

Q1)) Write a Java Program to calculate the following Polynomial:

$$y = u + \frac{u^2}{2} + \frac{u^3}{3} + \frac{u^4}{4} + \frac{u^5}{5} \quad \left(\frac{u^i}{i}\right)$$

```
public class Polynomial
{
    public static void main(String args[])
    {
        double u = 0.2;
        double y = 0.0;
        for (int i=1; i<=5 ; i++)
            y+= Math.pow(u,i) / i;
        System.out.println("Polynomial = "+y);
    }
}
```

Q2)) Write a program using a method called changeC2F to convert temperature in Celsius to Fahrenheit with the formula:

$$F = 9C/5 + 32$$

Invoke the method changeC2F from the main method

```
public class Temperature
{
    public double changeC2F(double C)
    {
        double F = 9*C/5 + 32;      return 9*C/5+32;
        return F;
    }

    public static void main(String args[])
    {
        double C = 37.0;
        System.out.println("Enter temperature in Celsius:");
        C = double.parseDouble(stdin.readLine());

        double F = changeC2F(C);
        System.out.println("Temperature in Fahrenheit = "+F);

        System.out.println("Temperature in Fahrenheit = "+ changeC2F(C));
    }
}
```

**Q2: The following class called Rectangle is given as:**

```
public class Rectangle
{
    double length;
    double width;
}
```

**Complete declaration of the class:**

- Create a default constructor
- Create a constructor with input parameters
- Add a new method called set() to set the values of length and width
- Add a new method area() to calculate the area of rectangle.

**In the main method**

- Create an object called shape1 using default constructor
- Create an object called shape2 using constructor with input parameters,
- Invoke the method set() to set the values of length and width of the object shape1
- Invoke the method area() to calculate the area of the object shape2

```
public class Rectangle
{
    double length;
    double width;

    public void Rectangle() // default constructor
    {
        length = 0;
        width = 0;
    }

    public void Rectangle(double l, double w) // constructor with parameters
    {
        length = l;
        width = w;
    }

    public void set(double l, double w) // set values
    {
        length = l;
        width = w;
    }
}
```

```

public void setlength(double l) // set length value
{
    length = l;
}

public double area() // calculate area
{
    return l*w;
}

public double perimeter() // calculate perimeter
{
    return 2*(l+w);
}

public static void main(String args [])
{
    Rectangle shape1;
    Rectangle shape1 = new Rectangle();
    Rectangle shape2 = new Rectangle(15.0, 32.0);
    shape1.set(12.0, 25.0);

    double area2 = shape2.area();
    System.out.println("Area of 2nd rectangle: "+area2);

    System.out.println("Area of 2nd rectangle: "+shape2.area());

}
}

```

**Q4) What is the output of the following program:**

```
class Printstars
{
    public static void print_multiple_stars(int i)
    {
        int k;
        for (k=1; k<=i; k=k+1)
            System.out.print("*");
    }

    public static void main(String args [])
    {
        int j=2;
        print_multiple_stars(j*2);
        System.out.println("j*2");
    }
}
```

**** j*2
-------------

**Q4) Find errors and correct (if any) in the following program:**

```
class Check even
{
    public static double is_even(int k)
    {
        if (k%2==0)      Return true;
        else              Return false;
    }

    public static void main(String args [])
    {
        boolean flag;
        int i = 11, int j=21;
        flag = is_even("i*j");
        System.put.println(" Is i*j even? ", flag);
    }
}
```

```
class Check even
{
    public static boolean is_even(int k)
    {
        if (k%2==0)      return true;
        else              return false;
    }

    public static void main(String args [])
    {
        boolean flag;
        int i = 11, j=21;
        flag = is_even(i*j);
        System.put.println("Is " +i*j+ " even? "+flag);
    }
}
```