1. What are the components of JAVA platform? Explain. Write a java program to illustrate to usage of conditional statements and looping statements.

A.

Platform

A platform is the hardware or software environment in which a program runs.

Most popular platforms like Microsoft Windows, Linux, Mac OS and Solaris OS can be described as a combination of the operating system and underlying hardware.
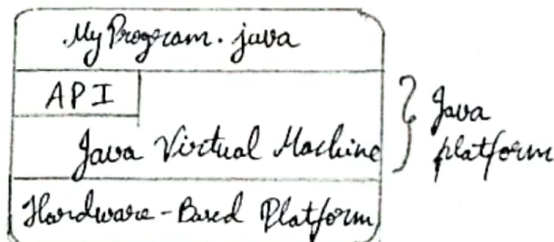
The Java platform differs from most other platforms in this it's a software-only platform that runs on top of other hardware-based platforms.

The Java platform has two components:

1) The Java Virtual Machine (JVM)
2) The Java Application Programming Interface (API)

1) JVM

It is the base for the Java platform and is ported onto various hardware-based platforms.

2) API

The API is a large collection of ready-made software components that provide many useful capabilities. It is grouped into libraries of related classes and interfaces, these libraries are known as packages.

My Program.java
API
Java Virtual Machine
Hardware-Based Platform

} Java platform

The API and Java Virtual Machine insulate the program from the underlying hardware.

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```java
import java.util.*;
class Main
{
    public static void main (String args[ ])
    {
        int [ ] a = {1, -9, 2, 6, -158, 296};
        int positive =0, negative = 0;
        int size = a.length;
        int i;
        for (i=0; i< size; i++)
        {
            if (a[i]<0)
                    negative ++;
            else if (a[i]>0)
                    positive++;
        }
        System.out.println("No of positive numbers"= + positive);
        System.out.println("No of negative numbers"= + negative);
    }
}
```

Output:

No. of positive numbers = 4

No. of negative numbers = 2

2. Write any six significant differences between Procedure Oriented Programming and Object Oriented Programming. Why JAVA is Robust programming language? Explain.

A. Conventional programming using high level languages such as COBOL, FORTON and C is commonly known as procedure-oriented programming. Object-oriented programming (OOP) is a programming language model organized around objects and data.

　　Differences between POP and OOP

S.No		Procedure Oriented Programming	Object Oriented Programming
1.	Importance	In POP, importance given to procedure rather than data.	In OOP, importance is given to the data rather than procedure.
2.	Divided into	In POP, large program is divided into small parts called functions.	In OOP, large program is divided into small parts called objects.
3.	Approach	POP follows TOP Down approach.	OOP follows Bottom Up approach.
4.	Data Hiding	POP does not have any proper way for hiding data so it is less secure.	OOP provides Data hiding so it provides more security.
5.	Expansion	To add new data and functions in POP is not so easy.	OOP provides all easy way to add new data and functions.
6.	Over loading	In POP Overloading is not possible.	In OOP overloading is possible in the form of method over loading and operator over loading.
	Examples	C, VB, FORTRAN, Pascal	C++, JAVA, VB.NET, C#.NET.

Robustness is the capacity of a computer system to handle the errors during the execution and manage the incorrect input of data.

Java is robust because it utilizes strong memory management. There is an absence of pointers that avoid security problems.

The strong type-checking mechanisms and exception handling in java makes it as a robust language.

3. Define a class ParkingLot with the 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 the 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 for the first hour or part thereof, and Rs 1.50 for each additional hour or part thereof.

void display() - To display the detail

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

Ans.

```java
import java.util.*;
public class ParkingLot {
    Scanner ak= new Scanner(System.in);
    int vno;
    int hours;
    double bill;
    void input()
    {
        System.out.println("Enter vehicle number: ");
        vno = ak.nextInt();
        System.out.println("Enter no of hours: ");
        hours = ak.nextInt();
    }
```

```java
void calculate ()
{
    if (hours <= 1)
        bill = hours * 3;
    else if (hours > 1)
        bill = 3 + (hours - 1) * 1.5;
}
void display ()
{
    System.out.println ("The vehicle is" + " " + Vno);
    System.out.println (" Total bill is" + " " + bill);
}
public static void main (String [] args) {
    ParkingLot ab = new ParkingLot ();
    ab. input ();
    ab. calculate ();
    ab. display ();
}
}
```

Output:-

Enter vehicle number :
123
Enter no. of hours :
2
The vehicle number is 123
Total bill is 4.5

Output 2 :-

Enter vehicle number:
369
Enter no. of hours :
1
The vehicle number is 369
Total bill is 3.0

4. Design a class to overload a function Joystring() as follows:

i, void Joystring (string s, char ch1, char ch2) with one string and two character arguments that replaces the character argument ch1 with the character argument ch2 in the given string s and prints the new string.

Example:

Input value of s = "TECHNALAGY"

ch1 = 'A'

ch2 = 'O'

Output: "TECHNOLOGY"

ii, void Joystring (string s) with one string argument that prints the position of the first space and the last space of the given string s.

Example:

Input value of = "Cloud computing means Internet based computing"

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iii, void Joystring (String s1, String s2) with two string arguments that combines the two strings with a space between them and prints the resultant string.

Example:

Input value of s1 = "COMMON WEALTH"

s2 = "GAMES"

Output: "COMMON WEALTH GAMES"

Ans:

```java
import java.util.*;
public class overload
{
    void Joystring (String s, char ch1, char ch2)
    {
        String A = s.replace (ch1, ch2);
        System.out.println ("New string is"+" "+A);
    }
```

```
void Joystring (String s)
{
    int B = s.indexOf(' ');
    System.out.println ("First Index :" + " " + B);
    int C = s.lastIndexOf(' ');
    System.out.println ("Last Index :" + " " + C);
}
void Joystring (String s1, String s2)
{
    String B = " ";
    String BC = s1.concat (B).concat (s2);
    System.out.println (BC);
}
public static void main (String args [])
{
    overload BC = new overload ();
    BC.Joystring ("TECHNALAGY", 'A', 'O');
    BC.Joystring (" cloud computing means Internet based computing");
    BC.Joystring ("COMMON WEALTH", "GAMES");
}
}
```

Output:-

New string is TECHNOLOGY

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COMMON WEALTH GAMES

Resources:-

1) docs.oracle.com
2) https://www.geeksforgeeks.org
3), 4) I had watched some youtube videos and done accordingly...