

1) What are the components of Javaplatform? Explain. Write a java program to illustrate the usage of conditionals statements & looping statements.

A) A platform is the hardware or software environment in which a program runs. The java platform differs from most other platforms in that it's a software-only platform that runs on top of other hard-ware platforms. The Javaplatform has two components

- Java virtual Machine (JVM)
- Java Application Programming Interface (API)

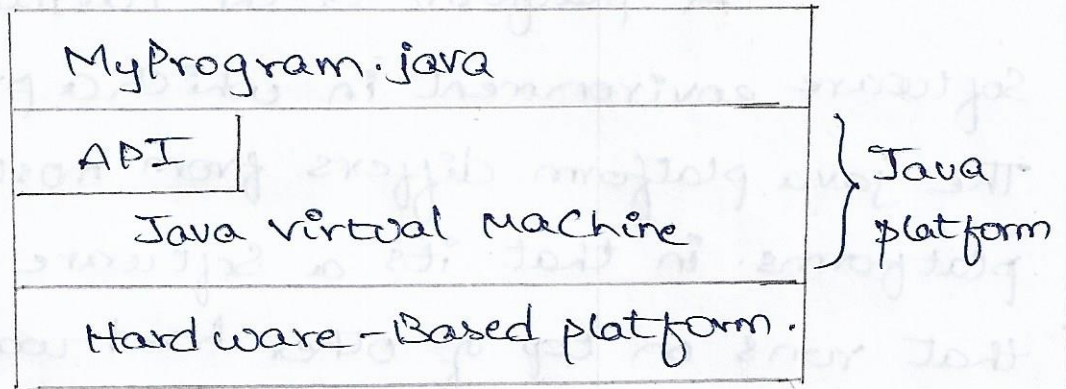
1) JVM is an abstract machine. It is a specification that provides runtime environment in which Java byte code can executed.

Jvm is platform independent. The Jvm performs following operation

- Loads Code
- verifies Code
- Executes Code
- provides runtime environment

It contains classloader, memory area, execution engine etc.

2) 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) { // opening
                int count = 0;
                for (int j = 1; j <= i; j++) {
                    if (i % j == 0)
                        count++;
                }
            }
        }
    }
}
```

```

        if (count == 2)
            System.out.println(i);
    } // closing.
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 &&
        i % (Math.sqrt(i)) != 0)
        System.out.println(i);
    }
}
}

```

Here for is called looping statement & if-else called conditional statement.

- 2) Write any six significant differences between procedure oriented programming & object oriented programming! Why Java is Robust programming language! Explain
- A) → procedure oriented programming is structure oriented programming whereas

oop is Object oriented

- In oop program is divided into objects whereas in pop program is divided into functions
- oop follows Bottom-up approach but pop follows Top-down approach.
- In oop Inheritance is allowed but in pop inheritance is not allowed.
- pop uses access specifier whereas oop doesn't use access specifier
- In oop hiding the data is done by Encapsulation but in pop no data hiding takes place
- Examples of oop are C++, Java whereas Examples for pop are C, Pascal.
- Data is shared among objects through the member functions in oop & In pop Global data is shared among functions in the program
- oop mainly focus on "data security" whereas pop on "how to get the task done".

Robust means strong. Java is Robust because:

- It uses Strong memory management
- There is lack of pointers that avoids security problems
- There is automatic garbage collection in java which runs on java virtual machine to get rid of objects which are not being used by Java application anymore
- There are exception handling & type checking mechanism in java. All these points make java robust.

- 3) Define a class parkingLot with description
Instance variables / data members:
int vno: To store vehicle number, int hours - To store hours of time parked in parking lot,
double bill - to store bill amount.
Member methods:
void input() - To store vno & hours, void Calculate()
To compute parking charge at Rs 40 for first hour
& Rs 1.50 for each additional hour. void display()
To display detail
Write a main method to create an object
& call above methods.


```

A) 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 hours for parking");
        hours = sc.nextInt();
    }

    public void calculate() {
        bill = hours > 1 ? 3 + (hours - 1) * 4.50 : 3;
    }

    public void display() {
        System.out.println("vehicle number is " + vno);
        System.out.println("vehicle is parked for "
            + hours + " hours");
        System.out.println("Amount paid is " + bill);
    }
}

public class ParkingLotFeatures {
    public static void main(String[] args) {
        ParkingLot obj = new ParkingLot();
        obj.input(); obj.calculate();
        obj.display();
    }
}

```

u) Design a class to overload JoyString()

(i) void JoyString (String s, char ch1, char ch2)
with one string & two characters that replaces
the character ch1 with ch2 & print new
string

(ii) void JoyString (String s) with one string prints
position of first space and last space in string

(iii) void JoyString (String s1, String s2) that
combines two strings with space & print
resultant string.

(i) Example

S = "TECHNOLGY"

ch1 = 'A'

ch2 = 'O'

output : "TECHNOLOGY"

(ii) Example

s1 = "COMMON WEALTH"

s2 = "GAMES"

output :

COMMON WEALTH GAMES

(ii) Example

s1 = "Cloud Computing means Internet based Computing"

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```

*) import java.util.*;
class OverRide {
    public void JoyString (string s, char ch1, char ch2){
        string replaced = s.replace(ch1, ch2);
        System.out.println (replaced);
    }
    public void JoyString (String s){
        ArrayList<Integer> arr = new ArrayList<Integer>();
        int currindex = 0;
        while (currindex != -1){
            currindex = s.indexOf(" ", currindex+1);
            arr.add(currindex);
        }
        System.out.println ("First Index : " + arr.get(0));
        System.out.println ("Last Index : " + arr.get(
            arr.size()-2));
    }
    public void JoyString (String s1, String s2){
        s1 = s1.concat(" ");
        s1 = s1.concat(s2);
        System.out.println(s1);
    }
}

```



```
public class StringOverloading {  
    public static void main (String[] args) {  
        OverRide obj = new OverRide ();  
        obj.JoyString ("TECHNALAGY", 'A', 'O');  
        obj.JoyString ("Cloud Computing means  
            Internet based Computing");  
        obj.JoyString ("COMMON WEALTH", "GAMES");  
    }  
}
```