ASSIGNMENT 1

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.

SOURCE CODE :

```java
import java.util.Scanner;

public class Lab4_question1 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter start of range: ");
        int start = sc.nextInt();
        System.out.print("Enter end of range: ");
        int end = sc.nextInt();
        printArmstrongNumber(start, end);
        sc.close();
    }

    static void printArmstrongNumber(int start, int end) {
        System.out.println("Armstrong numbers in the range:");
        for (int num = start; num <= end; num++) {
            int original = num;
            int sum = 0;
            int temp = num;
            int digits = 0;

            while (temp > 0) {
                digits++;
                temp /= 10;
            }

            temp = num;
            while (temp > 0) {
                int digit = temp % 10;
                int cube = 1;
```

```java
        for (int i = 0; i < digits; i++) {

            cube *= digit;

        }

        sum += cube;

        temp /= 10;

    }


    if (sum == original) {

        System.out.println(original);

    }

    }

  }

}
```

OUTPUT:

ASSIGNMENT 2

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.
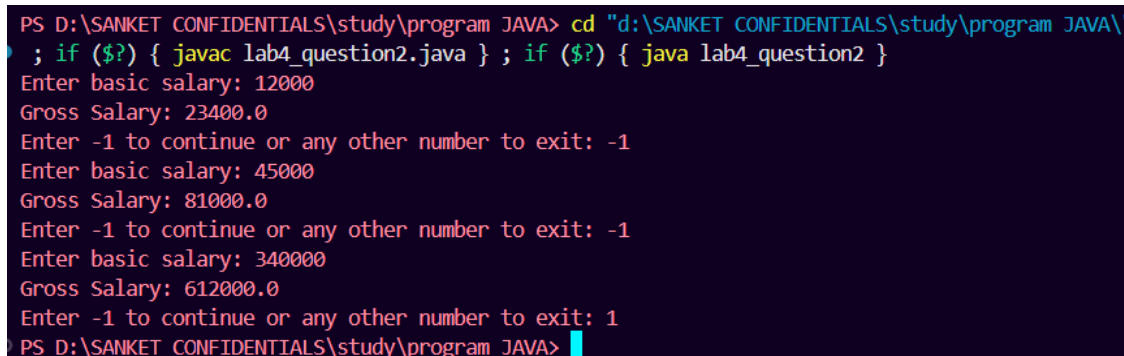
SOURCE CODE :

```java
import java.util.Scanner;

public class lab4_question2 {
    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:\SANKET CONFIDENTIALS\study\program JAVA> cd "d:\SANKET CONFIDENTIALS\study\program JAVA\
 ; if ($?) { javac lab4_question2.java } ; if ($?) { java lab4_question2 }
Enter basic salary: 12000
Gross Salary: 23400.0
Enter -1 to continue or any other number to exit: -1
Enter basic salary: 45000
Gross Salary: 81000.0
Enter -1 to continue or any other number to exit: -1
Enter basic salary: 340000
Gross Salary: 612000.0
Enter -1 to continue or any other number to exit: 1
PS D:\SANKET CONFIDENTIALS\study\program JAVA>
```

ASSIGNMENT 3

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.

SOURCE CODE:

```java
import java.util.Scanner;

public class lab4_question3 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        int evenCount = 0, oddCount = 0;

        while (true) {
            System.out.print("Enter a number (-1 to stop): ");
            int num = sc.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);
    }
}
```

OUTPUT:

```
PS D:\SANKET CONFIDENTIALS\study\program JAVA> cd  d:\SANKET CONFIDENTI
ALS\study\program JAVA\" ; if ($?) { javac lab4_question3.java } ; if (
$?) { java lab4_question3 }
Enter a number (-1 to stop): 12
Enter a number (-1 to stop): 32
Enter a number (-1 to stop): 34
Enter a number (-1 to stop): 54
Enter a number (-1 to stop): 43
Enter a number (-1 to stop): 67
Enter a number (-1 to stop): 89
Enter a number (-1 to stop): -1
Total even numbers: 4
Total odd numbers: 3
PS D:\SANKET CONFIDENTIALS\study\program JAVA>
```