1.Find out if the given number is an Armstrong number. Logic-if 153 is the supplied value, then $1^3 + 5^3 + 3^3 = 1+125+27 = 153$ .This is the same as supplied value hence it is an Armstrong number.

Solution:

```java
package java_assignment_1;
//question number 1
import java.util.Scanner;

public class armstrongNumber {
	public static void main(String[] args) {
		Scanner input=new Scanner(System.in);
		System.out.println("Enter a number :");
		int number=input.nextInt();
		int temp=number;
		int last;
		int sum=0;

		//to find the sum of cubes of digits of given number
		while(temp!=0) {
			last=temp%10;
			sum+=(last*last*last);
			temp/=10;
		}

		//to check if sum of cubes of digits of given number and the given number are equal
		if(sum==number) {
			System.out.println(number+" is an armstrong number.");
		}
		else
			System.out.println(number+" is not an armstrong number.");
	}

}
```

```
Enter a no. to check Armstrong : 153
This is an Armstrong Number
```

2. Find out all the Armstrong no. between the range 100 – 999.

Solution:-

```java
//Question number 2
package java_assignment_1;

public class armstrongNumberInRange {
	public static void main(String[] args) {
		int temp,last;
		int sum;
		System.out.println("The armstrong numbers falling in the range of 100-999 are as follows : ");
		for(int i=100;i<=999;i++) {
			temp=i;
			sum=0;
			while(temp!=0) {
				last=temp%10;
				sum+=(last*last*last);
				temp/=10;
			}
			if(sum==i) {
				System.out.println(i);
			}
	}
 }
}
```

Output:

```
153 370 371 407
```

3. Find the Simple as well as the compound interest of supplied value.

Solution:

```java
package com.coreJavaAssignment1;

import java.util.Scanner;

public class assignment3 {
    public static void main(String[] args) {
        Scanner input = new Scanner(System.in);
        System.out.println("Enter the principal:");
        double principal = input.nextDouble();
        System.out.println("Enter the rate: ");
        double rate =input.nextDouble();
        System.out.println("Enter the duration:");
        double time = input.nextDouble();
        double simpleInterest = (principal*time*rate)/100;
        System.out.println("Enter the number of time interest is compounded");
        double number =input.nextDouble();

        double compoundInterest = principal * (Math.pow((1+ rate/100),(time * number)))-principal;
        System.out.println("Simple interest is :"+simpleInterest);
        System.out.println("Compound interest is: "+compoundInterest);


    }
}

```

4. Supply marks of three subject and declare the result, result declaration is based on below conditions:

Condition 1: -All subjects marks is greater than 60 is Passed

Condition 2: -Any two subjects marks are greater than 60 is Promoted

Condition 3: -Any one subject mark is greater than 60 or all subjects' marks less than 60 is failed.

Solution:-

```java
package com.coreJavaAssignment1;

import java.util.Scanner;

public class assignment4 {
    public static void main(String[] args) {
        System.out.println("Enter the 3 marks");
        Scanner input = new Scanner(System.in);
        int mark1 = input.nextInt();
        int mark2 = input.nextInt();
        int mark3 = input.nextInt();
        if (mark1 > 60 && mark2 > 60 && mark3 > 60) {
            System.out.println("hey you passed the exam");
        }

        else if((mark1 > 60 && mark2 > 60) || (mark2 > 60 && mark3 > 60) || (mark3 > 60 && mark1 > 60)) {
            System.out.println("Promoted");
        }


        else
        {
            System.out.println("failed");

        }
    }
}
```

5) Calculate the income tax on the basis of following table.

Note:-Assume slab is consider for Male, Female as well as Senior citizen

Slab	Income Range	Tax payable in Percentage
Slab A	0-1,80,000	Nil
Slab B	1,81,001-3,00,000	10%
Slab C	3,00,001-5,00,000	20%
Slab D	5,00,001-10,00,000	30%

Accept CTC from user and display tax amount

```java
package java_assignment_1;
import java.util.Scanner;
public class taxPay {
	public static void main(String[] args) {
		Scanner input=new Scanner(System.in);
		System.out.println("Enter your CTC :");
		double ctc=input.nextDouble();
		double taxAmount;
		if((ctc>0) && (ctc<180000)) {
			System.out.println("You belong to SLAB-A and tax payable is NIL.");
		}
		if((ctc>180000) && (ctc<300000)) {
			taxAmount=(ctc*0.10);
			System.out.println("You belong to SLAB-B and tax payable is "+taxAmount);
		}
		else if((ctc>300000) && (ctc<=500000)) {
			taxAmount=(ctc*0.20);
			System.out.println("You belong to SLAB-C and tax payable is "+taxAmount);
		}
		else if((ctc>500000) && (ctc<=1000000)) {
			taxAmount=(ctc*0.30);
			System.out.println("You belong to SLAB-D and tax payable is "+taxAmount);
		}
		}
```

6.Consider a CUI based application, where you are asking a user to enter his Login name and password, after

entering the valid user-id and password it will print the message “Welcome” along with user name. As per the

validation is concerned, the program should keep a track of login attempts. After three attempts a message

should be flashed saying “Contact Admin" and the program should terminate.

Solution:-

```java
package com.coreJavaAssignment1;

import java.util.Scanner;

public class assignment6 {
    public static void main(String[] args) {
         String userId = "Cg_training";
         String password = "training";
        Scanner input = new Scanner(System.in);

         for (int i=3;i>=1;i--) {

             System.out.print("Enter user id:");
             String user_Id1 = input.nextLine();
             System.out.print("Enter user password:");
             String password1 = input.nextLine();

             if ((userId.matches(user_Id1)) && (password.matches(password1))) {
                 System.out.println("welcome  " + userId);
                 break;
             }
             else {
                 System.out.println("login failed attempts remaining  " +(i-1) );
                 System.out.println("");
                 if (i==1){
                     System.out.println("Contact Admin");
                 }
             }

         }

```

7. There is an Array which is of the size 15, which may or may not be sorted. You should write a program to accept a number and search if it in contained in the array.

```java
package com.coreJavaAssignment1;

import java.util.Scanner;

public class assignment7 {
    public static void main(String[] args) {

        int[] number = {5, 12, 14, 6, 78, 19, 1, 23, 26, 35, 37, 7, 52, 86, 47};
        int flag =0;

        System.out.println("Enter a number to Search");
        Scanner input = new Scanner(System.in);
        int num = input.nextInt();
        for (int i = 0; i < number.length; i++) {
            if (number[i] == num) {
                System.out.println("Match found at position " +i);
                flag=1;
            }
            }
        if (flag ==0){
            System.out.println("Match not found");

            }


    }
```

Example:

5	12	14	6	78	19	1	23	26	35	37	7	52	86	47

Value to be search is 19

8) Using the above table write method apply sorting using **Bubble Sort**.

```java
package com.coreJavaAssignment1;




public class assignment8 {
    public static void bubblrSort ( int number[]){
        int n = number.length;
        for (int i = 0; i < n - 1; i++) {
            for (int j = 0; j < n - i - 1; j++) {
                if (number[j] > number[j + 1]) {
                    int temp = number[j];
                    number[j] = number[j + 1];
                    number[j + 1] = temp;
                }
            }


        }
    }
    public static void main(String[] args) {
        int[] number = {5, 12, 14, 6, 78, 19, 1, 23, 26, 35, 37, 7, 52, 86, 47};
        System.out.println("Array before sorting");
        for (int i=0;i<number.length;i++){
            System.out.print(number[i]+" ");

        }
        System.out.println();
        bubblrSort(number);
        System.out.println("Array after bubble sort");
        for(int i=0;i<number.length;i++)
            System.out.print(number[i]+" ");

```