1. Write a program to calculate the sum of the first 50 natural numbers.

Input:

```java
class NaturalNumber{

        public static void main(String args[]){

                int sum=0;

                for(int i=1;i<=50;i++)

                {

                        sum=sum+i;

                }

                System.out.println("Sum of first 50 natural numbers is: "+sum);

        }

}
```
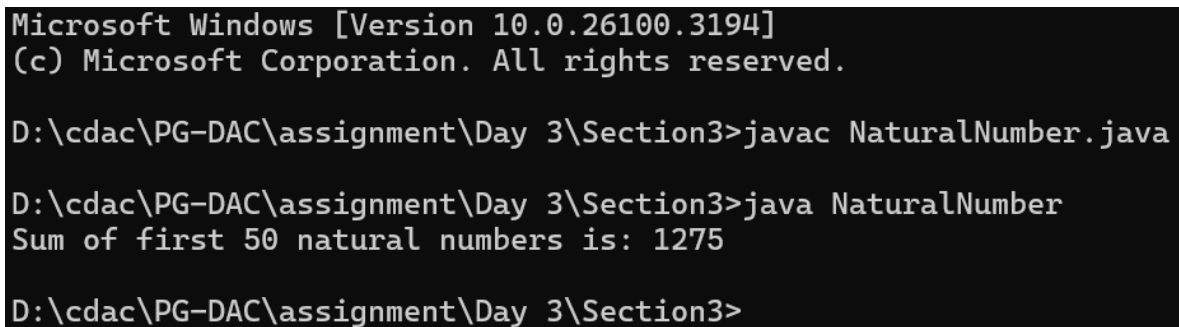
output:


```
Microsoft Windows [Version 10.0.26100.3194]
(c) Microsoft Corporation. All rights reserved.

D:\cdac\PG-DAC\assignment\Day 3\Section3>javac NaturalNumber.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java NaturalNumber
Sum of first 50 natural numbers is: 1275

D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

2. Write a program to compute the factorial of the number 10.

Input:

```java
class Factorial{

        public static void main(String args[]){

                int fact=1;

                for(int i=10;i>=1;i--)

                {

                        fact= fact * i;

                }

                System.out.println("Factorial of 10= "+fact);
```

```
        }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3>javac Factorial.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java Factorial
Factorial of 10= 3628800

D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

3. Write a program to print all multiples of 7 between 1 and 100.

Input:
```
class Multiples{

        public static void main(String args[]){

                int div=0;

                System.out.print("Number divisible by 7 are: ");

                for(int i=1;i<=100;i++)

                {

                        if(i%7==0)

                        {

                                System.out.print(i+", ");

                        }

                }


        }

}
```
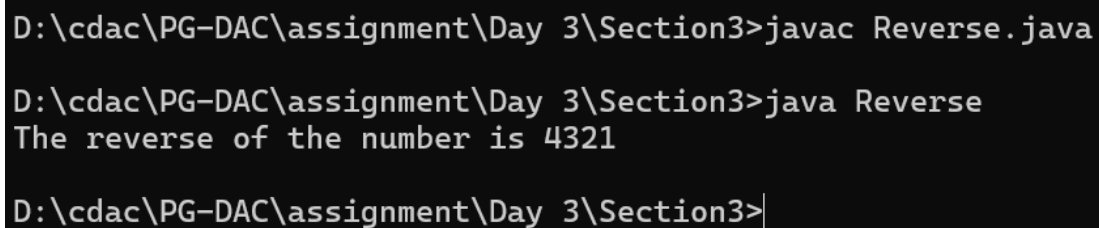
Output:
```
D:\cdac\PG-DAC\assignment\Day 3\Section3>javac Multiples.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java Multiples
Number divisible by 7 are: 7, 14, 21, 28, 35, 42, 49, 56, 63, 70, 77, 84, 91, 98,
D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

4. Write a program to reverse the digits of the number 1234. The output should be 4321.

Input:
```java
class Reverse{

    public static void main(String[] args) {

        int num = 1234;

            int reverse = 0;

        while (num != 0) {

                    int digit = num % 10;

                    reverse = reverse * 10 + digit;

            num /= 10;

            }

        System.out.println("The reverse of the number is " + reverse);

    }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3>javac Reverse.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java Reverse
The reverse of the number is 4321

D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

5. Write a program to print the Fibonacci sequence up to the number 21.

Input:
```java
class Fibonacci{

        public static void main(String args[]){

                int f0=0;

                int f1=1;

                System.out.print("Fibonacci series upto 21 number are: ");
```

```java
                System.out.print(f0+","+f1+",");

                for(int i=1;i<=19;i++)

                {

                        int f=f0+f1;

                        System.out.print(f+",");

                        f0=f1;

                        f1=f;

                }


        }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3>javac Fibonacci.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java Fibonacci
Fibonacci series upto 21 number are: 0,1,1,2,3,5,8,13,21,34,55,89,144,233,377,610,987,1597,2584,4181,6765,
D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

6. Write a program to find and print the first 5 prime numbers.

Input:
```java
public class Prime {

    public static void main(String[] args) {

        System.out.println("First 5 prime numbers are:");

        int n = 2;

        int count = 0;


        while (count < 5) {

            int c = 0;


            for (int i = 2; i < n; i++) {

                if (n % i == 0) {
```

```
            c++;

            break;

        }

    }


    if (c == 0) {

        System.out.print(n+",");

        count++;

    }


    n++;

    }

  }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3>javac Prime.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java Prime
First 5 prime numbers are:
2,3,5,7,11,
D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

7. Write a program to calculate the sum of the digits of the number 9876. The output should be 30 (9 + 8 + 7 + 6).

Input:

```
public class Digits {

    public static void main(String[] args) {

        int num = 9876;

        int sum = 0;


        while (num > 0) {
```

```
        sum = sum + num % 10;

        num = num/ 10;

    }


    System.out.println( " Sum of digit 9876 is:"+sum );

  }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3>javac Digits.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java Digits
 Sum of digit 9876 is:30

D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

8. Write a program to count down from 10 to 0, printing each number.

Input:

```
public class CountDown{

    public static void main(String[] args) {

        for(int i=10;i>=0;i--)

        {

                System.out.println(i);

        }

    }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3>java CountDown
10
9
8
7
6
5
4
3
2
1
0

D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

9. Write a program to find and print the largest digit in the number 4825.

Input:

public class LargestDigit {

   public static void main(String[] args) {

     int num = 4825;

     int maxDigit = 0;

     while (num > 0)

      {

     int digit = num % 10;

     if (digit > maxDigit)

        {

      maxDigit = digit;

    }

    num /= 10;

   }

     System.out.println("Largest digit: " + maxDigit);

```
    }
}
```

Output:

10. Write a program to print all even numbers between 1 and 50.

Input:

```java
public class Even {

        public static void main(String[] args) {

                System.out.println("First 50 even number are: ");

                for(int i=1;i<=50;i++)

                {

                        if(i%2==0)

                        {

                                System.out.print(i+", ");

                        }

                }

        }

}
```

Output:

11. Write a Java program to demonstrate the use of both pre-increment and post-decrement

operators in a single expression

Input:

```
public class Incriment{

        public static void main(String[] args) {

                int i = 5;

        int result = ++i - i--;

        System.out.println("Initial value of i: 5");

        System.out.println("Value after pre-increment (++i): " + (i + 1));

        System.out.println("Value after post-decrement (i--): " + i);

        System.out.println("Result of the expression (++i - i--): " + result);

        System.out.println("Final value of i: " + i);

        }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3>javac Incriment.java

D:\cdac\PG-DAC\assignment\Day 3\Section3>java Incriment
Initial value of i: 5
Value after pre-increment (++i): 6
Value after post-decrement (i--): 5
Result of the expression (++i - i--): 0
Final value of i: 5

D:\cdac\PG-DAC\assignment\Day 3\Section3>
```

12. Write a program to draw the following pattern:

*****

*****

*****

*****

*****

Input:

class Pattern1{

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

                for(int i=1; i<6;i++)

                {

                        for(int j=1; j<=5;j++)

                        {

                                System.out.print("*");

                        }

                        System.out.println();

                }

        }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern1.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern1
*****
*****
*****
*****
*****
```

13. Write a program to print the following pattern:

1

2*2

3*3*3

4*4*4*4

5*5*5*5*5

5*5*5*5*5

4*4*4*4

3*3*3

2*2

1

Input:

```java
class Pattern2{
    public static void main(String args[]){
        for(int i=1; i<6;i++)
        {
            for(int j=1; j<=i;j++)
            {
                System.out.print(i);
                if(j<i)
                {
                    System.out.print("*");
                }
            }
            System.out.println();
        }
        //Lower triangle
        for(int i=5; i>0;i--)
        {
            for(int j=1; j<=i;j++)
            {
                System.out.print(i);
                if(j<i)
                {
                    System.out.print("*");
                }

            }
            System.out.println();
```

}

               }

}

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern2.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern2
1
2*2
3*3*3
4*4*4*4
5*5*5*5*5
5*5*5*5*5
4*4*4*4
3*3*3
2*2
1
```

14. Write a program to print the following pattern:

*

 **

 ***

 *****

 ****

 ****

Input:

class Pattern3{

        public static void main(String args[]){

                for(int i=1; i<=6;i++)

                {

                        for(int j=1; j<=i;j++)

                        {

                                System.out.print("*");

```
            }
                System.out.println();
        }
    }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern3.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern3
*
**
***
****
*****
******
```

15. Write a program to print the following pattern:

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

Input:

```
class Pattern4{
        public static void main(String args[]){
                int n = 5;


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

```
                    System.out.print("* ");

            }

            System.out.println();

        }

    }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern4.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern4
      *
    * *
   * * *
  * * * *
* * * * *
```

16. Write a program to print the following pattern:

```
*

***

*****

*******

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

Input:

class Pattern5{

        public static void main(String args[]){

                int n = 5;

        for (int i = 1; i <= n; i++) {

                for (int j = i; j < n; j++) {

                        System.out.print(" ");

                }
```

```
            for (int k = 1; k <= 2*i-1; k++) {

                    System.out.print("* ");

            }

            System.out.println();

        }

        }

}
```

Output:

17. Write a program to print the following pattern:

*****

 ****

 ***

 **

 *

Input:

class Pattern6 {

    public static void main(String args[]) {

        int n = 5;

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

            for (int j = i; j < n; j++) {

                System.out.print(" ");

```
        }

        for (int k = 1; k <= i; k++) {

            System.out.print("* ");

        }

        System.out.println();

    }

  }

}
```

Output:

18. Write a program to print the following pattern:

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

Input:

class Pattern7{

        public static void main(String args[]){

                int n = 3;

        for (int i = 1; i <= n; i++) {
```

```java
        for (int j = i; j < n; j++) {

                System.out.print(" ");

        }


        for (int k = 1; k <= 2*i-1; k++) {

                System.out.print("* ");

        }
        System.out.println();

    }



for (int i = 4; i >= 1; i--) {


        for (int j = i; j < 4; j++) {

                System.out.print(" ");

        }


        for (int k = 1; k <= i; k++) {

                System.out.print("* ");

        }
        System.out.println();

    }


    }
}
```
Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern7.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern7
   *
  * * *
 * * * * *
 * * * *
  * * *
   * *
    *
```

19. Write a program to print the following pattern:

1

1*2

1*2*3

1*2*3*4

1*2*3*4*5

Input:

class Pattern8{

        public static void main(String args[]){

                for(int i=1; i<6;i++)

                {

                        for(int j=1; j<=i;j++)

                        {

                                System.out.print(j);

                                if(j<i)

                                {

                                        System.out.print("*");

                                }

                        }

                        System.out.println();

                }
```

```
        }
}
```

Output:

20. Write a program to print the following pattern:

5

5*4

5*4*3

5*4*3*2

5*4*3*2*1

Input:

```
class Pattern9{
        public static void main(String args[]){
                for(int i=5; i>0;i--)
                {
                        for(int j=5; j>=i;j--)
                        {
                                System.out.print(j);
                                if(j>i)
                                {
                                        System.out.print("*");
                                }
                        }
```

```
                System.out.println();

        }


    }

}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern9.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern9
5
5*4
5*4*3
5*4*3*2
5*4*3*2*1
```

21. Write a program to print the following pattern:

1

1*3

1*3*5

1*3*5*7

1*3*5*7*9

Input:

```
class Pattern10{

    public static void main(String[] args) {

        int n = 5;


        for (int i = 1; i <= n; i++) {

            int num = 1;

            for (int j = 1; j <= i; j++) {

                System.out.print(num);

                num += 2;
```

```
            if (j < i) {

                System.out.print("*");

            }

        }

        System.out.println(); // Move to the next line

    }

  }

}
```

Output:

22. Write a program to print the following pattern:

****

 ****

 *****

 ***

 *

 ***

 *****

 ****

****

Input:

public class Pattern11 {

    public static void main(String[] args) {

        int n = 5;

```java
for (int i = n; i >= 1; i--) {

    // Print leading spaces

    for (int j = n; j > i; j--) {

        System.out.print(" ");

    }


    for (int k = 1; k <= (2 * i - 1); k++) {

        System.out.print("*");

    }

    System.out.println();

}
for (int i = 2; i <= n; i++) {

    for (int j = n; j > i; j--) {

        System.out.print(" ");

    }

    for (int k = 1; k <= (2 * i - 1); k++) {

        System.out.print("*");

    }

    System.out.println(); // Move to the next line

  }

 }
}
```

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern11.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern11
*********
 *******
  *****
   ***
    *
   ***
  *****
 *******
*********
```

23. Write a program to print the following pattern:

11111

22222

33333

44444

55555

Input:

class Pattern12{

        public static void main(String args[]){

                for(int i=1; i<6;i++)

                {

                        for(int j=1; j<=5;j++)

                        {

                                System.out.print(i);

                        }

                        System.out.println();

                }

        }

}

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern12.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern12
11111
22222
33333
44444
55555
```

24. Write a program to print the following pattern:

1

22

333

4444

55555

Input:

class Pattern13{

    public static void main(String args[]){

        for(int i=1; i<6;i++)

        {

            for(int j=1; j<=i;j++)

            {

                System.out.print(i);

            }

            System.out.println();

        }

    }

}

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern13.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern13
1
22
333
4444
55555
```

25. Write a program to print the following pattern:

1

12

123

1234

12345

Input:

class Pattern14{

    public static void main(String args[]){

        for(int i=1; i<6;i++)

        {

            for(int j=1; j<=i;j++)

            {

                System.out.print(j);

            }

            System.out.println();

        }

    }

}

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern14
1
12
123
1234
12345

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>
```

26. Write a program to print the following pattern:

1

2 3

4 5 6

7 8 9 10

11 12 13 14 15

Input:

class Pattern15{

     public static void main(String args[]){

         int n=1;

         for(int i=1; i<6;i++)

         {

             for(int j=1; j<=i;j++)

             {

                 System.out.print(n+" ");

                 n++;

             }

             System.out.println();

         }

     }

}

Output:

```
D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>javac Pattern15.java

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>java Pattern15
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

D:\cdac\PG-DAC\assignment\Day 3\Section3\triangle>
```