0 && i%3 == 0 && i%5 == 0 && i%7 == 0
        && i%11 == 0 && i%13 == 0 && i%17 == 0
        && i%19 == 0 && (Math.sqrt(i))! = 0)
        System.out.println(i);
    }
}
}

Here for is called looping statement. and
if-else is called conditional statement.
```

2. write any six significant difference between
procedural oriented programming and object oriented progra-
mming. why JAVA is robust programming language?
Explain.

Difference between procedural oriented programming and
Object oriented Programming.

Procedural oriented programming vs Object oriented programming

- | | |
|---|---|
| 1. In Procedural programming, program is divided into small parts called "Functions". | 1. In object oriented programming is divided into small parts is called "objects" |
| 2. Procedural programming follows top down approach. | 2. Oriented programming (OOP) follows bottom up approach |
| 3. There is no access specifiers in procedural programming | 3. Object oriented programming have access specifiers like "Private", "Public", "Protected" etc.. |
| 4. Adding new data and function is not easy in procedural oriented programming. | 4. Adding new data and function is easy in object oriented programming. |
| 5. Procedural programming does not have any proper way for hiding data so, it is less secure. | 5. Object oriented programming provides data hiding so it is more secure. |

6. In procedural programming, overloading is not possible.
7. In procedural programming, function is more important than data.
8. Procedural programming is based on unreal world.
9. Examples:

C, FORTRAN, Pascal, Basic etc.

6. Overloading is possible in object oriented programming
7. In object oriented programming data is more important than function.
8. Object oriented programming is based on real world.
9. Examples:

C++, java, python, C# etc..

Why Java is "ROBUST PROGRAMMING LANGUAGE"

Robust means reliable and no programming language can really assure reliability. Java puts a lot of emphasis on early checking for possible errors, as Java compiler are able to detect many problems that would first show up during execution time in other languages.

Java has the strong memory allocation and automatic garbage collection mechanism. It provided the powerful "exception handling" and "type checking mechanism" as compare to other programming languages.

Compiler checks the programming whether there any error and interpreter checks any runtime error and makes the system secure from crash. All of the above features makes the Java language robust.

java Example of "robust" code

```
if (var == true){  
    ---  
} else if (var == false){  
    ---  
} else {  
    ---  
}
```

Robust Code means that program takes into account all possibilities, and that there is no such thing as an error - all situation handled by code and result in valid state, hence the "else"

1. java is robust because, it is highly supported language. it is portable across many operating systems. java also has feature of automatic memory management and garbage collection.
2. java is robust and flexible language because ~~java~~ java uses early checking for errors. later dynamic (run-time) error checking. java has a good mechanism for error checking. java is robust language because of its cross platform features which is supported by the java virtual machine.

3. To call a software to robust it must not crash in due to unwanted behavior. In "C" language, where the programmer manages memory ("manual allocation of memory"). It's common for a program to crash due to memory leak.

features of java programming language Robust:

BUILT IN MEMORY MANAGEMENT: memory allocation/deallocation is performed internally in java and pointers are not exposed to developer. Hence run-time segmentation fault kind of errors (due to pointer misuse) do not occur (or very rare).

GARBAGE COLLECTOR:

Since Garbage collector automatically cleans unreferenced objects, memory leaks are controlled.

EXCEPTION HANDLING:

Avoids applications crash & lets programmers to easily handle exception scenarios, and improve robustness.

CERTAIN FEATURES OF JAVA COMPILER SUCH AS STRONGLY TYPED:

Avoids automatic conversion, which reduces unexpected runtime behavior.

So, robustness characteristics of java Applications to run with minimal/no run time errors.

3.

Define a class parking lot with following description.

instance variables / data members:

int vno - To store the vehicle number

int hours - To store the number of hours the vehicle is parked in the parking lot.

double bill - To store bill amount

Member methods:

void input() - To input and store vno and hours.

void calculate() - To compute the parking charge at the rate of RS.3 for the first hour or part thereof and RS=1.50 for additional hour a part

void display() - To display details.

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

Package parkinglot features;

import java.util.Scanner;

class ParkingLot

{

 private int vno;

 private int hours;

 double bill;

 public void input()

{

 Scanner sc = new Scanner (System.in);

 System.out.println("Enter vehicle number");

 vno = sc.nextInt();

 System.out.println("Enter no. of hours");

 hours = sc.nextInt();

}

 public void calculate()

{

 bill = hours > 1 ? 3 + (hours - 1) * 1.5 : 3;

}

 public void display()

{

 System.out.println("Vehicle number is " + vno);

 System.out.println("Vehicle parked for " + hours + " hours");

 System.out.println("Amount to be paid is " + bill);

}

}

public class parkinglotfeatures

{

 public static void main (String [] args)

{

 ParkingLot obj = new ParkingLot();

 obj.input(); obj.calculate(); obj.display();

}

}

4. Design a class to overload a function joystring() as follows
- void joystring (string s, char ch1, char ch2) with string any two character argument ch2 in the given string s and prints the new string

EXAMPLE:

INPUT value of s = "TECHNLAGY"

ch₁ = 'A'

ch₂ = 'O'

OUTPUT : "TECHNOLOGY"

- void joystring() with one string argument that prints the position of the first space and the last space of given string

EXAMPLE:

INPUT value of s = "cloud computing means Internet based computing"

first index : 5

last index : 36.

- void joystring (string s₁, string s₂) with two string Argument that combines the two strings with space b/w them and print resultant string.

EXAMPLE:

INPUT value of s₁ = "COMMON WEALTH"

s₂ = "GAMES"

OUTPUT = "COMMON WEALTH GAMES"

```
import java.io.*;
import java.util.Scanner;
public class Overload
{
    void joystring (String s, char ch1, char ch2)
    {
        String op = " ";
        for (int i=0; i < s.length(); i++)
        {
            char ch = s.charAt(i);
            if (ch==ch1)
                ch=ch2;
            op+=ch;
        }
        System.out.println(op);
    }
    void joystring (String s)
    {
        int a=0;
        int b=0;
        for (int i=0; i < s.length(); i++)
        {
            char ch = s.charAt(i);
            if (ch == " ")
            {
                int a=i;
                ++b;
                if (b==1)
                    System.out.println("first index:" + a);
            }
        }
        System.out.println("last index:" + b);
    }
    void joystring (String s1, String s2)
```

```
{  
    System.out.println(s1+" "+s2);  
}  
public static void main (String [] args)  
{  
    Overload obj = new Overload();  
    String s = "TECHNALAGY";  
    char ch1 = 'A'  
    char ch2 = 'O';  
    String ss = "cloud computing means internet based  
                computing";  
    String s1 = "COMMON WEALTH";  
    String s2 = "GAMES";  
    obj.joystring (ch1,s,ch2);  
    obj.joystring (ss);  
    obj.joystring (s1,s2);  
}  
}
```