Task 1 - Basics

a). Write a JAVA program to display default value of all primitive data type of JAVA.

b). Write a java program that display the roots of a quadratic equation ax2+bx=0. Calculate the discriminate **d** and basing on value of **d**, describe the nature of root.

c). Write a case study on public static void main(250 words).

a).
```
class PrimitiveTypes
{
 static byte b;
 static short s;
 static int i;
 static long l;
 static boolean b1;
 static double d;
 static float f;
 public static void main(String args[])
 {
  System.out.println("byte default value ="+b);
  System.out.println("short default value ="+s);
  System.out.println("int default value ="+i);
  System.out.println("long default value ="+l);
  System.out.println("boolean default value ="+b1);
  System.out.println("double default value ="+d);
  System.out.println("float default value ="+f);
 }
}
```
 Output :-
  byte default value = 0
  short default value = 0
  int default value = 0
  long default value = 0
  boolean default value = False
  double default value = 0.0
  float default value =0.0

b).
```
import java.util.*;
class QuadraticDemo
{
 public static void main(String args[])
 {
  int a,b,c;
  double r1,r2,d;
  Scanner s=new Scanner(System.in);
  System. out. println("Given quadratic Equation : ax^2+bx+c");
  System.out.println("Enter a:");
```

```
  a=s.nextInt();
  System.out.println("Enter b:");
  b=s. nextInt();
  System.out.println("Enter c:");
  c=s.nextInt();
  d=b*b-4*a*c;
  if(d>0)
{
 System.out.println("Roots are Real and Unequal");
 r1=(-b+Math.sqrt(d))/(2*a);
 r2=(-b-Math.sqrt(d))/(2*a);
 System.out.println("First root is :"+r1);
 System.out.println("Second root is :"+r2);
}
else if(d==0)
{
  System.out.println("Roots are Real and Equal");
  r1=(-b+Math.sqrt(d))/(2*a);
  System.out.println("Root :"+r1);
}
else
{
  System.out.println("Roots are Imaginary");
}
}
}
```

Output :-
Given quadratic Equation : ax^2+bx+c
Enter a : 2
Enter b : 3
Enter c : 1
Roots are Real and unequal
First root is : -0.2
Second root is : -1.0

c) Case Study:-
The program structure of a simple java program is given below with different steps.

- **Step-1:** Click start + run and then type notepad in run dialogue box and click ok. It displays notepad .
- **Step-2:** In run dialogue box type cmd and click ok. It display command prompt.
- **Step-3:** Type the following program in the notepad and save the program as "Example.java" in a current working directory.

```
Class Example
 {
 public static void main(String args[])
 {
  System.out.println("Welcome");
 }
 }
```

- **Step-4:** (Compilation)
  To compile the program type the following in the current working directory and then click enter
  C:\xxx>javac Example.java
- **Step-5:** Execution
  To run the program type the following in the current working directory and then click enter
  C:\xxx>java Example

Explanation:-

- Generally the file name and class name should be the same. If it is not the same than the java file can be compiled but it cannot be executed. That is when execution gives the following error.
- Exception in thread "main" java.lang.no class be found error: ex
- In the public static void main(String args[]) statement
  - ❖ public is an access specifier . If a class is visible to all classes then the public is used.
  - ❖ main() must be declared as public since it must be called by outside of its class.
  - ❖ The keyword void represents that main() doesnot return a values.
  - ❖ The keyword static represents main() to be called without creating an object of the class.
  - ❖ The main method contains one parameter String args[]
  - ❖ We can send same input values(arguments) at run these arguments time to the String args[] of the main. These arguments are called Command-line arguments. These Command-line arguments are passed at the command prompt.
  - ❖ In System.out.println("Welcome"); statement.
  - ❖ System is a predefined class that provide access to the system.
  - ❖ out is the output stream.
  - ❖ println() method display the output in different line. If we use print() method it display the output in the same line.