Lab 4

Assignment-1

- Write a program to find out all the armstrong numbers within a given range using a method named **printArmstrongNumber(int start, int end)** by taking input from the user.
- The program should print the Armstrong number in a given range starting from “start” and ending with “end”.
- Armstrong Number Example: 153 1 3+5 3+3 3 =153 (Number which is equal to the sum of the cubes of its digits).
- ***Note:*** Input should be taken from the keyboard. Use a loop to calculate the Armstrong number from “start” to “end”. Also use loops to calculate the cube of a number. ***Do not use the Math.pow() function.***

Program

```
import java.util.Random;

public class Rectangle {
    private int length;
    private int width;

    public Rectangle(int length, int width) {
        this.length = length;
        this.width = width;
    }

    public int calculateArea() {
        return length * width;
    }

    public static void main(String[] args) {
        Random rand = new Random();
        Rectangle rectangle1 = new Rectangle(rand.nextInt(20) + 1,
rand.nextInt(20) + 1);
        Rectangle rectangle2 = new Rectangle(rand.nextInt(20) + 1,
rand.nextInt(20) + 1);

        int area1 = rectangle1.calculateArea();
        int area2 = rectangle2.calculateArea();
        System.out.println("Rectangle1: length = " + rectangle1.length + ",
width = " + rectangle1.width + ", area = " + area1);
```

```
        System.out.println("Rectangle2: length = " + rectangle2.length + ",
width = " + rectangle2.width + ", area = " + area2);

        if (area1 > area2) {
            System.out.println("Rectangle1 > Rectangle2");
        } else if (area1 < area2) {
            System.out.println("Rectangle1 < Rectangle2");
        } else {
            System.out.println("They are equal");
        }
    }
}
```

Output

```
PS D:\Venshu\College\Engg\TPCell-Training\Sem5-Java\Anudip-Practicals\lab-assignments\lab4> javac Armstrong.java; java Armstrong
Enter start of range: 400
Enter end of range: 3000
Armstrong numbers between 400 and 3000: 407     1634
```

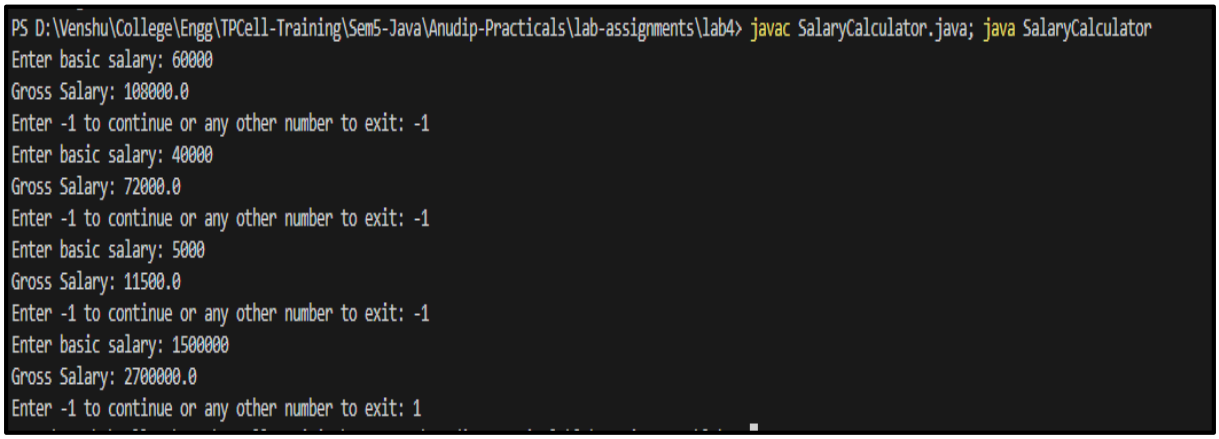
Assignment-2

- Write a program to calculate the gross salary of a group of employees.
- Basic salary should be taken from the user.
- If the basic salary is greater than 15000, HRA=20% and DA=60% will be given, else HRA=3000 and DA 70% will be given to the employee.
- ***Note:*** Input of basic salary will be taken from the keyboard. After calculating the salary of one employee, the program will ask for the user's choice as int. If "-1" is entered, then the loop will continue and the loop will exit for other int inputs.

Program

```
import java.util.Scanner;

public class SalaryCalculator {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);

        while (true) {
            System.out.print("Enter basic salary: ");
            double basic = sc.nextDouble();
            double hra, da, gross;

            if (basic > 15000) {
                hra = 0.20 * basic;
                da = 0.60 * basic;
            } else {
                hra = 3000;
                da = 0.70 * basic;
            }

            gross = basic + hra + da;
            System.out.println("Gross Salary: " + gross);

            System.out.print("Enter -1 to continue or any other number to
exit: ");
            int choice = sc.nextInt();
            if (choice != -1) {
                break;
            }
        }
        sc.close();
    }
}
```

Output


PS D:\Venshu\College\Engg\TPCell-Training\Sem5-Java\Anudip-Practicals\lab-assignments\lab4> javac SalaryCalculator.java; java SalaryCalculator
Enter basic salary: 60000
Gross Salary: 108000.0
Enter -1 to continue or any other number to exit: -1
Enter basic salary: 40000
Gross Salary: 72000.0
Enter -1 to continue or any other number to exit: -1
Enter basic salary: 5000
Gross Salary: 11500.0
Enter -1 to continue or any other number to exit: -1
Enter basic salary: 1500000
Gross Salary: 2700000.0
Enter -1 to continue or any other number to exit: 1

Assignment-3

Write a program to count and print the total number of odd and even numbers from user inputs. Program will ask for user inputs in a loop. Loop will terminate if -1 is entered as input.

Program

```java
import java.util.Scanner;

public class EvenOdd {
    public static void main(String[] args) {
        Scanner scanner = new Scanner(System.in);
        int evenCount = 0, oddCount = 0;

        while (true) {
            System.out.print("Enter a number (-1 to exit): ");
            int num = scanner.nextInt();
            if (num == -1) {
                break;
            }
            if (num % 2 == 0) {
                evenCount++;
            } else {
                oddCount++;
            }
        }

        System.out.println("Total even numbers: " + evenCount);
        System.out.println("Total odd numbers: " + oddCount);
        scanner.close();
    }
}
```

Output

```
PS D:\Venshu\College\Engg\TPCell-Training\Sem5-Java\Anudip-Practicals\lab-assignments\lab4> javac EvenOdd.java; java EvenOdd
Enter a number (-1 to exit): 56
Enter a number (-1 to exit): 24
Enter a number (-1 to exit): 12
Enter a number (-1 to exit): 21
Enter a number (-1 to exit): 65
Enter a number (-1 to exit): 89
Enter a number (-1 to exit): 32
Enter a number (-1 to exit): 26
Enter a number (-1 to exit): 5
Enter a number (-1 to exit): 87
Enter a number (-1 to exit): 22
Enter a number (-1 to exit): 90
Enter a number (-1 to exit): 1054
Enter a number (-1 to exit): -1
Total even numbers: 8
Total odd numbers: 5
```