

LABORATORY - I

5TH DECEMBER, 2023

TUESDAY.

- 1) Write a program in JAVA to display your name.

```
import java.util.*;  
class PranavSrinivas  
{
```

```
    public static void main (String args[])  

```

```
        System.out.println ("PRANAV SRINIVAS");  

```

```
}
```

PRANAV SRINIVAS

- 2) Write a program in JAVA to accept an integer and check whether it's an even or an odd number.

```
import java.util.*;
```

```
class evenodd
```

```
{
```

```
    public static void main (String args[])
```

```
{
```

```
    Scanner s = new Scanner (System.in);
```

```
    System.out.println ("Enter any integer:\t");
```

```
    int n = s.nextInt();
```

```
    if (n % 2 == 0)
```

```
        System.out.println (n + " is an even number.");
```

```
    else
```

```
        System.out.println (n + " is an odd number.");
```

```
}
```

```
}
```

Enter any integer: 41

41 is an odd number

- 3) Write a program in JAVA to accept a positive integer 'x' and find the n^{th} root of the given positive integer.

```

import java.util.*;
class Pranav
{
    public static void main (String args[])
    {
        Scanner s = new Scanner (System.in);
        System.out.println ("Enter a positive integer: ");
        int x = s.nextInt();
        while (x > 0)
        {
            System.out.println ("Enter the root: ");
            int n = s.nextInt();
            float a = pow (x, (1/n));
            break;
        }
        System.out.println ("x + " + "1/" + n + "=" + a);
    }
}

```

Enter a positive integer: 16

Enter the root: 2 $16^{1/2} = 4$

- 4) Write a program in JAVA to accept the number of units consumed in 'units' and to print the electricity bill using the following table:

Units consumed	Price per unit
Less than 100	₹ 1.20
For next 200 units	₹ 2.00
For next 100 units	₹ 3.00
Greater than 400	₹ 3.50

```
import java.util.*;
class ElectricityBill
{
    public static void main (String args[])
    {
        Scanner s = new Scanner (System.in);
        System.out.println ("Enter number of units consumed:");
        float units = s.nextFloat();
        if (units < 100.0)
        {
            float billamount = (1.00 * units);
            System.out.println ("Bill Amount: " + billamount);
        }
        else if (units > 100.0 && units <= 300.0)
        {
            float billamount = (1.20 * 100) + ((units - 100) * 2.00);
            System.out.println ("Bill Amount: " + billamount);
        }
        else if (units > 300.0 && units <= 400.0)
        {
            float billamount = ((1.20 * 100) + (2.00 * 200.0) +
                (units - 300.0) * 3.00);
            System.out.println ("Bill Amount: " + billamount);
        }
        else
        {
            float billamount = ((1.20 * 100) + (2.00 * 200.0) + (3.00 * 100) +
                (units - 400) * 3.50);
            System.out.println ("Bill Amount: " + billamount);
        }
    }
}
```

Enter the number of units consumed: 472

Bill Amount: 1072.00.

- 5) Write a program in JAVA to accept the co-efficients a, b, c for a quadratic equation $ax^2 + bx + c = 0$ and hence find the roots of the given quadratic equation.

```
import java.util.*;  
class QE  
{  
    public static void main(String args[])  
    {  
        Scanner s = new Scanner(System.in);  
        System.out.println("Quadratic equation: ax^2 + bx + c = 0");  
        System.out.println("Enter the value of a: ");  
        double a = s.nextDouble();  
        System.out.println("Enter the value of b: ");  
        double b = s.nextDouble();  
        System.out.println("Enter the value of c: ");  
        double c = s.nextDouble();  
        double d = b * b - (4 * a * c);  
        if (d > 0.0)  
        {  
            double r1 = ((-b + Math.sqrt(d)) / (2 * a));  
            double r2 = ((-b - Math.sqrt(d)) / (2 * a));  
            System.out.println("The roots are " + r1 + " and " + r2);  
        }  
        else if (d == 0.0)  
        {  
            double r1 = -b / (2 * a);  
            System.out.println("The roots are real and equal." + r1);  
        }  
        else  
        {  
            System.out.println("The roots are imaginary");  
            double r1 = (-b / (2 * a));  
            double r2 = ((d, 0.5) / (2 * a));  
        }  
    }  
}
```

System.out.println("Roots: " + r1 + " , " + r2);
 } }

{ Quadratic Equation: $ax^2 + bx + c = 0$

{ Enter the value of a: 0

Not a quadratic equation. Enter non-zero value of a!!!

Quadratic Equation: $ax^2 + bx + c = 0$

Enter the value of a: 2.3

Enter the value of b: 4

Enter the value of c: 5.6

The roots are imaginary

Roots: -0.87 + 1.30i and -0.87 - 1.30i

Quadratic Equation: $ax^2 + bx + c = 0$

Enter the value of a: 1

Enter the value of b: -6

Enter the value of c: +6

The roots are real and repeat; 2

Quadratic Equation: $ax^2 + bx + c = 0$

Enter the value of a: 1

Enter the value of b: -9

Enter the value of c: 10

The roots are -1 and 10

6) ~~Write a program in JAVA to find the factorial of a number given positive integer~~

import java.util.*;

class Factorial

{

public static void main(String args[])

{

Scanner s = new Scanner (System.in);

int f = 1, n; i;

```
System.out.println("Enter a positive integer: ");
n = scanner.nextInt();
if (n == 0)
    f = 1;
else if (n < 0)
    System.out.println("Enter a positive integer!!! ");
else
{
    for (i = 1; i <= n; i++)
        f *= i;
    System.out.println("The factorial of " + n + " is " + f);
}
```

Enter a positive integer: 5

The factorial of 5 is 120.

Enter a positive integer: -7

Enter a positive integer!!!

Enter a positive integer: 0

The factorial of 0 is 1.

- 7) Write a program in JAVA to find the area of a rectangle and verify the same with same erroneous inputs of length and breadth.

```
import java.util.*;
public class RectangularArea
{
    public static void main(String args[])
    {
        int l, b;
        l = Integer.parseInt(args[0]);
    }
}
```

```

b = Integer.parseInt(args[1]);
int area = l * b;
System.out.println("length of rectangle = " + l + "unit");
System.out.println("breadth of rectangle = " + b + "unit");
System.out.println("Area of rectangle = " + area + "sq unit");
}
}

C:\>javac RectangleArea.java
C:\>java RectangleArea 20 40
length of rectangle = 20 units
breadth of rectangle = 40 units
area of rectangle = 800 sq. units

```

- 8) Write a program in JAVA to find the sum of digits for a given number using a function / method.

```

import java.util.*;
class Sumofdigits
{
    public static void main (String args[])
    {
        Scanner s = new Scanner (System.in);
        System.out.println("Enter a number: \t");
        int n = s.nextInt();
        System.out.println("Sum of digits of " + n + " is " + getSum(n));
    }

    static int getSum (int n)
    {
        int sum = 0;
        while (n != 0)
        {
            sum += n % 10;
        }
    }
}

```

```

n/ = 10;
{
    return sum;
}
}

```

Enter a number: 95914

Sum of digits of 95914 is 28.

- 9) Write a program in JAVA to check whether a given number is palindrome or not using user defined functions

```

import java.util.*;
class Palindrome
{
    public static void main (String args[])
    {
        Scanner s = new Scanner (System.in);
        System.out.println ("Enter any positive integer:");
        int n = s.nextInt();
        int r = reverse(n);
        System.out.println ("Reverse of " + n + " = " + r);
        if (n == r)
            System.out.println ("Palindrome Number");
        else
            System.out.println ("Not a palindrome Number");
    }
}

```

```

static int reverse (int n)
{
    int rev = 0;
    while (n > 0)
    {
}

```

```
    rev = rev * 10 + n % 10;  
}
```

```
return rev;
```

{

Enter any positive integer: 6954

Reverse of 6954 is 4596

Not a palindrome Number

Enter any positive integer: 696

Reverse of 696 = 696

Palindrome Number.

• Addition of snippet to program 5)

```
while(a == 0)
```

{

```
System.out.println("Not a quadratic equation");
```

```
System.out.println("Enter a non-zero value for a!!!");
```

```
System.out.println("There exists no solution!");
```

{