ASSIGNMENT NO 2

Q1 Write a program to calculate the sum of first 10 natural number.

Program:

```java
package Assignment_01;

public class que1 {
    public static void main(String[] args)
    {
        int sum = 0;
        for(int i=1; i<=10; i++)
        {
            sum += i;
        }
        System.out.println("Sum of first 10 natural number is: " + sum);
    }
}
```

Output:

```
<terminated> que1 (1) [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe (26-Mar-2023, 5:35:05 pm – 5:35:06 p
Sum of first 10 natural number is: 55
```

Q2.Write a program that prompts the user to input a positive integer. It should then print the multiplication table of that number.

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que02 {
    public static void main(String[]args) {
    int num;
    Scanner s = new Scanner(System.in);
    System.out.print("Enter  any positve number: ");

    num=s.nextInt();
        for(int i=1; i <= 10; i++)
    {
    System.out.println(num*i);
    }
    }
}
```

Output:

```
<terminated> que02 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.
Enter  any positve number: 5
5
10
15
20
25
30
35
40
45
50
```

Q 3 Write a program that prompts the user to input an integer and then outputs the number with the digits reversed. For example, if the input is 12345, the output should be 54321.

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que_03 {
    public static void main(String[] args) {
        int num;
        int rev=0;

        Scanner s=new Scanner(System.in);
        System.out.print("Enter a  positive number: ");
        num = s.nextInt();


        while (num != 0)
        {
            rev = rev * 10 + num % 10;
            num = num / 10;
        }
        System.out.println("Reversed number: " + rev);
    }

}
```

Output:

```
<terminated> que_03 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe (26-Mar-2023, 5:40:03 pm – 5:40:07 pm) [pid: 8216]
Enter a  positive number: 1234
Reversed number: 4321
```

Q 4. Write a do-while loop that asks the user to enter two numbers.
The numbers should be added and the sum displayed. The loop
should ask the user whether he or she wishes to perform the
operation again. If so, the loop should repeat; otherwise it should
terminate.(while loop)

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que_04 {

        public static void main(String[] args) {
          int num1, num2, sum;
            char repeat;
            Scanner s = new Scanner(System.in);

            do {
                System.out.print("Enter the first number: ");
                num1 = s.nextInt();
                System.out.print("Enter the second number: ");
                num2 = s.nextInt();

                sum = num1 + num2;

                System.out.println("The sum  is " + sum);

                System.out.print("Do you want to perform the operation
again? (y/n): ");
                repeat = s.next().charAt(0);

            } while (repeat == 'y' || repeat == 'Y');


        }
    }
```

Output:

que_04 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe (26-Mar-2023, 5:45:11 pm) [p
Enter the first number: 50
Enter the second number: 100
The sum is 150
Do you want to perform the operation again? (y/n):

Q 5 Write a program to print out all Armstrong numbers between 1 and 500. If sum of cubes of each digit of the number is equal to the number itself, then the number is called an Armstrong number.
For example, 153 = (1 * 1 * 1) + (5 * 5 * 5) + (3 * 3 * 3)

Program:

```java
package Assignment_01;
public class que_05 {
        public static void main(String[] args) {

            int num, rem, sum;

            System.out.println("Armstrong numbers between 1 and 500:");

            for (int i = 1; i <= 500; i++)
            {
                num = i;
                sum = 0;

                while (num > 0)
                {
                    rem = num % 10;
                    sum += rem * rem * rem;
                    num=num/10;
                }

                if (sum == i) {
                    System.out.println(i);
                }
            }
        }
}
```

Output:

```
<terminated> que_05 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe  (26-Mar-2023, 5:47:37 pm –
Armstrong numbers between 1 and 500:
1
153
370
371
407
```

Q 6 Write a program to print Fibonacci series of n terms where n is input by user :
0 1 1 2 3 5 8 13 24 .....

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que_06 {

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

        System.out.print("Enter the number of terms: ");
        int n = s.nextInt();

        int firstTerm = 0;
        int secondTerm = 1;


        System.out.print("Fibonacci Series up to " + n + " terms: ");

        for (int i = 1; i <= n; i++) {
            System.out.print(firstTerm + " ");
            int nextTerm = firstTerm + secondTerm;
            firstTerm = secondTerm;
            secondTerm = nextTerm;


        }

    }
}
```

Output:

```
<terminated> que_06 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe  (26-Mar-20
Enter the number of terms: 6
Fibonacci Series up to 6 terms: 0 1 1 2 3 5
```

Q 7 Write a program to print following :

i)

```
**********
**********
**********
**********
```

Program:

```java
package Assignment_01;

public class que7_01 {
    public static void main(String[] args) {

        for(int i=1;i<=4;i++)//row
        {
            for(int j=1;j<=10;j++)
            {
                System.out.print("*");
            }
            System.out.println();
        }
    }

}
```

Output:

```
**********
**********
**********
**********
```

ii)

```
*
**
***
****
*****
```

Program:

```java
package Assignment_01;

public class que7_02 {
    public static void main(String[] args) {

        for(int i=1;i<=5;i++)//row
        {
            for(int j=1;j<=i;j++)
            {
                System.out.print("*");
            }
            System.out.println();
        }
    }

}
```

Output:

```
*
**
***
****
*****
```

iii)

```
    *
   **
  ***
 ****
*****
```

Program:

```java
package Assignment_01;

public class que7_03 {

    public static void main(String[] args) {
        int rows = 5;

        for (int i = 1; i <= rows; i++) {
            for (int j = 1; j <= rows-i; j++) {
                System.out.print(" ");
            }
            for (int k = 1; k <= i; k++) {
                System.out.print("* ");
            }
            System.out.println();
        }
    }
}
```

Output:

```
    *
   * *
  * * *
 * * * *
* * * * *
```

iv)

```
    *
   ***
  *****
 *******
*********
```

....

Program:

```java
package Assignment_01;

public class que7_04 {
    public static void main(String[] args)
    {
        int space=5;
        int i;
        int p;


        for( i=1;i<=5;i++)//row
        {
            for( p=1;p<=space-i     ;p++)
            {
            System.out.print(" ");

            }

            for(   int j=1;j<=i*2-1;j++)
            {
                System.out.print( "*");

            }
            System.out.println();
            p--;
        }
    }


}
```

Output:

```
    *
   ***
  *****
 *******
*********
```

v)

```
    1
   222
  33333
 4444444
555555555
```

Program:

```java
package Assignment_01;

public class que7_05 {

    public static void main(String[] args) {
        int rows = 5;

        for (int i = 1; i <= rows; i++) {
            for (int j = 1; j <= rows-i; j++) {
                System.out.print("  ");
            }
            for (int k = 1; k <= 2*i-1; k++) {
                System.out.print(i+" ");
            }
            System.out.println();
        }
    }
}
```

Output:

```
        1
      2 2 2
    3 3 3 3 3
  4 4 4 4 4 4 4
5 5 5 5 5 5 5 5 5
```

vi)

```
ABCDEEDCBA
ABCD    DCBA
ABC       CBA
AB           BA
A             A
```

Program:

```java
package Assignment_01;

public class que7_06 {

	public static void main(String[] args) {

		int n= 5;
		int i=0;
		int j;
		int k;
		int m;

		char a='A';
		for( i=0 ;i<n ;i++) {
		for( j=n ; j>i ;j--) {
		System.out.print(a);
		a++;
		}
		for(k=0;k<i;k++) {
		System.out.print("  ");
		}
		for(m=n;m>i;m--) {
		a--;
		System.out.print(a);

		 }
		System.out.println();

		}

	}
}
```

Output:

```
<terminated> que7_06 [Java Application] C:\Program Files\Java\jdk-1
ABCDEEDCBA
ABCD    DCBA
ABC     CBA
AB         BA
A          A
```

Q 8 Write a program in java to find the sum of the even and odd digits of the number which is given as input.

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que_08{
    public static void main(String[] args) {
        Scanner s = new Scanner(System.in);

        System.out.print("Enter a number: ");

        int num = s.nextInt();
        int evenSum = 0;
        int oddSum = 0;

        while (num > 0)
        {
            int digit = num % 10;

            if (digit % 2 == 0) {evenSum += digit;}

            else                 { oddSum += digit;}

            num /= 10;
        }

        System.out.println("Sum of even digits: " + evenSum);
        System.out.println("Sum of odd digits: " + oddSum);
    }
}
```

Output:

```
<terminated> que_08 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe (26-Mar
Enter a number: 245896
Sum of even digits: 20
Sum of odd digits: 14
```

Q9 Write a program to check if given number is prime or not.

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que_9 {
    public static void main(String[] args)
    {
        Scanner s = new Scanner(System.in);

        System.out.print("Enter a number: ");
        int num = s.nextInt();
        boolean isPrime = true;

        if (num <= 1) {isPrime = false;}
        else
        {
            for (int i = 2; i < num; i++)
            {
                if (num % i == 0)
                {
                    isPrime = false;
                    break;
                }
            }
        }

        if (isPrime)
            { System.out.println(num + " is a prime number");}
        else
            {System.out.println(num + " is not a prime number");}

    }
}
```

Output:

```
<terminated> que_9 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe  (26
Enter a number: 7
7 is a prime number
```

Q 10 .Write a program to print prime numbers between 2 to 20.

Program:

```java
package Assignment_01;

public class que_10 {
    public static void main(String[] args) {

        int num = 20, count;
        for (int i = 2; i <= num; i++)
        {
            count = 0;
            for (int j = 2; j <= i / 2; j++)
            {
                if (i % j == 0)
                {
                    count++;
                    break;
                }
            }

            if (count == 0) {
                System.out.println(i);
            }

        }
    }
}
```

Output:

```
<terminated> que_10 [Java Application] C:\Program Files\Java
2
3
5
7
11
13
17
19
```

Q 11 Write program to find largest among three numbers

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que_11 {
    public static void main(String[] args) {
        int N1, N2, N3, largest;
        Scanner s = new Scanner(System.in);

        System.out.print("Enter the first number: ");
        N1 = s.nextInt();

        System.out.print("Enter the second number: ");
        N2 = s.nextInt();

        System.out.print("Enter the third number: ");
        N3 = s.nextInt();

        largest = N1;
        if (N2 > largest) {
            largest = N2;
        }
        if (N3 > largest) {
            largest = N3;
        }
        System.out.println("The largest number is " + largest);
    }
}
```

Output:

```
<terminated> que_11 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe (2
Enter the first number: 50
Enter the second number: 100
Enter the third number: 150
The largest number is 150
```

Q 12. Write a program to find sum of all integers greater than 100 and less than 200 that are divisible by 7.

Program:

```java
package Assignment_01;

public class que_12
    {
            public static void main(String[] args)
            {
                int sum = 0;
                int i;

                for ( i = 101; i < 200; i++)
                {
                    if (i % 7 == 0)


                    {
                        sum += i;

                    }
                }

                System.out.println("The sum is " + sum);
            }
    }
```

Output:

The sum is 2107

Q 13 .Write a Java program to print numbers between 1 to 100 which are divisible by 3, 5 and by both.

Program:

```java
package Assignment_01;

public class que_13 {

    public static void main(String[] args) {
        for (int i = 1; i <= 100; i++) {
            if (i % 3 == 0 && i % 5 == 0) {
                System.out.println(" divisible by both 3 and 5:  " + i);
            } else if (i % 3 == 0) {
                System.out.println(" divisible by 3:  " + i);
            } else if (i % 5 == 0) {
                System.out.println(" divisible by 5:  " + i);
            }
        }
    }
}
```

Output:

```
divisible by 3:  3
divisible by 5:  5
divisible by 3:  6
divisible by 3:  9
divisible by 5:  10
divisible by 3:  12
 divisible by both 3 and 5:  15
divisible by 3:  18
divisible by 5:  20
divisible by 3:  21
divisible by 3:  24
divisible by 5:  25
divisible by 3:  27
 divisible by both 3 and 5:  30
divisible by 3:  33
divisible by 5:  35
divisible by 3:  36
divisible by 3:  39
divisible by 5:  40
divisible by 3:  42
 divisible by both 3 and 5:  45
divisible by 3:  48
divisible by 5:  50
divisible by 3:  51
divisible by 3:  54
divisible by 5:  55
divisible by 3:  57
```

```
 divisible by both 3 and 5:   60
divisible by 3:   63
divisible by 5:   65
divisible by 3:   66
divisible by 3:   69
divisible by 5:   70
divisible by 3:   72
 divisible by both 3 and 5:   75
divisible by 3:   78
divisible by 5:   80
divisible by 3:   81
divisible by 3:   84
divisible by 5:   85
divisible by 3:   87
 divisible by both 3 and 5:   90
divisible by 3:   93
divisible by 5:   95
divisible by 3:   96
divisible by 3:   99
divisible by 5:   100
```

Q 14. create a menu driven application in java that show

"Add"   Add two number
"subtract" Subtract two number
"Multiple"   Multiple two numbers
"Exit "   Exit

Program:

```java
package Assignment_01;
import java.util.Scanner;

public class que_14 {


            Scanner input = new Scanner(System.in);
            int choice;
            do {
                System.out.println("\nMain Menu");
                System.out.println("1. Add");
                System.out.println("2. Subtract");
                System.out.println("3. Multiply");
                System.out.println("4. Exit");
                System.out.print("Enter your choice: ");
                choice = input.nextInt();
                switch (choice) {
                    case 1:
                        System.out.print("Enter the first number: ");
                        int num1 = input.nextInt();
                        System.out.print("Enter the second number: ");
                        int num2 = input.nextInt();
                        int sum = num1 + num2;
                        System.out.println("The sum is " + sum);
                        break;
                    case 2:
                        System.out.print("Enter the first number: ");
                        num1 = input.nextInt();
                        System.out.print("Enter the second number: ");
                        num2 = input.nextInt();
                        int diff = num1 - num2;
                        System.out.println("The difference  is " + diff);
                        break;
                    case 3:
                        System.out.print("Enter the first number: ");
                        num1 = input.nextInt();
                        System.out.print("Enter the second number: ");
                        num2 = input.nextInt();
                        int product = num1 * num2;
                        System.out.println("The product  is " + product);
                        break;
                    case 4:
                        System.out.println("Exiting the program...");
                        break;
```

```
                default:
                        System.out.println("Invalid choice. Please try
again.");

                        break;
                }
            } while (choice != 4);


        }
    }
```

Output:

```
Main Menu
1. Add
2. Subtract
3. Multiply
4. Exit
Enter your choice: 3
Enter the first number: 5
Enter the second number: 9
The product  is 45

Main Menu
1. Add
2. Subtract
3. Multiply
4. Exit
Enter your choice: 2
Enter the first number: 4
Enter the second number: 6
The difference  is -2

Main Menu
1. Add
2. Subtract
3. Multiply
4. Exit
Enter your choice: 4
Exiting the program...
```

Q 15. Write a program to display first 1 to 20 even number on screen
. Terminate the program when number 16 is found using break
command .

Program:

```java
package Assignment_01;

public class que_15 {
        public static void main(String[] args) {

            for (int i = 1; i <= 20; i++) {
                if (i % 2 == 0) {System.out.println(i);}


                if (i == 16) {System.out.println("Number 16 found.
Terminating the program.");
                            break;}

                }
            }
        }
```

Output:

```
<terminated> que_15 [Java Application] C:\Program Files\Java\jdk-18.0.2.1\bin\javaw.exe  (26-Mar-2023, 6:15
2
4
6
8
10
12
14
16
Number 16 found. Terminating the program.
```

Q 16 Write a Java program that accepts two double variables and test if both strictly between 0 and 1 and false otherwise.
Hint n1 > 0 && n1 < 1 && n2 > 0 && n2 < 1

Program:

```java
package Assignment_01;
import java.util.Scanner;
public class que_16 {
        public static void main(String[] args) {
            Scanner s = new Scanner(System.in);

            System.out.print("Enter the first double variable: ");
            double num1 = s.nextDouble();

            System.out.print("Enter the second double variable: ");
            double num2 = s.nextDouble();

            if (num1 > 0 && num1 < 1 && num2 > 0 && num2 < 1)
                System.out.println("Both variables are strictly between 0
and 1.");
             else {
                System.out.println("false");
            }

        }
    }
```

Output:

```
Enter the first double variable: 0.5
Enter the second double variable: 0.9
Both variables are strictly between 0 and 1.
```