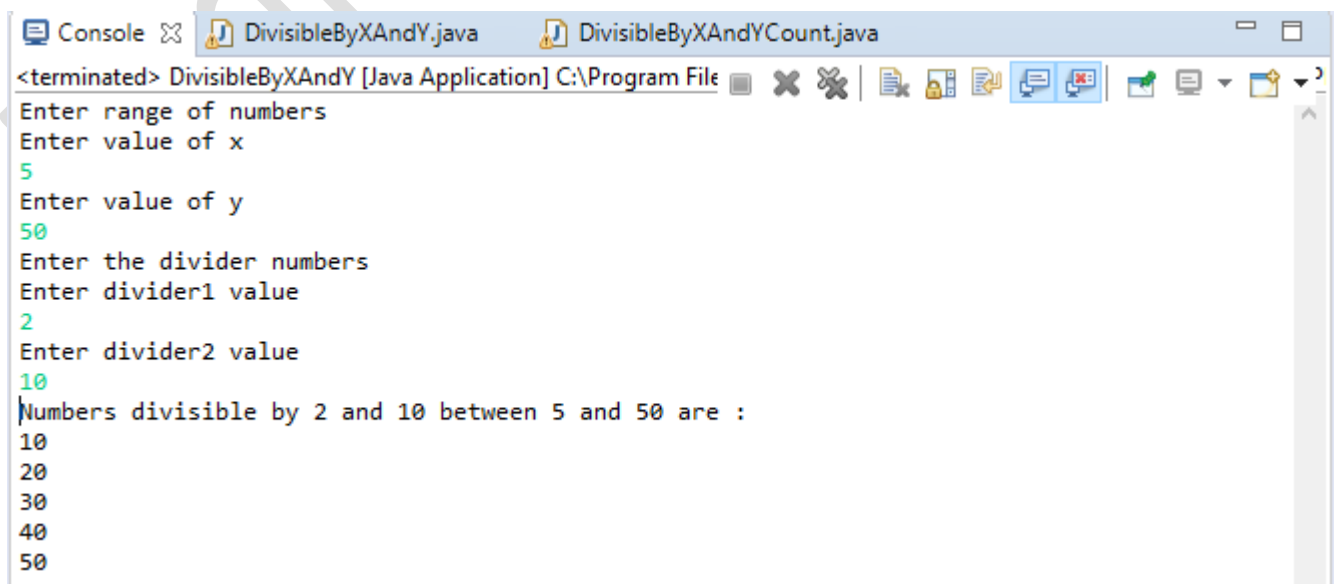


1. Write a program to print numbers divisible by any two numbers between a ranges of x & y

Code:

```
import java.util.Scanner;
public class DivisibleByXAndY
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter range of numbers");
        System.out.println("Enter value of x");
        int x=scan.nextInt();
        System.out.println("Enter value of y");
        int y=scan.nextInt();
        System.out.println("Enter the divider numbers");
        System.out.println("Enter divider1 value");
        int divider1=scan.nextInt();
        System.out.println("Enter divider2 value");
        int divider2=scan.nextInt();
        System.out.println("Numbers divisible by "+ divider1+"
and "+divider2 + " between "+ x+" and "+y + " are :");
        for(int i=x;i<=y;i++)
        {
            if(i%divider1==0 && i%divider2==0)
            {
                System.out.println(i);
            }
        }
    }
}
```

Output:



```
<terminated> DivisibleByXAndY [Java Application] C:\Program File
Enter range of numbers
Enter value of x
5
Enter value of y
50
Enter the divider numbers
Enter divider1 value
2
Enter divider2 value
10
Numbers divisible by 2 and 10 between 5 and 50 are :
10
20
30
40
50
```

2. Write a program to print the total count of numbers which are divisible by any two numbers ranges between x and y

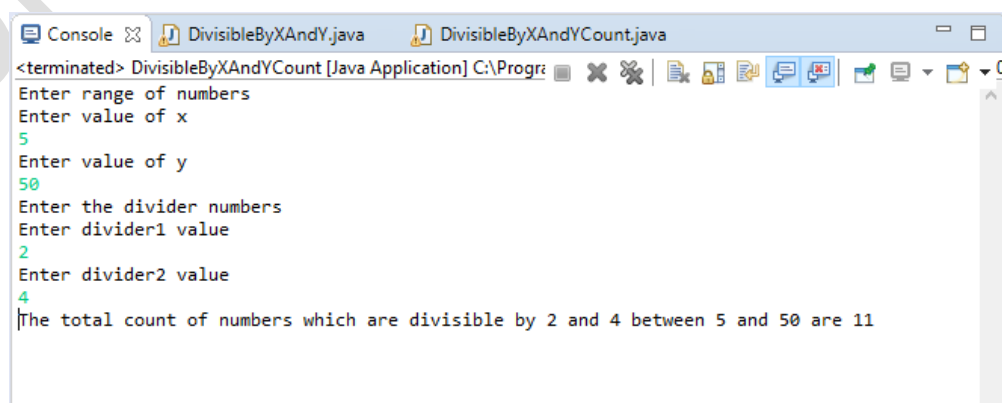
Code:

```
import java.util.Scanner;

public class DivisibleByXAndYCount
{
    public static void main(String[] args)
    {
        Scanner s1=new Scanner(System.in);
        System.out.println("Enter range of numbers");
        System.out.println("Enter value of x");
        int x=s1.nextInt();
        System.out.println("Enter value of y");
        int y=s1.nextInt();
        System.out.println("Enter the divider numbers");
        System.out.println("Enter divider1 value");
        int divider1=s1.nextInt();
        System.out.println("Enter divider2 value");
        int divider2=s1.nextInt();
        int count=0;
        for(int i=x;i<=y;i++)
        {
            if(i%divider1==0 && i%divider2==0)
            {
                count++;
            }
        }

        System.out.println("The total count of numbers which are
        divisible by "+divider1+" and "+ divider2 + " between "+
        x + " and "+ y +" are "+count);
    }
}
```

Output:



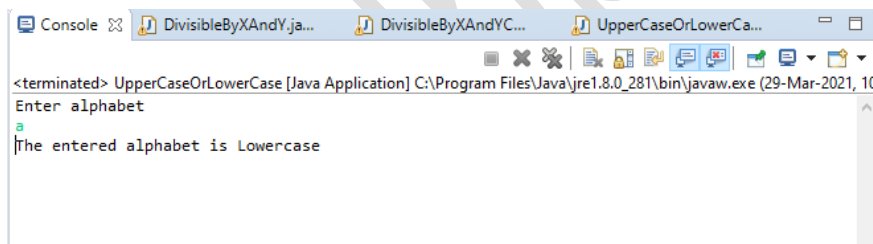
```
<terminated> DivisibleByXAndYCount [Java Application] C:\Progr
Enter range of numbers
Enter value of x
5
Enter value of y
50
Enter the divider numbers
Enter divider1 value
2
Enter divider2 value
4
The total count of numbers which are divisible by 2 and 4 between 5 and 50 are 11
```

3. Write a program to check the given alphabet is Uppercase or Lowercase

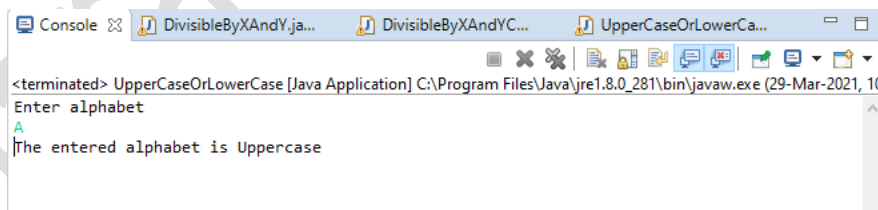
Code:

```
import java.util.Scanner;
public class UpperCaseOrLowerCase
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter alphabet");
        char alphabet=scan.next().charAt(0);
        if((alphabet>='a') && (alphabet<='z'))
        {
            System.out.println("The entered alphabet is Lowercase");
        }
        else if((alphabet>='A') && (alphabet<='Z'))
        {
            System.out.println("The entered alphabet is Uppercase");
        }
        else
        {
            System.out.println("Invalid Alphabet");
        }
    }
}
```

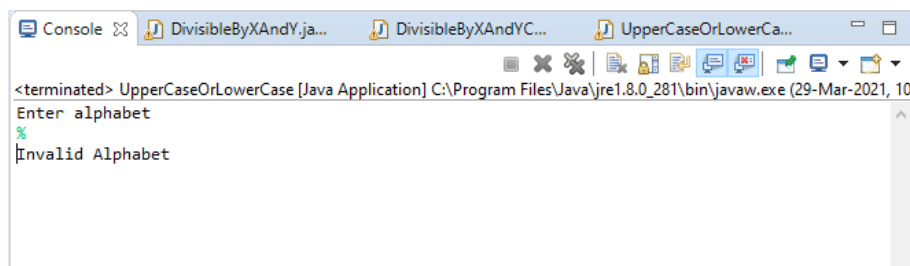
Output1:-



Output2:-



Output3:-

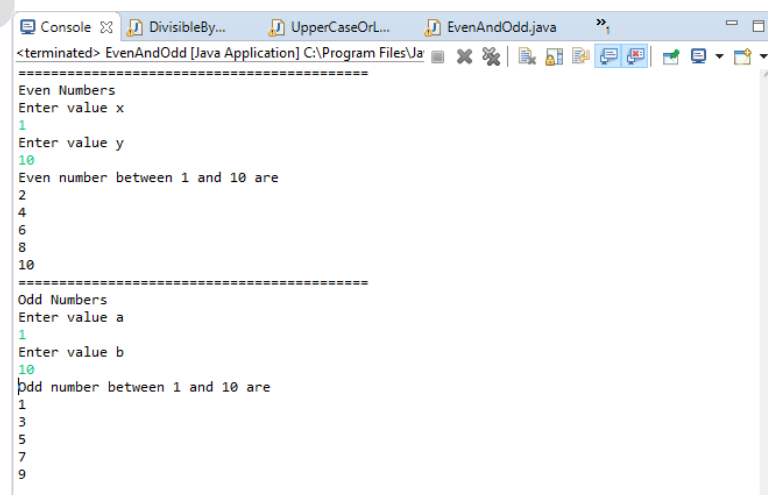


4. Write a program to print even numbers between x & y, and odd numbers between a & b

Code:

```
import java.util.Scanner;
public class EvenAndOdd
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("=====");
        System.out.println("Even Numbers");
        System.out.println("Enter value x");
        int x=scan.nextInt();
        System.out.println("Enter value y");
        int y=scan.nextInt();
        System.out.println("Even number between " + x + " and "+y + " are ");
        for(int i=x;i<=y;i++)
        {
            if(i%2==0)
            {
                System.out.println(i);
            }
        }
        System.out.println("=====");
        System.out.println("Odd Numbers");
        System.out.println("Enter value a");
        int a=scan.nextInt();
        System.out.println("Enter value b");
        int b=scan.nextInt();
        System.out.println("Odd number between " + a + " and "+b + " are ");
        for(int i=a;i<=b;i++)
        {
            if(i%2!=0)
            {
                System.out.println(i);
            }
        }
    }
}
```

Output:-



```
Console  DivisibleBy...  UpperCaseOrL...  EvenAndOdd.java
<terminated> EvenAndOdd [Java Application] C:\Program Files\Ja
=====
Even Numbers
Enter value x
1
Enter value y
10
Even number between 1 and 10 are
2
4
6
8
10
=====
Odd Numbers
Enter value a
1
Enter value b
10
Odd number between 1 and 10 are
1
3
5
7
9
```

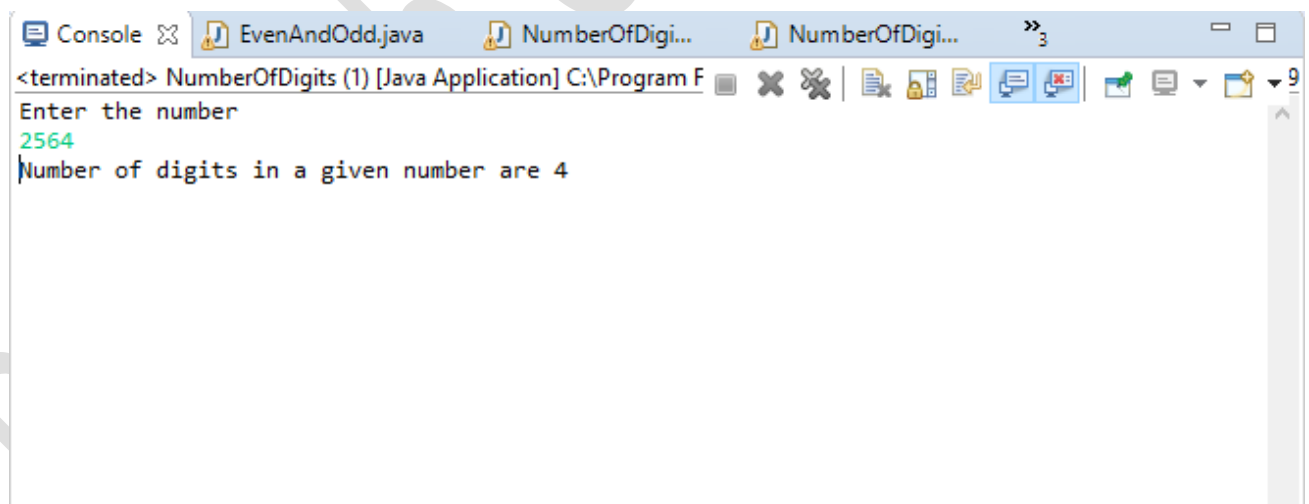
5. Write a program to count number of digits in an entered number

For example :- Entered number=**205**, Number of digits are **3**

Code:

```
import java.util.Scanner;
public class NumberOfDigits
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number=scan.nextInt();
        int count=0;
        while(number>0)
        {
            number=number/10; // or number /= 10;
            count++;
        }
        System.out.println("Number of digits in a given number
are "+count);
    }
}
```

Output:-



6. Write a program for summation of numbers

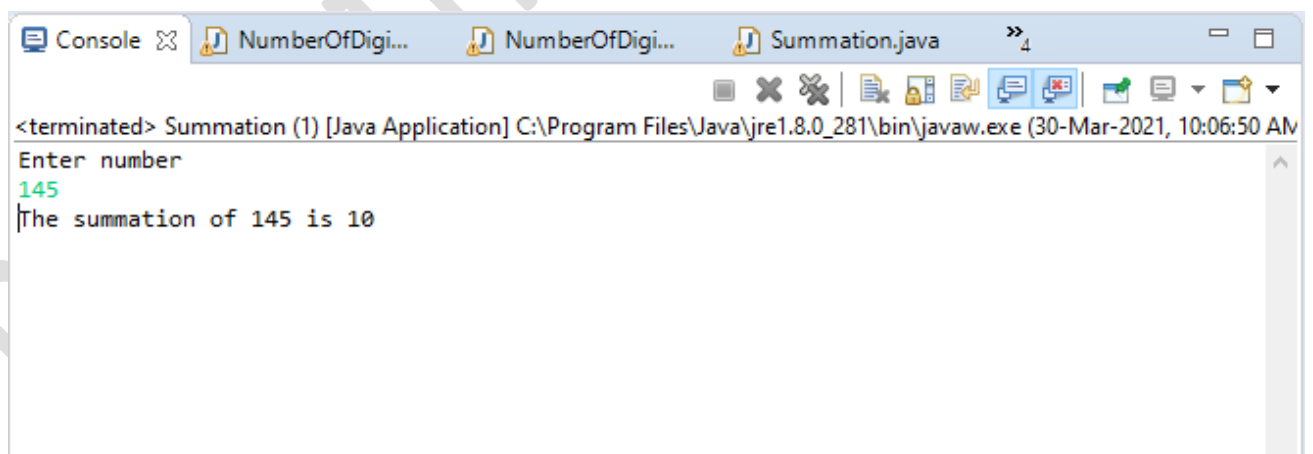
For example:- Entered number = 145

Summation= 1+4+5=> 10

Code:

```
import java.util.Scanner;
public class Summation
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter number");
        int number=scan.nextInt();
        int num=number;
        int sum=0;
        while(number>0)
        {
            int reminder=number%10;
            sum=sum + reminder; // or sum += reminder;
            number=number/10; // or number /= 10;
        }
        System.out.println("The summation of "+ num+ " is "+sum);
    }
}
```

Output:-



7. Write a program for Reversing digits

Example:- Entered number = 123

Output = 3

2

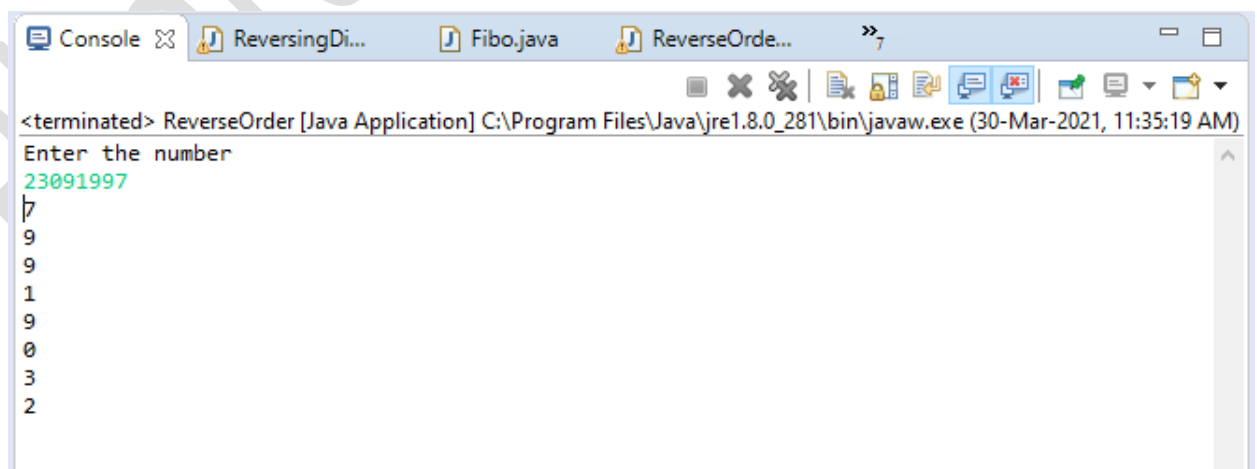
1

Code:

```
import java.util.Scanner;

public class ReverseOrder
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number=scan.nextInt();
        while(number>0)
        {
            int reminder= number%10;
            System.out.println(reminder);
            number /=10;
        }
    }
}
```

Output:-



```
<terminated> ReverseOrder [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (30-Mar-2021, 11:35:19 AM)
Enter the number
23091997
7
9
9
1
9
0
3
2
```

8. Write a program for reversing order

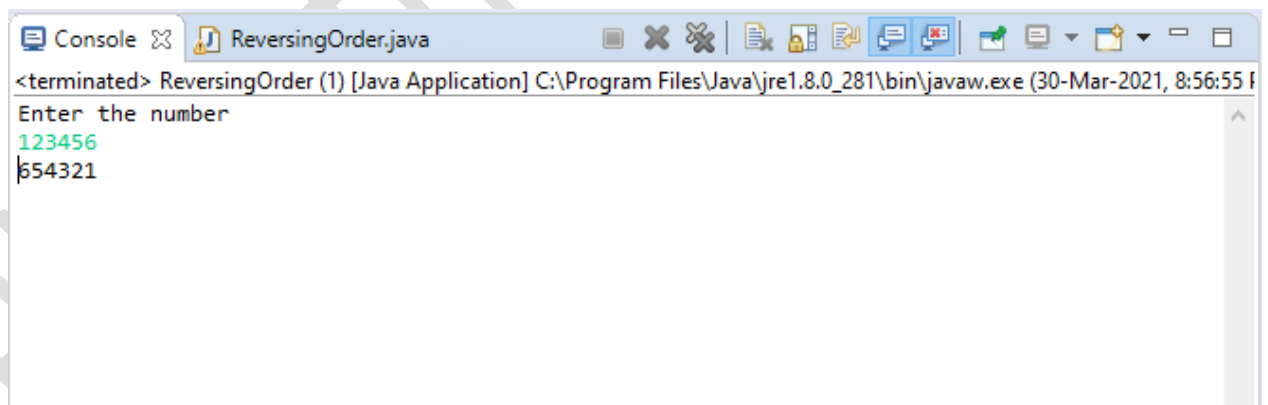
for example:- Entered number = 123456

Output = 654321

Code:

```
import java.util.Scanner;
public class ReversingOrder
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number=scan.nextInt();
        int reverse= 0;
        while(number>0)
        {
            int reminder = number%10;
            reverse= reverse*10 + reminder;
            number /=10; //or number=number/10;
        }
        System.out.println(reverse);
    }
}
```

Output:-

A screenshot of a Java IDE's console window. The title bar shows 'Console' and 'ReversingOrder.java'. The console output displays the program's execution: it prompts 'Enter the number', receives the input '123456', and outputs '654321'. The window title also includes the file path 'C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe' and the timestamp '(30-Mar-2021, 8:56:55)'.

```
<terminated> ReversingOrder (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (30-Mar-2021, 8:56:55)
Enter the number
123456
654321
```


9. Write a program to check whether the given number is palindrome or not

Palindrome: A number is said to be palindrome, when the number order is same in both forward and backward

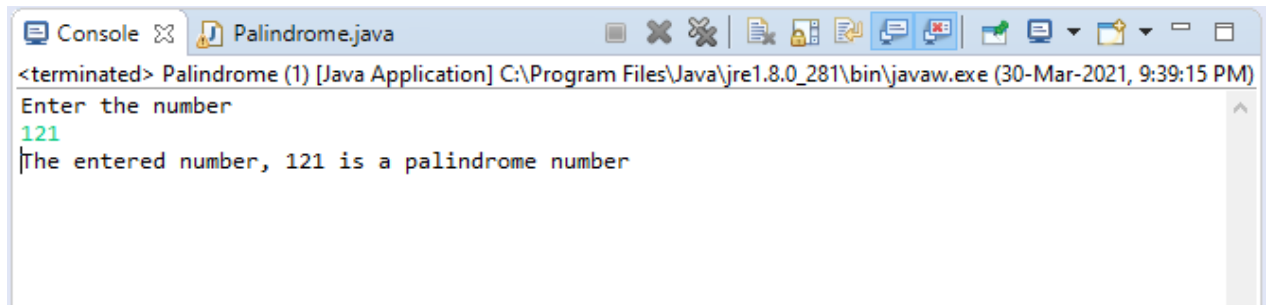
Example 1: Number 121 is a palindrome number because, even though the number is written backwards, it is still 121.

Example 2: Number 1212 is not a palindrome number because, when the number is written backwards, it will be 2121. Since $1212 \neq 2121$ it is not palindrome.

Code:

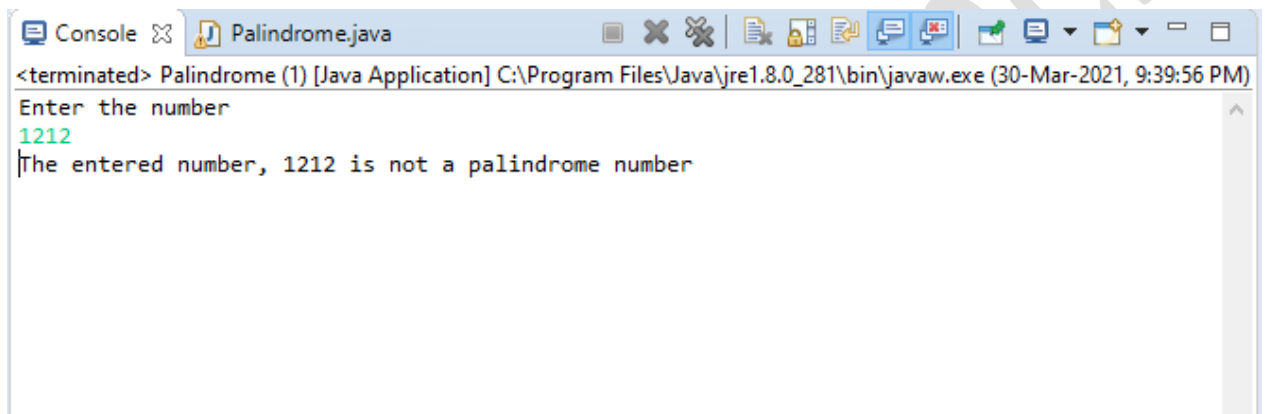
```
import java.util.Scanner;
public class Palindrome
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number=scan.nextInt();
        int num= number;
        int reverse=0;
        while(number>0)
        {
            int reminder= number%10;
            reverse = reverse*10 + reminder;
            number /=10; // or number = number/10
        }
        if(num==reverse)
        {
            System.out.println("The entered number, "+num+ " is a palindrome number");
        }
        else
        {
            System.out.println("The entered number, "+num+ " is not a palindrome number");
        }
    }
}
```

Output 1:-



```
<terminated> Palindrome (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (30-Mar-2021, 9:39:15 PM)
Enter the number
121
The entered number, 121 is a palindrome number
```

Output 2:-



```
<terminated> Palindrome (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (30-Mar-2021, 9:39:56 PM)
Enter the number
1212
The entered number, 1212 is not a palindrome number
```

10 . Write a program to check whether the given number is Spy number or not

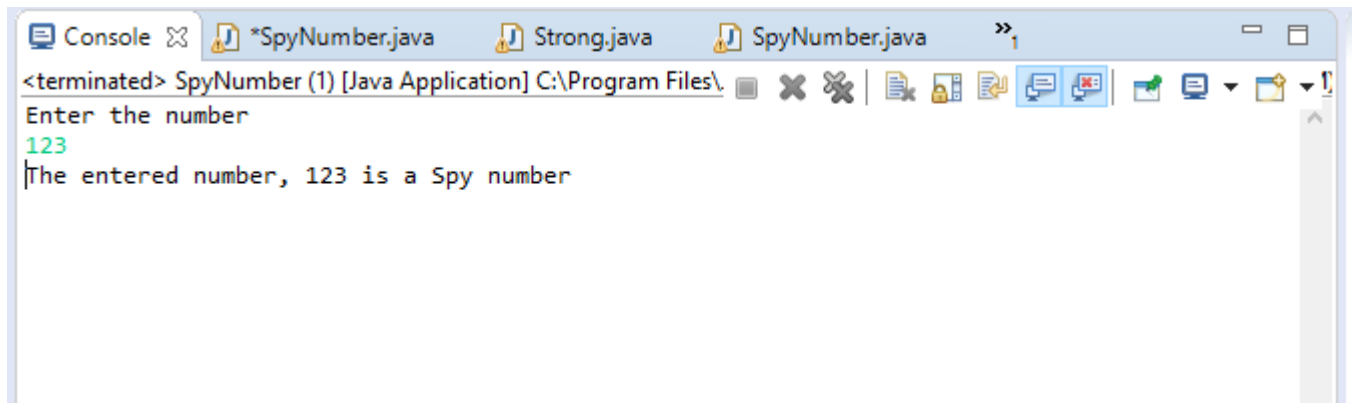
Spy number: A number is said to be a Spy number, if both sum and product of all digits are equal

Example:- Number 123 is a Spy number, sum of it's digits is 6 ($1+2+3=6$) and product of it's digits is 6 ($1 \times 2 \times 3 = 6$). Both sum and product are same. Thus, 123 is a spy number.

Code:

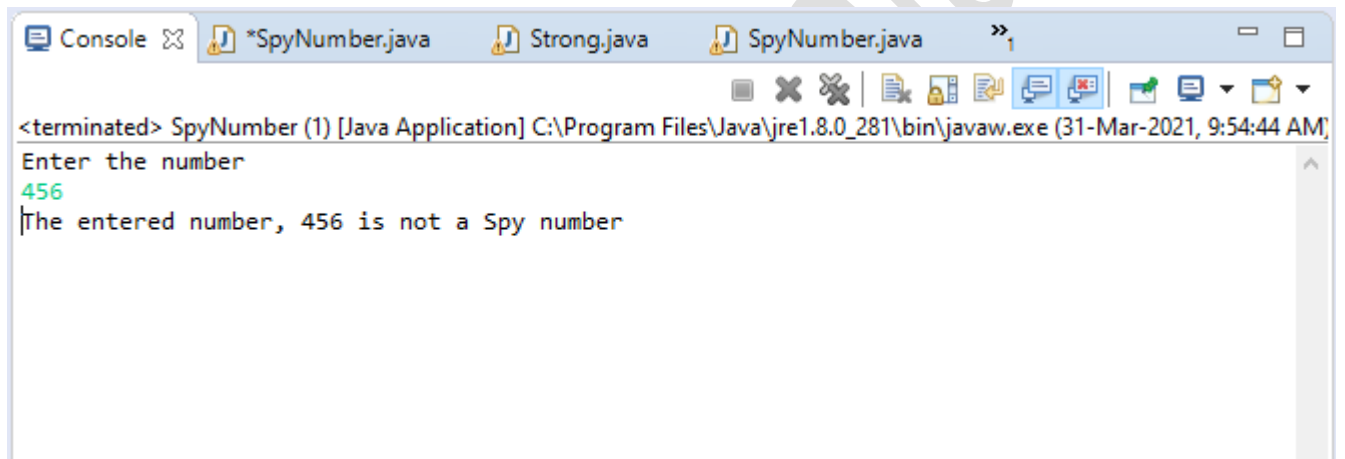
```
import java.util.Scanner;
public class SpyNumber
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number=scan.nextInt();
        int num=number;
        int sum=0;
        int product=1;
        while(number>0)
        {
            int reminder= number%10;
            sum += reminder; // or sum = sum + reminder;
            product *= reminder; // or product = product
                               *reminder;
            number /=10; // or number = number/10;
        }
        if(sum==product)
        {
            System.out.println("The entered number, "+ num + "
                               is a Spy number");
        }
        else
        {
            System.out.println("The entered number, "+ num + "
                               is not a Spy number");
        }
    }
}
```

Output 1:-



```
<terminated> SpyNumber (1) [Java Application] C:\Program Files\
Enter the number
123
The entered number, 123 is a Spy number
```

Output 2:-



```
<terminated> SpyNumber (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (31-Mar-2021, 9:54:44 AM)
Enter the number
456
The entered number, 456 is not a Spy number
```

11. Write a program to print factorial of any number

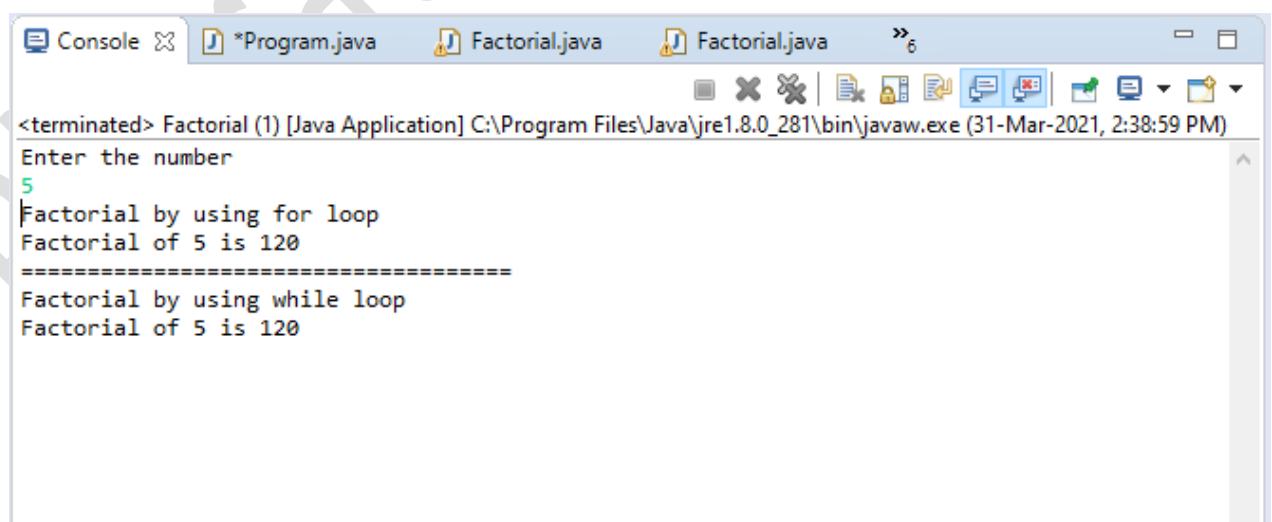
Factorial : A factorial is a function that multiplies a number by every number below it. For example $5! = 5*4*3*2*1=120$.

Code:

```
import java.util.Scanner;
public class Factorial
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number= scan.nextInt();
        System.out.println("Factorial by using for loop");

        int multiply = 1;
        for(int i=1 ;i<= number;i++)
        {
            multiply *= i; // or multiply = multiply*i;
        }
        System.out.println("Factorial of "+ number+ " is "+ multiply);
        System.out.println("=====");
        System.out.println("Factorial by using while loop");
        int j=1;
        int multiply2 = 1;
        while(j<=number)
        {
            multiply2 *= j; // or multiply2 = multiply2*j;
            j++;
        }
        System.out.println("Factorial of "+ number+ " is "+ multiply2);
    }
}
```

Output :-

A screenshot of a Java IDE window titled "Factorial (1) [Java Application]". The console output shows the program execution: "Enter the number", followed by the input "5", then "Factorial by using for loop", "Factorial of 5 is 120", a separator line "=====", "Factorial by using while loop", and finally "Factorial of 5 is 120". The IDE interface includes a toolbar with icons for running, debugging, and other development actions.

```
<terminated> Factorial (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (31-Mar-2021, 2:38:59 PM)
Enter the number
5
Factorial by using for loop
Factorial of 5 is 120
=====
Factorial by using while loop
Factorial of 5 is 120
```

12. Write a program to check whether the given number is strong number or not

Strong Number : Strong number is a number whose sum of all digits factorial is equal to the number 'n'. So, to find a number whether its strong number, we have to pick every digit of the number like the number is 145 then we have to pick 1, 4 and 5 now we will find factorial of each number i.e, $1! = 1$, $4! = 24$, $5! = 120$.

Now we will sum up $1 + 24 + 120$ so we get 145, that is exactly same as the input given, so we can say that the number is strong number.

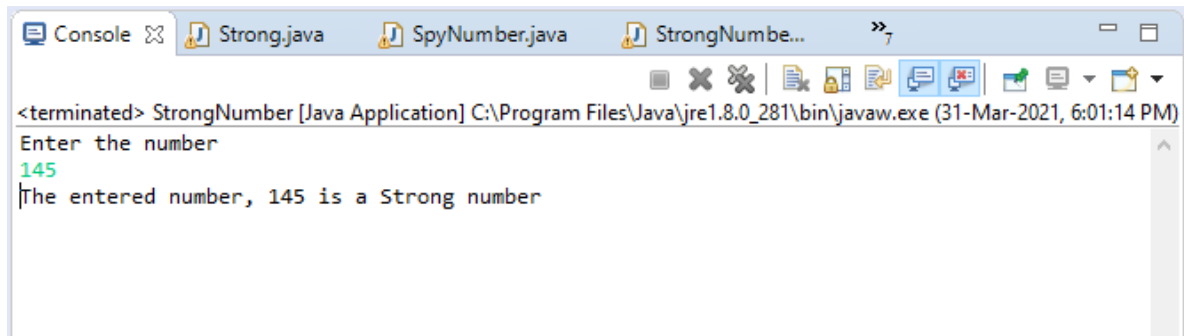
a) By using while loop :

Code:

```
import java.util.Scanner;
public class StrongNumber {

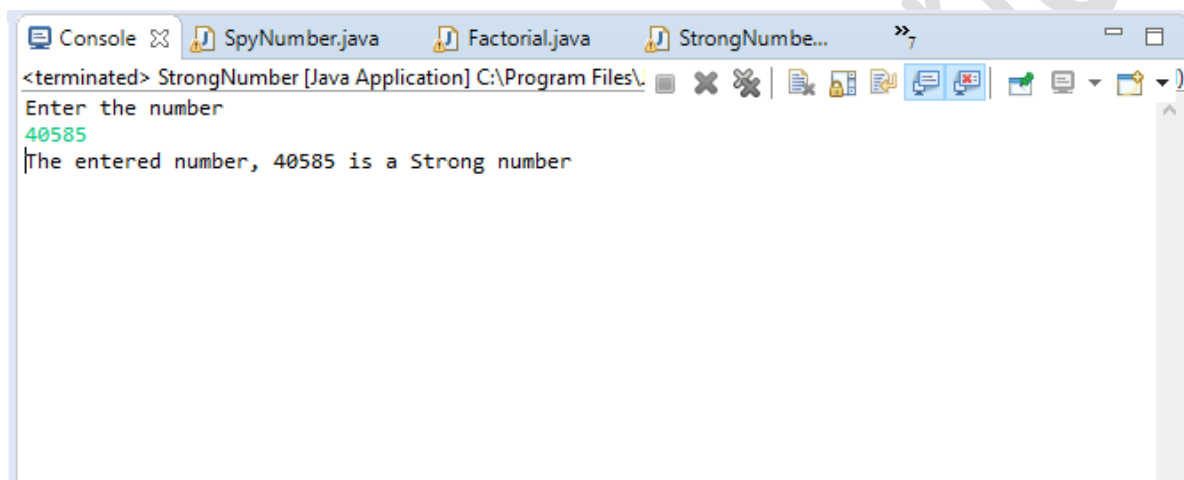
    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter the number");
        int number= scan.nextInt();
        int num= number;
        int sum=0;
        while(number>0)
        {
            int fact=1;
            int reminder = number%10;
            int i=reminder;
            while(i>0 && i<= number)
            {
                fact=fact*i;
                i--;
            }
            sum += fact; //or sum = sum + fact;
            number /= 10; // or number = number/10;
        }
        if(sum==num)
        {
            System.out.println("The entered number, "+ num
            + " is a Strong number");
        }
        else{
            System.out.println("The entered number, "+ num
            + " is not a Strong number");
        }
    }
}
```

Output 1:-



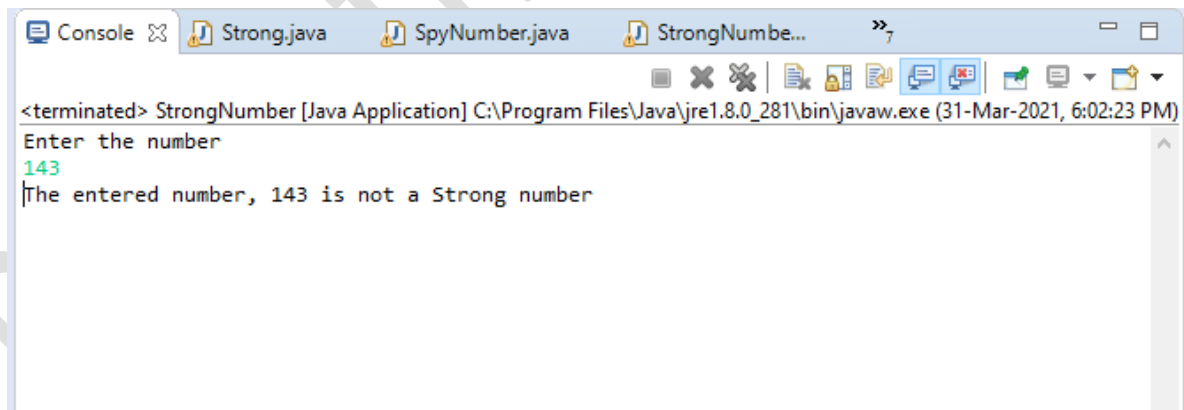
```
<terminated> StrongNumber [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (31-Mar-2021, 6:01:14 PM)
Enter the number
145
The entered number, 145 is a Strong number
```

Output 2:-



```
<terminated> StrongNumber [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (31-Mar-2021, 6:02:14 PM)
Enter the number
40585
The entered number, 40585 is a Strong number
```

Output 3:-



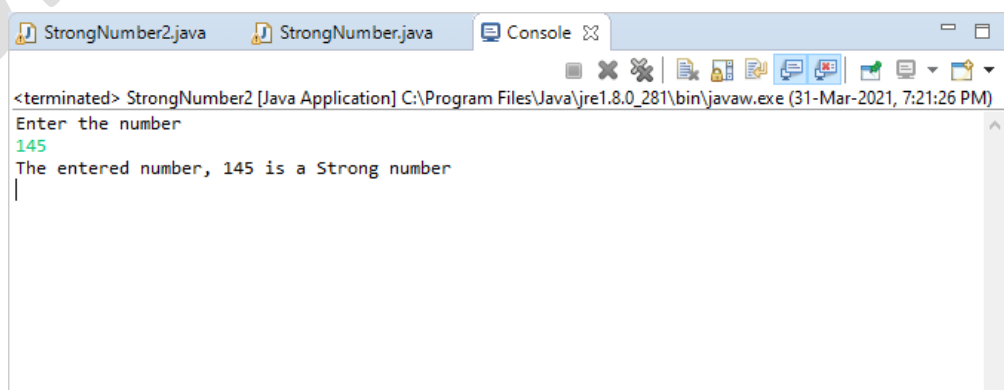
```
<terminated> StrongNumber [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (31-Mar-2021, 6:02:23 PM)
Enter the number
143
The entered number, 143 is not a Strong number
```

b) By using for loop :

Code:

```
import java.util.Scanner;
public class StrongNumber2
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number= scan.nextInt();
        int num=number;
        int sum=0;
        while(number>0)
        {
            int fact=1;
            int reminder = number%10;
            for(int i=1; i<=reminder;i++)
            {
                fact *= i; // or fact = fact * i;
            }
            sum += fact; // or sum = sum + fact;
            number /=10; // or number = number/10;
        }
        if(sum==num)
        {
            System.out.println("The entered number, "+ num + "
is a Strong number");
        }
        else
        {
            System.out.println("The entered number, "+ num + "
is not a Strong number");
        }
    }
}
```

Output :-



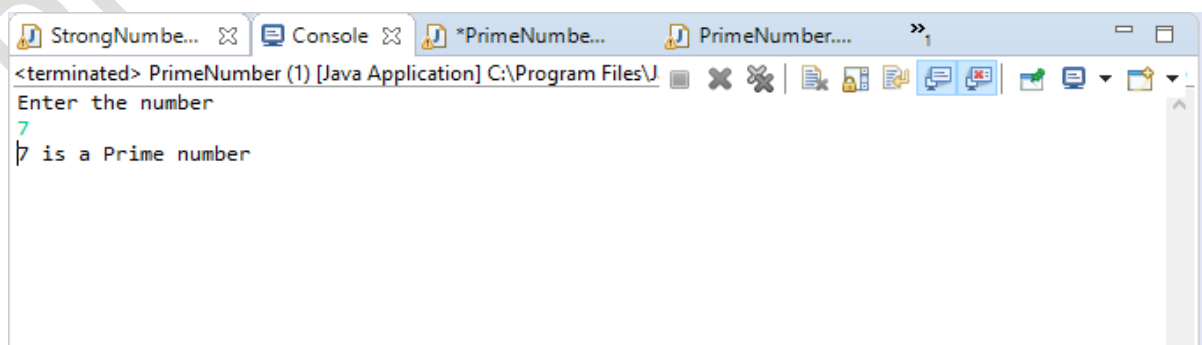
13. Write a program to check whether the given number is prime number or not

Prime number : A number is said to be prime number only if, it is divided by 1 and itself. For example Number 7, is a prime number because it can be divided by only 1 and 7 (itself), not by any other number.

Code:

```
import java.util.Scanner;
public class PrimeNumber {
    public static void main(String[] args)
    {
        Scanner scan= new Scanner (System.in);
        System.out.println("Enter the number");
        int number = scan.nextInt();
        int count=0;
        for(int i=2;i<number;i++)
        {
            if(number%i==0)
            {
                count++;
            }
        }
        if(count<1)
        {
            System.out.println(number + " is a Prime number");
        }
        else
        {
            System.out.println(number + " is not a Prime
            number");
        }
    }
}
```

Output :



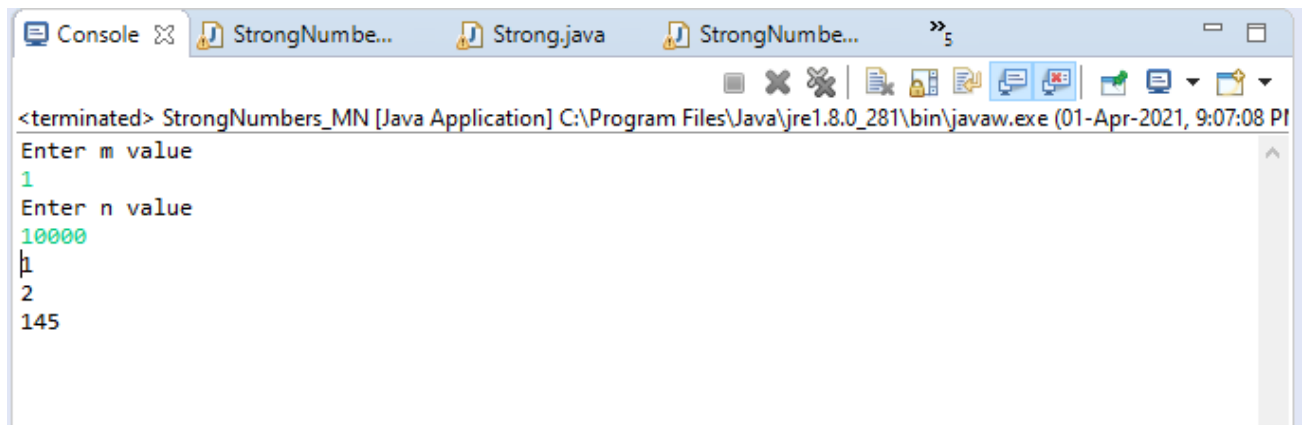
14. Write a program to print Strong numbers between m and n

Code :

```
import java.util.Scanner;
public class StrongNumbers_MN
{
    public static boolean strong(int a)
    {
        int n=a;
        int sum=0;
        while(n>0)
        {
            int fact=1;
            int reminder=n%10;
            for(int i=1;i<=reminder;i++)
            {
                fact=fact*i; //or fact *= i;
            }
            sum += fact;
            n /=10; //or n = n/10;
        }
        if(sum==a)
        {
            return true;
        }
        else
        {
            return false;
        }
    }

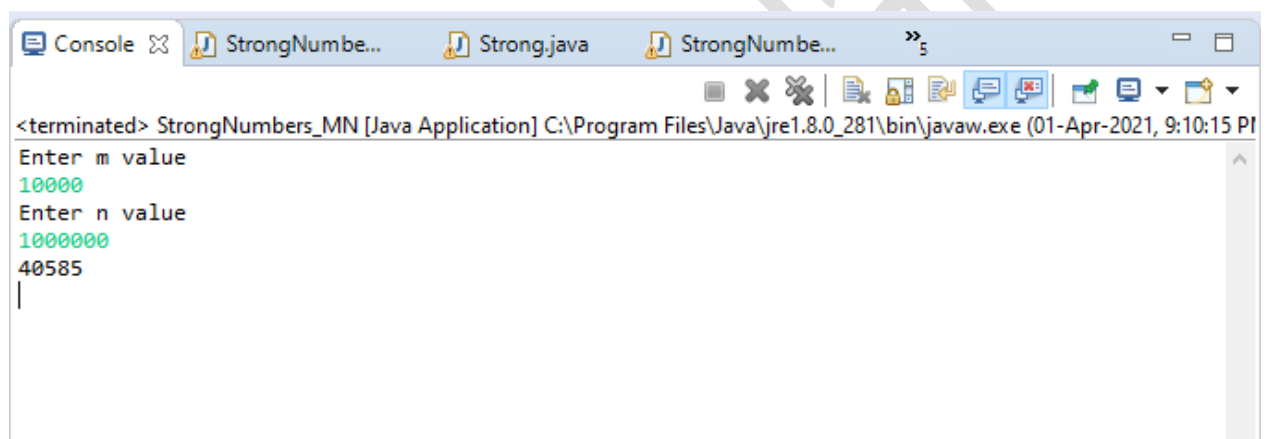
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter m value");
        int m= scan.nextInt();
        System.out.println("Enter n value");
        int n= scan.nextInt();
        for(int i=m;i<=n;i++)
        {
            if(strong(i))
            {
                System.out.println(i);
            }
        }
    }
}
```

Output 1:-



```
<terminated> StrongNumbers_MN [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (01-Apr-2021, 9:07:08 PM)
Enter m value
1
Enter n value
10000
1
2
145
```

Output 2:-



```
<terminated> StrongNumbers_MN [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (01-Apr-2021, 9:10:15 PM)
Enter m value
10000
Enter n value
1000000
40585
```

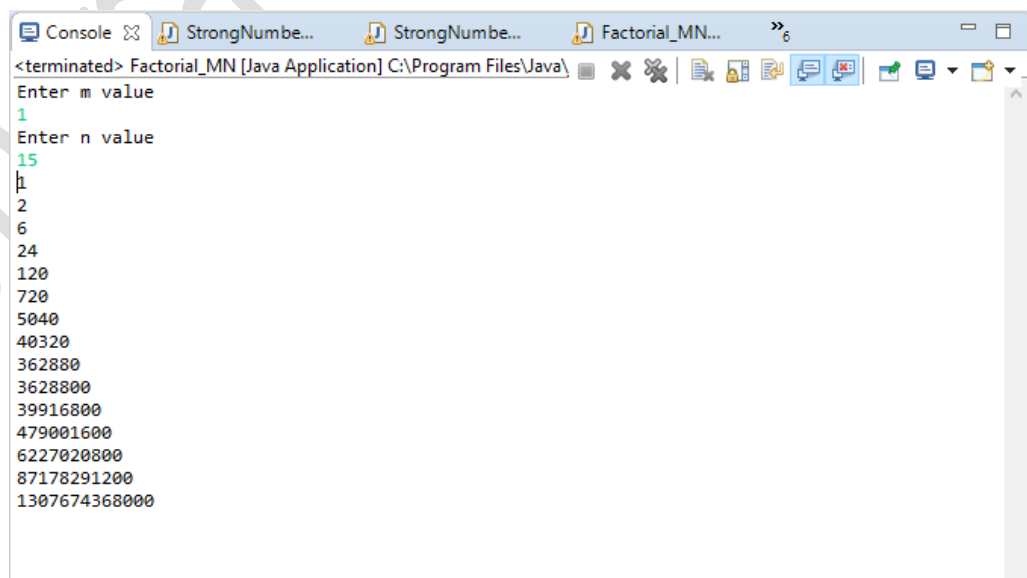
15. Write a program to print factorials between m and n

Code:

```
import java.util.Scanner;
public class Factorial_MN
{
    public static long factorial(int a)
    {
        int n=a;
        long fact=1;
        for(int i=1;i<=n;i++)
        {
            fact *=i;
        }
        return fact;
    }

    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter m value");
        int m=scan.nextInt();
        System.out.println("Enter n value");
        int n=scan.nextInt();
        for(int i=m;i<=n;i++)
        {
            System.out.println(factorial(i));
        }
    }
}
```

Output :-



```
<terminated> Factorial_MN [Java Application] C:\Program Files\Java\
Enter m value
1
Enter n value
15
1
2
6
24
120
720
5040
40320
362880
3628800
39916800
479001600
6227020800
87178291200
1307674368000
```

16. Write a program to print Fibonacci numbers

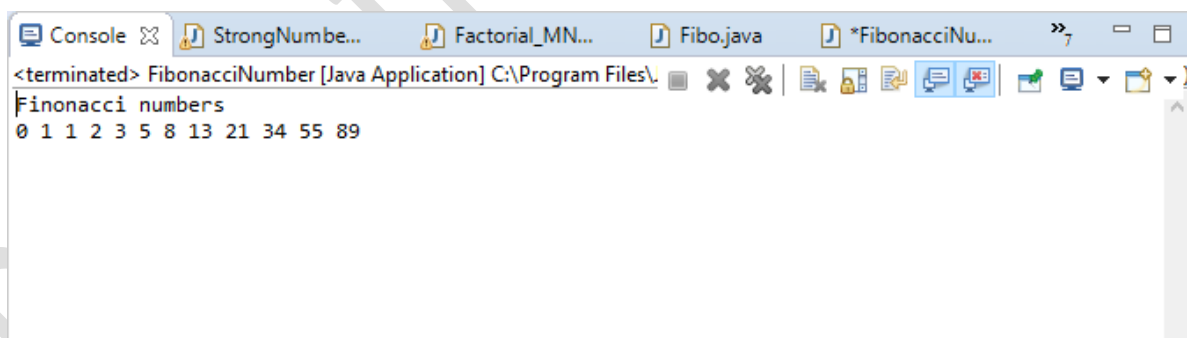
Fibonacci numbers : The Fibonacci sequence is a series of numbers where a number is the addition of the last two numbers, starting with 0, and 1.

The Fibonacci sequence: 0, 1, 1, 2, 3, 5, 8, 13, 21.....

Code:

```
public class FibonacciNumber
{
    public static void main(String[] args)
    {
        int n1=0;
        int n2=1;
        System.out.println("Fibonacci numbers");
        System.out.print(n1 + " " + n2);
        for(int i=1;i<=10;i++)
        {
            int n3 = n1+n2;
            System.out.print(" " + n3);
            n1=n2;
            n2=n3;
        }
    }
}
```

Output :-



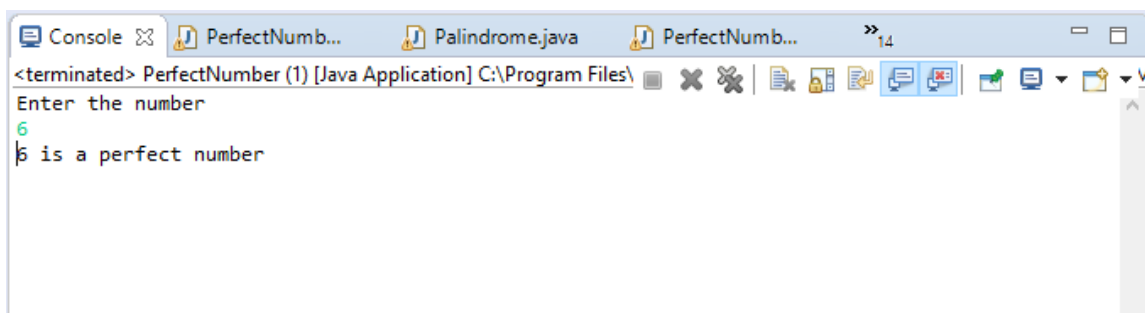
17. Write a program to check whether given number is Perfect number or not

Perfect number: In number theory, a perfect number is a positive integer that is equal to the sum of its positive divisors, excluding the number itself. For instance, 6 has divisors 1, 2 and 3 (excluding itself), and $1 + 2 + 3 = 6$, so 6 is a perfect number.

Code:

```
import java.util.Scanner;
public class PerfectNumber
{
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter the number");
        int number=scan.nextInt();
        int sum=0;
        for(int i=1;i<number;i++)
        {
            if(number%i==0)
            {
                sum += i; // or sum = sum + i;
            }
        }
        if(sum==number)
        {
            System.out.println(number + " is a perfect number");
        }
        else
        {
            System.out.println(number+" is not a perfect number");
        }
    }
}
```

Output :-

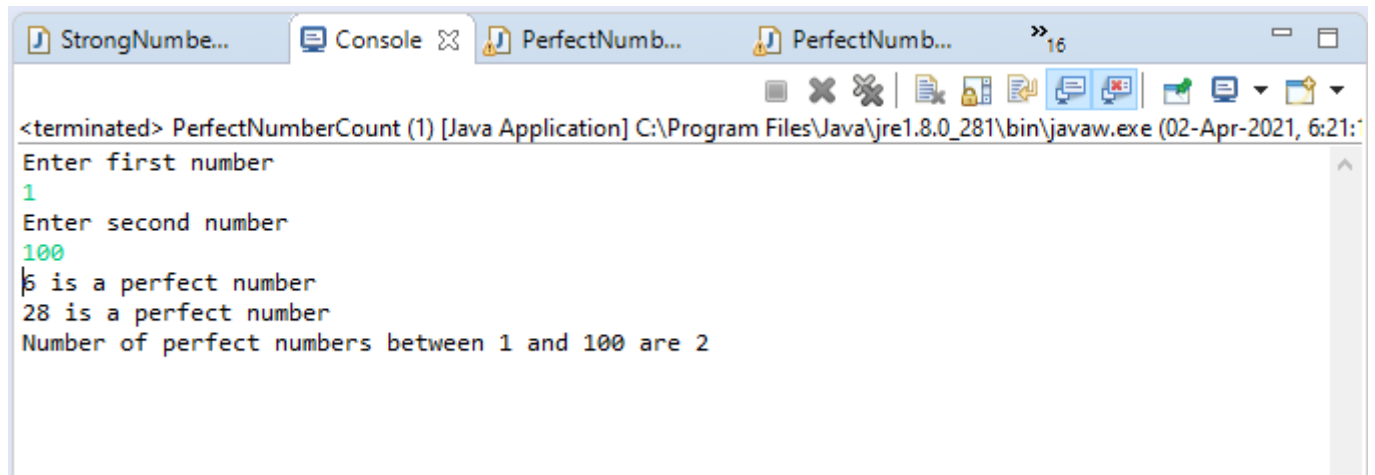


18. Write a program to print and count the perfect numbers between range of x and y

Code:

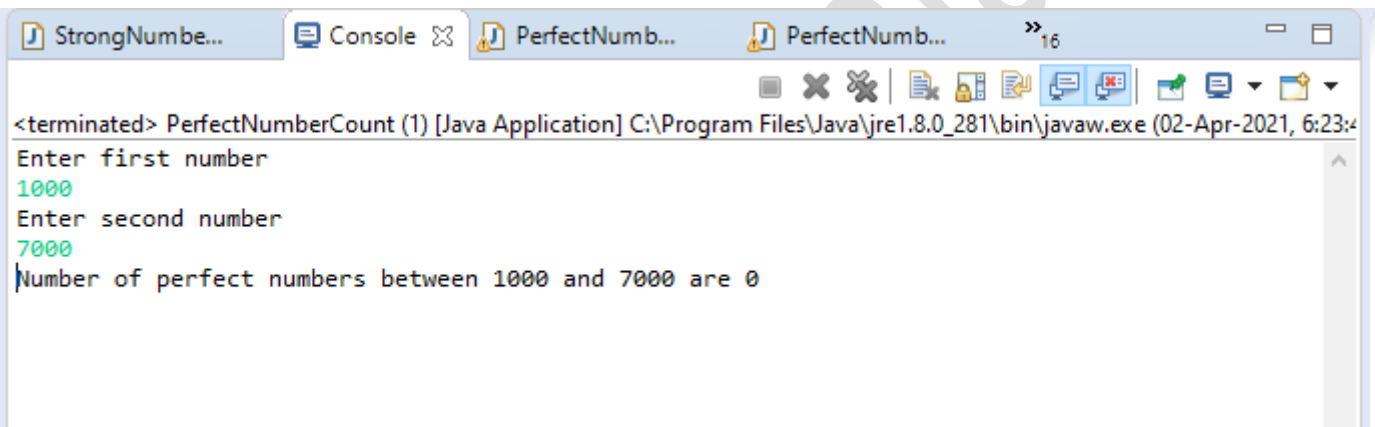
```
import java.util.Scanner;
public class PerfectNumberCount
{
    public static boolean perfect(int a)
    {
        int n=a;
        int sum=0;
        for(int i=1;i<n;i++)
        {
            if(n%i==0)
            {
                sum += i;
            }
        }
        if(sum==n)
        {
            return true;
        }
        else
        {
            return false;
        }
    }
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter first number");
        int number1=scan.nextInt();
        System.out.println("Enter second number");
        int number2=scan.nextInt();
        int count=0;
        for(int i=number1;i<=number2;i++)
        {
            if(perfect(i))
            {
                System.out.println(i + " is a perfect number");
                count++;
            }
        }
        System.out.println("Number of perfect numbers between " + number1 + " and " + number2+" are "+ count);
    }
}
```

Output 1:-



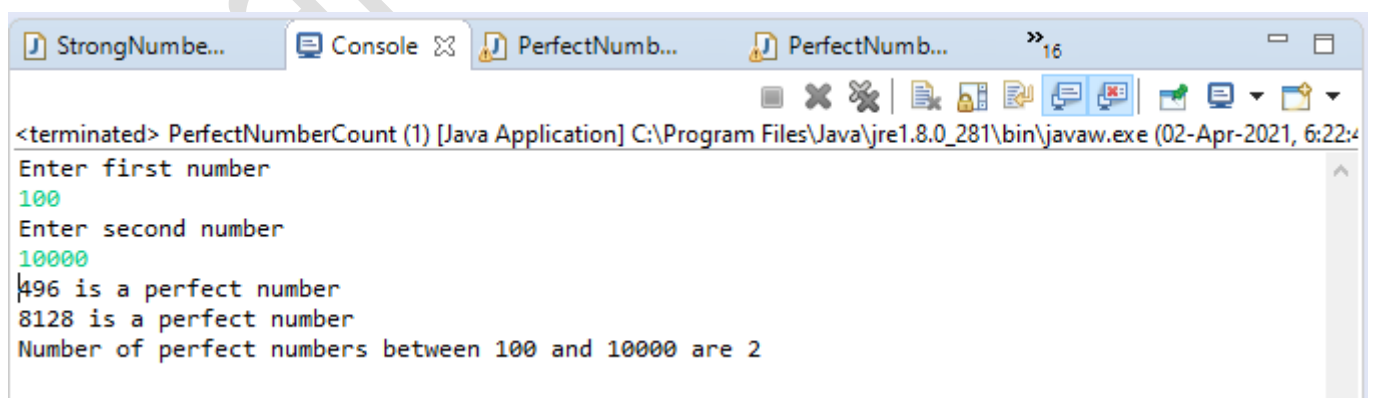
```
<terminated> PerfectNumberCount (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (02-Apr-2021, 6:21:
Enter first number
1
Enter second number
100
6 is a perfect number
28 is a perfect number
Number of perfect numbers between 1 and 100 are 2
```

Output 2:-



```
<terminated> PerfectNumberCount (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (02-Apr-2021, 6:23:
Enter first number
1000
Enter second number
7000
Number of perfect numbers between 1000 and 7000 are 0
```

Output 3:-



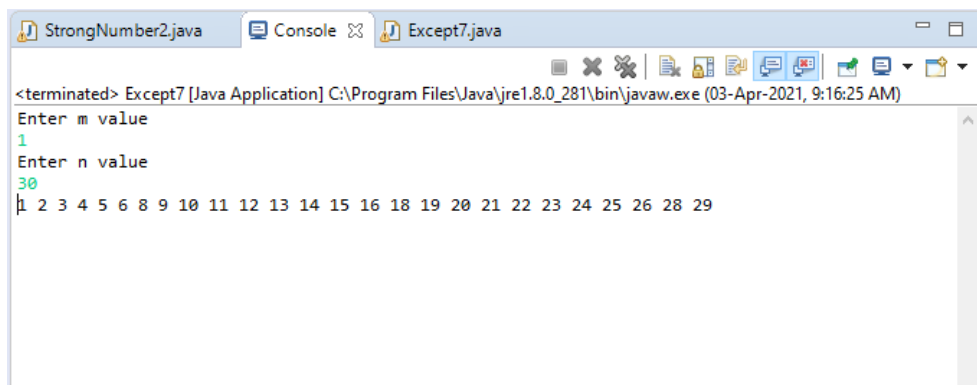
```
<terminated> PerfectNumberCount (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (02-Apr-2021, 6:22:
Enter first number
100
Enter second number
10000
496 is a perfect number
8128 is a perfect number
Number of perfect numbers between 100 and 10000 are 2
```


19. WAP to print numbers from M to N except numbers containing 7 in it

Code :

```
import java.util.Scanner;
public class Except7
{
    public static boolean check(int a)
    {
        while(a>0)
        {
            int r=a%10;
            if(r==7)
            {
                return false;
            }
            a=a/10;
        }
        return true;
    }
    public static void main(String[] args)
    {
        Scanner scan= new Scanner(System.in);
        System.out.println("Enter m value");
        int m= scan.nextInt();
        System.out.println("Enter n value");
        int n= scan.nextInt();
        for(int i=m;i<n;i++)
        {
            if(check(i))
            {
                System.out.print(i+ " ");
            }
        }
    }
}
```

Output :-



```
StrongNumber2.java Console Except7.java
<terminated> Except7 [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 9:16:25 AM)
Enter m value
1
Enter n value
30
1 2 3 4 5 6 8 9 10 11 12 13 14 15 16 18 19 20 21 22 23 24 25 26 28 29
```

20. WAP to check whether the given number is Armstrong number or not

Armstrong number: Armstrong number is a number that is equal to the sum of powers (depends on number of digits) of its digits. For example 0, 1, 153, 370, 371,407, 1634, 8028 etc. are the Armstrong numbers. Let's try to understand why 153 and 1634 are Armstrong numbers.

Example 1:- Number = 153 ; Number of digits = 3;
Number of digits = value of power;
 $1^3 + 5^3 + 3^3 = 1 + 125 + 27 \Rightarrow 153$ (equals to actual Number)

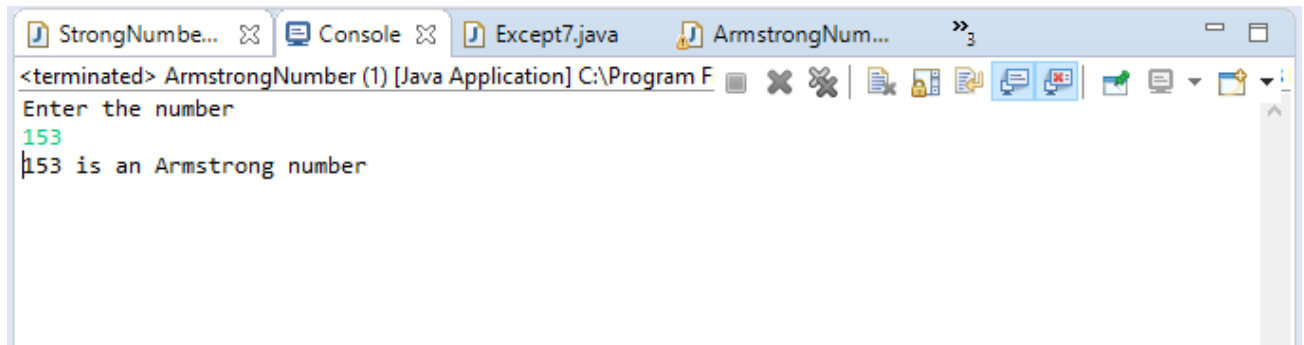
Example 2:- Number = 1634 ; Number of digits = 4;
Number of digits = value of power;
 $1^4 + 6^4 + 3^4 + 4^4 = 1 + 1296 + 81 + 256 \Rightarrow 1634$ (equals to actual Number)

Code :

```
import java.util.Scanner;
public class ArmstrongNumber {

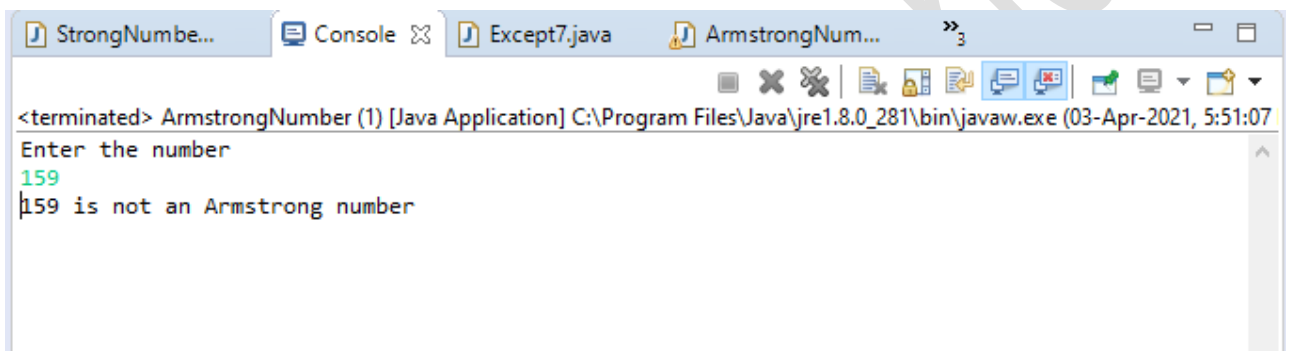
    public static void main(String[] args) {
        Scanner scan= new Scanner(System.in);
        System.out.println("Enter the number");
        int number = scan.nextInt();
        int num1 = number;
        int count=0;
        int sum=0;
        while(num1>0)
        {
            num1 = num1/10;
            count++;
        }
        int num2=number;
        while(num2>0)
        {
            int power=1;
            int reminder = num2%10;
            for(int i=1;i<=count;i++)
            {
                power *= reminder; // or power = power * reminder;
            }
            sum += power; // or sum = sum + power;
            num2= num2/10;
        }
        if(sum==number){
            System.out.println(number + " is an Armstrong number");
        }
        else
        {
            System.out.println(number + " is not an Armstrong number");
        }
    }
}
```

Output 1:-



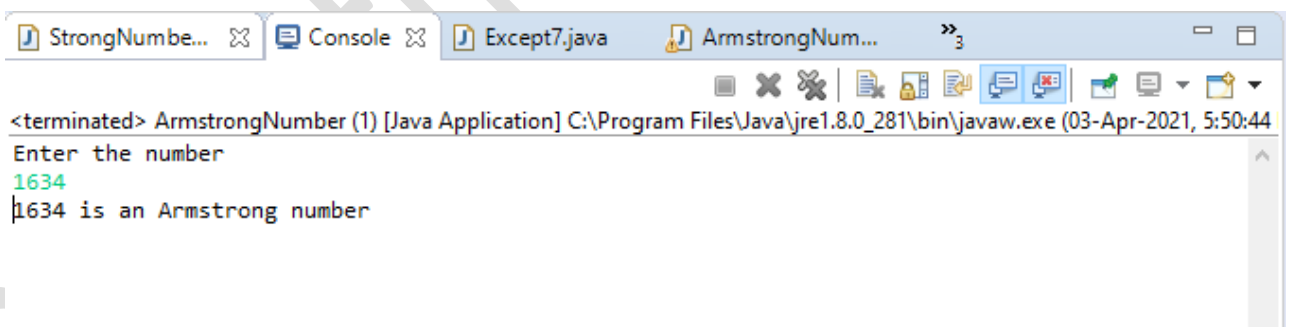
```
<terminated> ArmstrongNumber (1) [Java Application] C:\Program F
Enter the number
153
153 is an Armstrong number
```

Output 2:-



```
<terminated> ArmstrongNumber (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 5:51:07)
Enter the number
159
159 is not an Armstrong number
```

Output 3:-



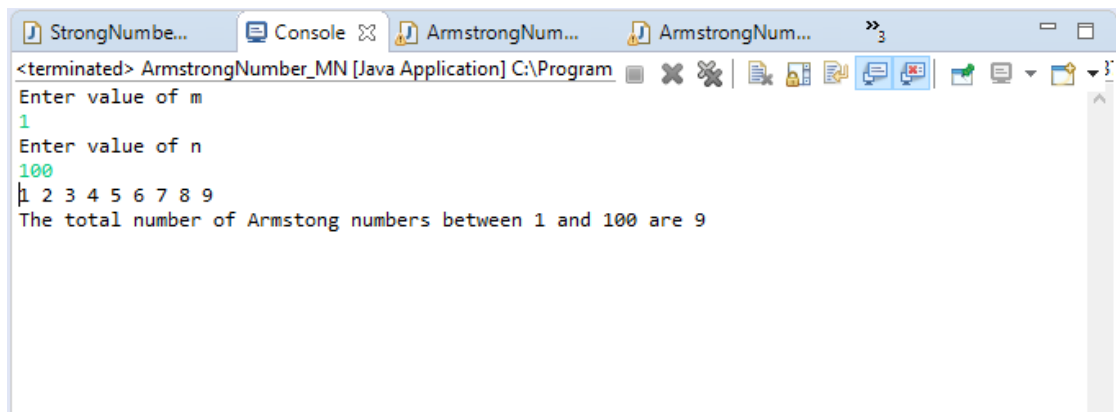
```
<terminated> ArmstrongNumber (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 5:50:44)
Enter the number
1634
1634 is an Armstrong number
```

21. WAP to print and count total number of Armstrong numbers between m and n

Code:

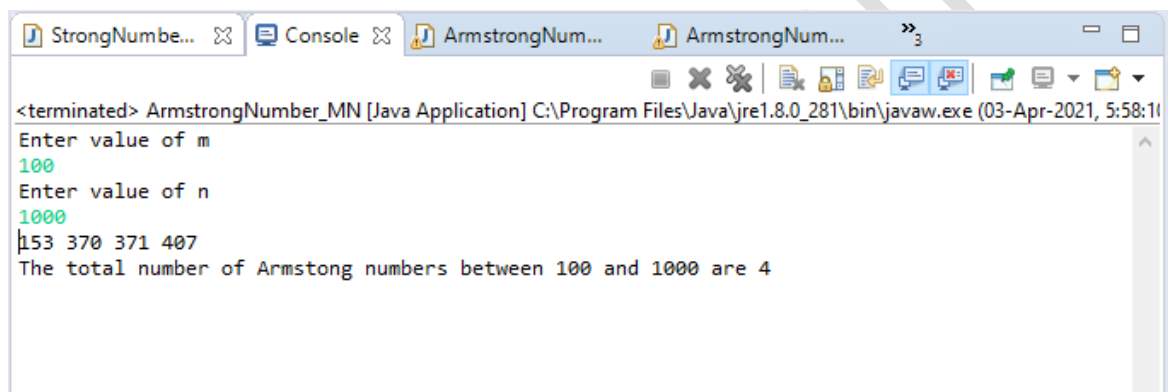
```
import java.util.Scanner;
public class ArmstrongNumber_MN
{
    public static boolean armstrong(int a)
    {
        int num1 = a;
        int count=0;
        int sum=0;
        while(num1>0)
        {
            num1 = num1/10;
            count++;
        }
        int num2=a;
        while(num2>0)
        {
            int power=1;
            int remainder = num2%10;
            for(int i=1;i<=count;i++)
            {
                power *= remainder; // or power = power * remainder;
            }
            sum += power; // or sum = sum + power;
            num2= num2/10;
        }
        if(sum==a)
        {
            return true;
        }
        else
        {
            return false;
        }
    }
    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter value of m");
        int m = scan.nextInt();
        System.out.println("Enter value of n");
        int n= scan.nextInt();
        int count2=0;
        for(int i=m;i<=n;i++)
        {
            if(armstrong(i))
            {
                System.out.print(i+" ");
                count2++;
            }
        }
        System.out.println("");
        System.out.println("The total number of Armstrong numbers between "+ m +" and "+ n+" are "+ count2++);
    }
}
```

Output 1:-



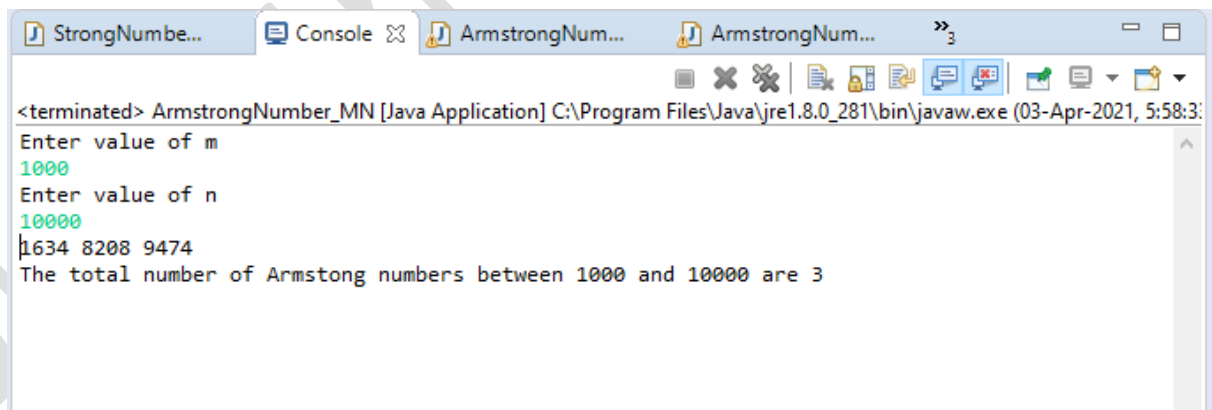
```
<terminated> ArmstrongNumber_MN [Java Application] C:\Program
Enter value of m
1
Enter value of n
100
1 2 3 4 5 6 7 8 9
The total number of Armstong numbers between 1 and 100 are 9
```

Output 2:-



```
<terminated> ArmstrongNumber_MN [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 5:58:11)
Enter value of m
100
Enter value of n
1000
153 370 371 407
The total number of Armstong numbers between 100 and 1000 are 4
```

Output 3:-



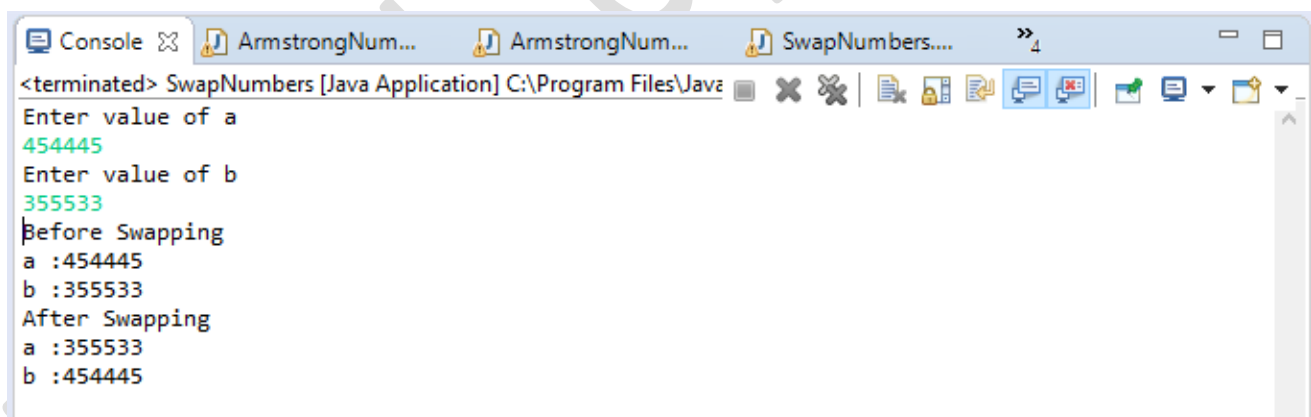
```
<terminated> ArmstrongNumber_MN [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 5:58:31)
Enter value of m
1000
Enter value of n
10000
1634 8208 9474
The total number of Armstong numbers between 1000 and 10000 are 3
```

22. WAP to swap values of two variables without using another variable

Code :

```
import java.util.Scanner;
public class SwapNumbers {
    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter value of a");
        int a = scan.nextInt();
        System.out.println("Enter value of b");
        int b = scan.nextInt();
        System.out.println("Before Swapping");
        System.out.println("a :" + a);
        System.out.println("b :" + b);
        a = a + b;
        b = a - b;
        a = a - b;
        System.out.println("After Swapping");
        System.out.println("a :" + a);
        System.out.println("b :" + b);
    }
}
```

Output :-



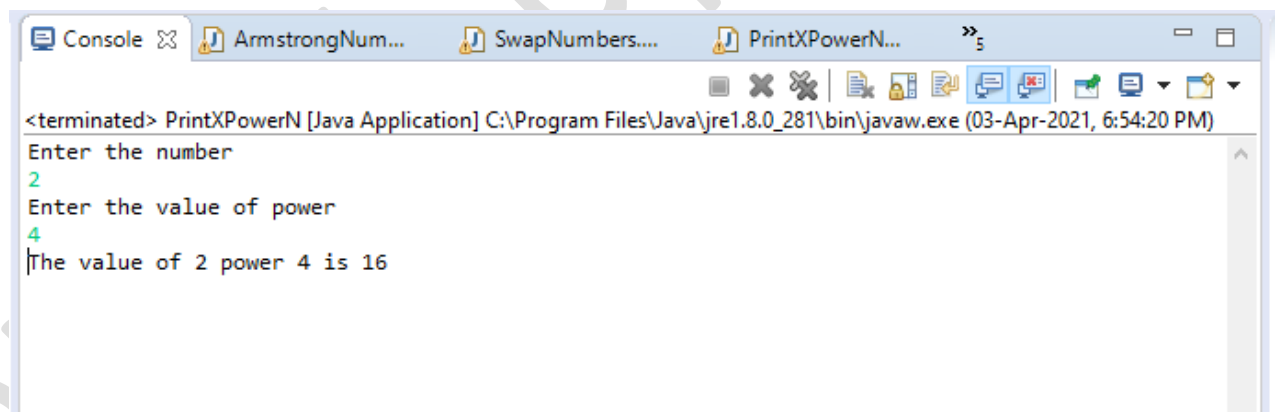
```
<terminated> SwapNumbers [Java Application] C:\Program Files\Java
Enter value of a
454445
Enter value of b
355533
Before Swapping
a :454445
b :355533
After Swapping
a :355533
b :454445
```

23. WAP to print X^n value (Example: 2^5 , 7^6 etc)

Code :

```
import java.util.Scanner;
public class PrintXPowerN {
    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter the number");
        int x = scan.nextInt();
        System.out.println("Enter the value of power");
        int n = scan.nextInt();
        int product=1;
        for(int i=1;i<=n;i++)
        {
            product *= x; // or product = product * x;
        }
        System.out.println("The value of "+ x +" power "+ n+" is "+ product);
    }
}
```

Output :-



24. WAP to check whether the given number is perfect square or not

Some examples of perfect square are 4, 9, 16..... As they have square roots

Examples: $2 * 2 = 4$;

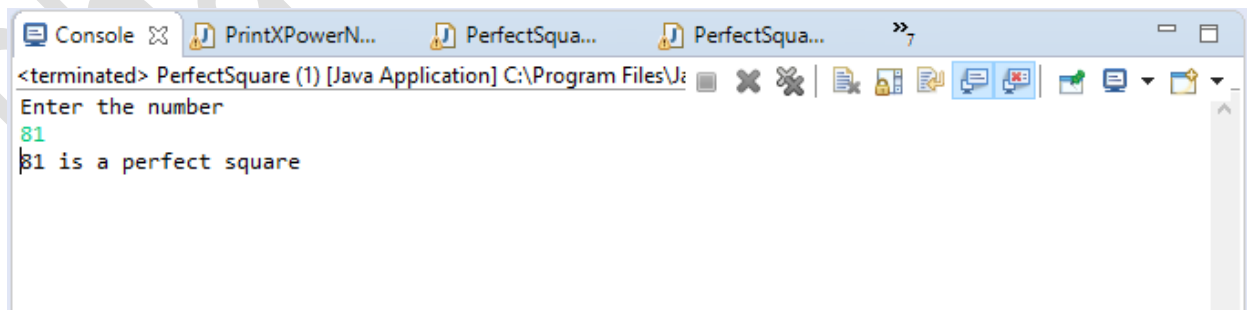
$3 * 3 = 9$;

$4 * 4 = 16$;

Code:

```
import java.util.Scanner;
public class PerfectSquare {
    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter the number");
        int number = scan.nextInt();
        boolean condition=false;
        for(int i=1;i<=number;i++)
        {
            if(i*i==number)
            {
                condition = true;
            }
        }
        if(condition==true)
        {
            System.out.println(number + " is a perfect square");
        }
        else
        {
            System.out.println(number + " is not a perfect square");
        }
    }
}
```

Output :-

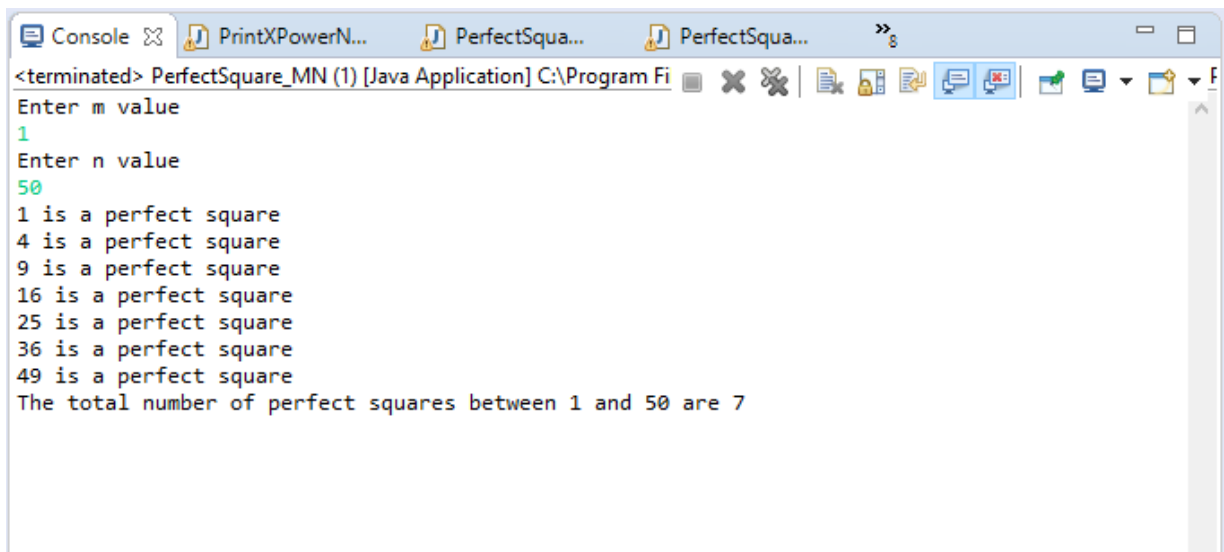


25. WAP to print and count total number of perfect numbers between M and N

Code:

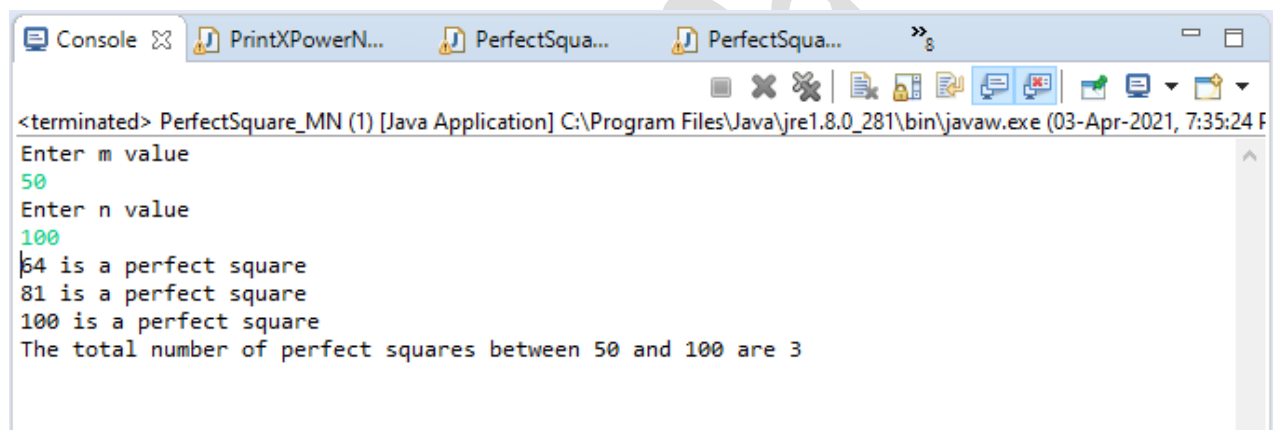
```
import java.util.Scanner;
public class PerfectSquare_MN {
    public static boolean perfect(int a)
    {
        int number=a;
        boolean condition=false;
        for(int i=1;i<=number;i++)
        {
            if(i*i==number)
            {
                condition = true;
            }
        }
        if(condition==true)
        {
            return true;
        }
        else
        {
            return false;
        }
    }
    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter m value");
        int m = scan.nextInt();
        System.out.println("Enter n value");
        int n = scan.nextInt();
        int count=0;
        for(int i=m;i<=n;i++)
        {
            if(perfect(i))
            {
                System.out.println(i + " is a perfect square");
                count++;
            }
        }
        System.out.println("The total number of perfect squares between " + m + " and " + n + " are " + count);
    }
}
```

Output 1:-



```
<terminated> PerfectSquare_MN (1) [Java Application] C:\Program Fi
Enter m value
1
Enter n value
50
1 is a perfect square
4 is a perfect square
9 is a perfect square
16 is a perfect square
25 is a perfect square
36 is a perfect square
49 is a perfect square
The total number of perfect squares between 1 and 50 are 7
```

Output 2:-



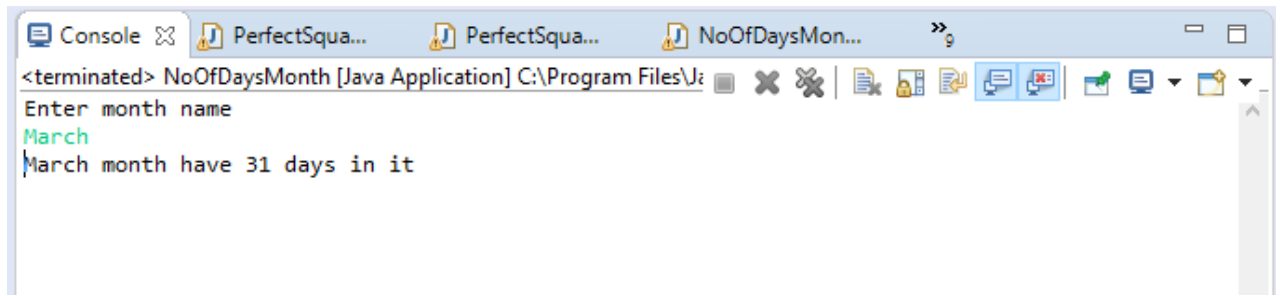
```
<terminated> PerfectSquare_MN (1) [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 7:35:24 F
Enter m value
50
Enter n value
100
64 is a perfect square
81 is a perfect square
100 is a perfect square
The total number of perfect squares between 50 and 100 are 3
```

26. WAP to print number of days in a month by reading month name by using switch

Code:

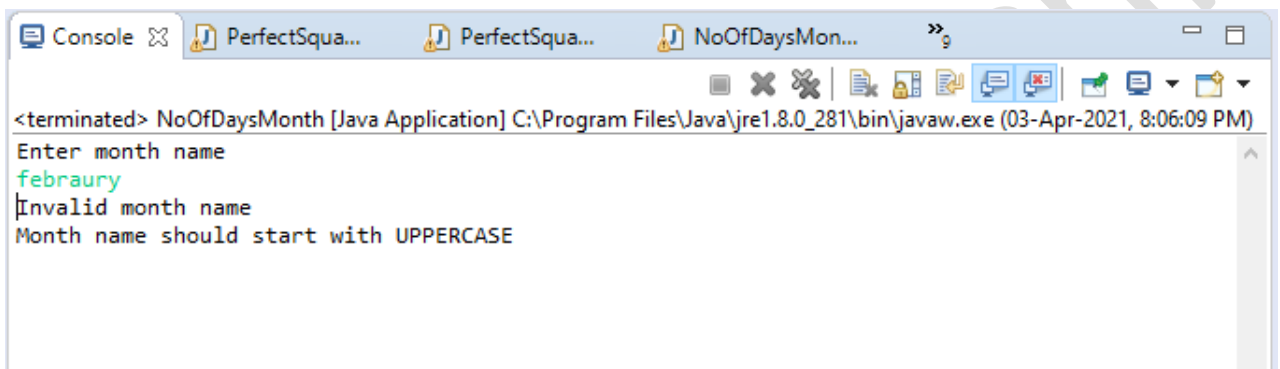
```
import java.util.Scanner;
public class NoOfDaysMonth {
    public static void main(String[] args)
    {
        Scanner scan= new Scanner(System.in);
        System.out.println("Enter month name");
        String monthName = scan.next();
        switch(monthName)
        {
            case "January":
            case "March":
            case "May":
            case "July":
            case "August":
            case "October":
            case "December":
            {
                System.out.println(monthName + " month have 31
                days in it");
                break;
            }
            case "April":
            case "June":
            case "September":
            case "November":
            {
                System.out.println(monthName + " month have 30 days
                in it");
                break;
            }
            case "Febraury":{
                System.out.println(monthName + " month have 28 days
                in normal year");
                System.out.println(" and 29 days in Leap year");
                break;
            }
            default:{
                System.out.println("Invalid month name");
                System.out.println("Month name should start with
                UPPERCASE");
            }
        }
    }
}
```

Output 1:-



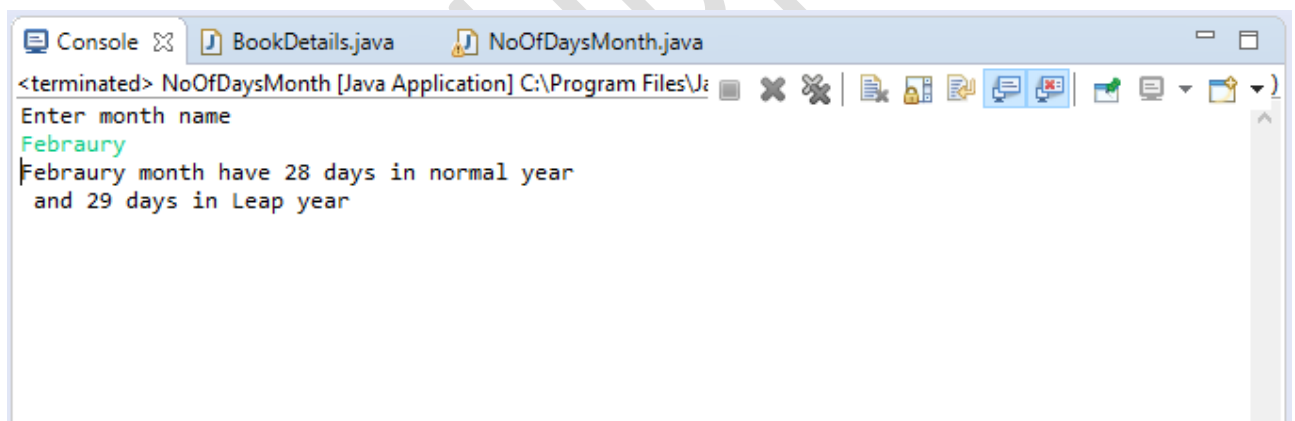
```
<terminated> NoOfDaysMonth [Java Application] C:\Program Files\J...
Enter month name
March
March month have 31 days in it
```

Output 2 :-



```
<terminated> NoOfDaysMonth [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 8:06:09 PM)
Enter month name
febraury
Invalid month name
Month name should start with UPPERCASE
```

Output 3 :-



```
<terminated> NoOfDaysMonth [Java Application] C:\Program Files\J...
Enter month name
Febraury
Febraury month have 28 days in normal year
and 29 days in Leap year
```

27. WAP to check given alphabet is vowel or consonant

Vowels :- a, e, i, o, u // A, E, I, O, U

Consonants :- Alphabets other than vowels are consonants

Code:

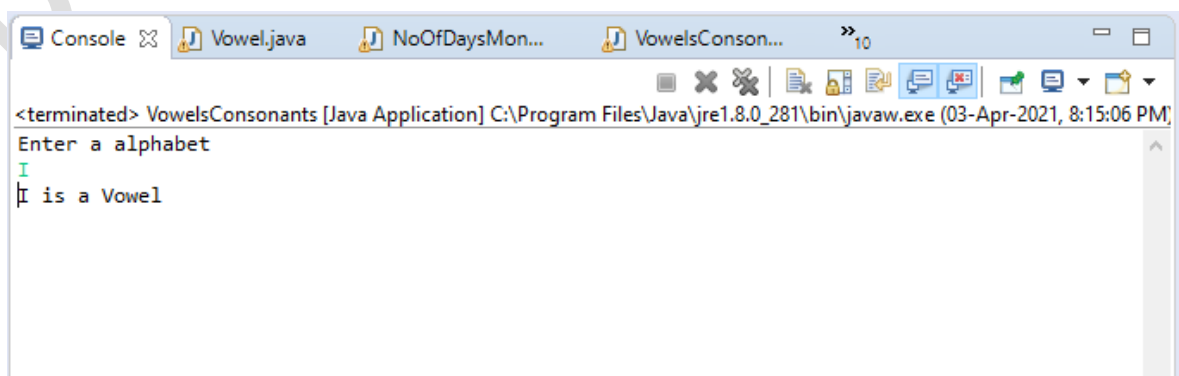
```
import java.util.Scanner;
public class VowelsConsonants {

    public static void main(String[] args)
    {
        Scanner scan=new Scanner(System.in);
        System.out.println("Enter a alphabet");

        char alphabet=scan.next().charAt(0);

        switch(alphabet)
        {
            case 'a':
            case 'e':
            case 'i':
            case 'o':
            case 'u':
            case 'A':
            case 'E':
            case 'I':
            case 'O':
            case 'U':
            {
                System.out.println(alphabet + " is a Vowel");
                break;
            }
            default :
            {
                System.out.println(alphabet + " is a Consonent");
            }
        }
    }
}
```

Output :-



```
<terminated> VowelsConsonants [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 8:15:06 PM)
Enter a alphabet
I
I is a Vowel
```

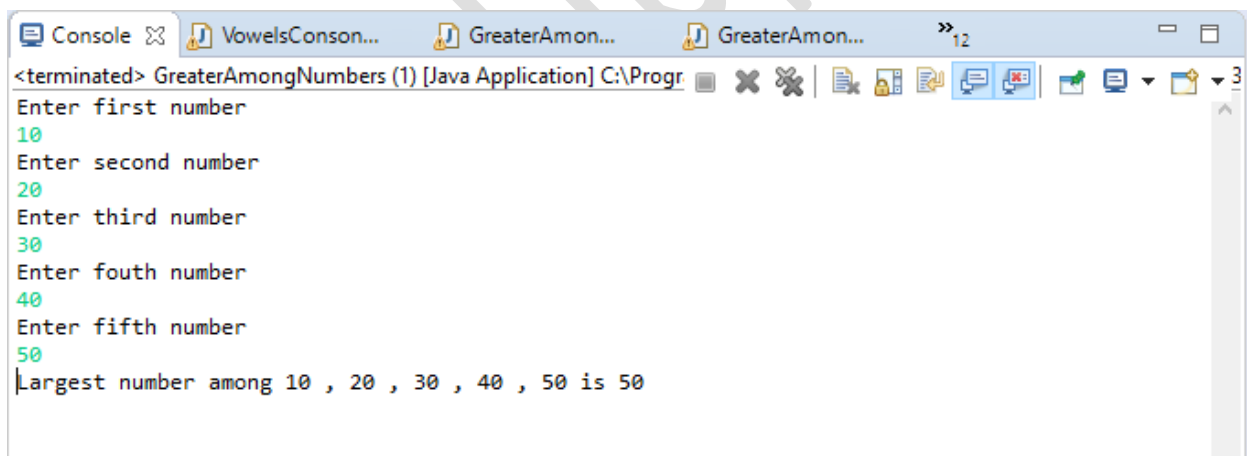
28. WAP to print / check the largest number among five numbers

Code :

```
import java.util.Scanner;
public class GreaterAmongNumbers {

    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter first number");
        int a=scan.nextInt();
        System.out.println("Enter second number");
        int b=scan.nextInt();
        System.out.println("Enter third number");
        int c=scan.nextInt();
        System.out.println("Enter fourth number");
        int d=scan.nextInt();
        System.out.println("Enter fifth number");
        int e=scan.nextInt();
        int greaterNumber = a>b&&a>c&&a>d&&a>e?a:b>c&&b>d&&b>e?b:c>d&&c>e?c:d>e?d:e;
        System.out.println("Largest number among " + a + " , " + b + " , " + c + " , " + d + " , " + e + " is "+greaterNumber);
    }
}
```

Output :-



```
<terminated> GreaterAmongNumbers (1) [Java Application] C:\Progr
Enter first number
10
Enter second number
20
Enter third number
30
Enter fourth number
40
Enter fifth number
50
Largest number among 10 , 20 , 30 , 40 , 50 is 50
```

29. WAP to print / check the smallest number among five numbers

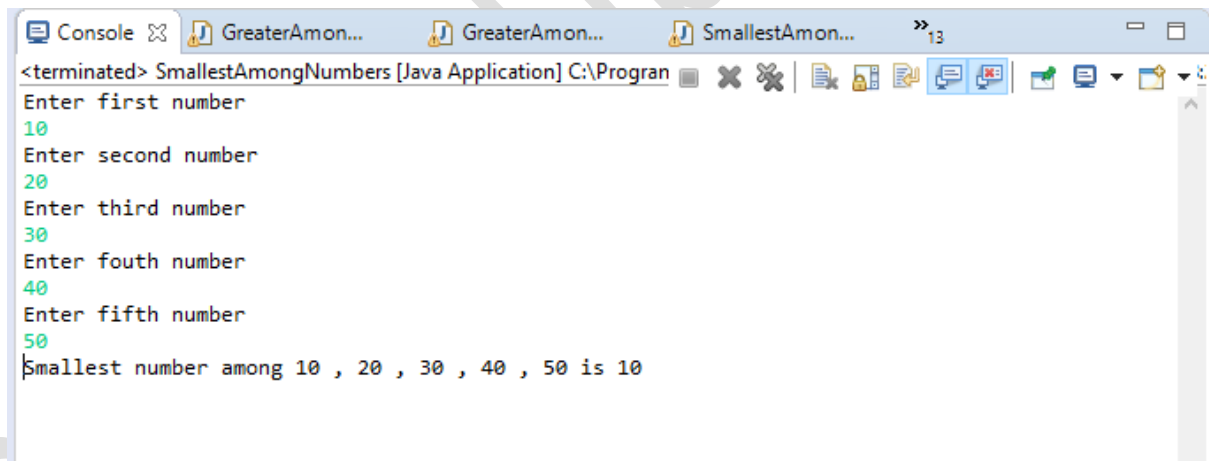
Code :

```
import java.util.Scanner;

public class SmallestAmongNumbers {

    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter first number");
        int a=scan.nextInt();
        System.out.println("Enter second number");
        int b=scan.nextInt();
        System.out.println("Enter third number");
        int c=scan.nextInt();
        System.out.println("Enter fourth number");
        int d=scan.nextInt();
        System.out.println("Enter fifth number");
        int e=scan.nextInt();
        int smallerNumber =a<b&&a<c&&a<d&&a<e?a:b<c&&b<d&&b<e?b:c<d&&c<e?c:d<e?d:e;
        System.out.println("Smallest number among "+ a + " , "+ b+ " , "+ c+ " , "+ d + "
        , "+ e + " is "+smallerNumber);
    }
}
```

Output :-



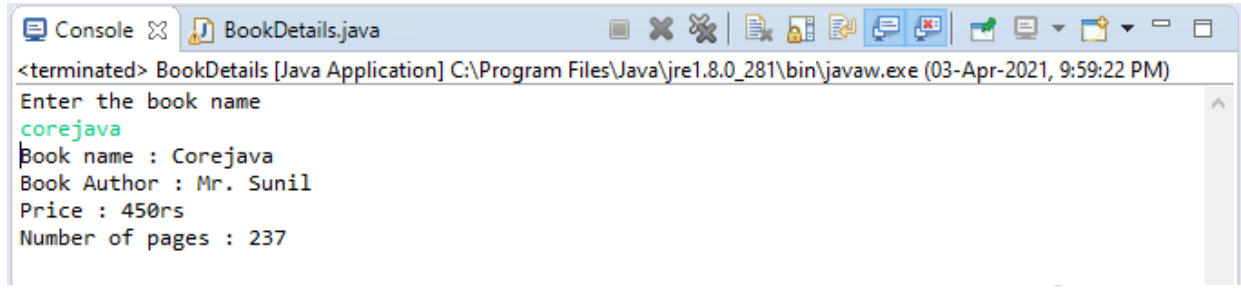
```
<terminated> SmallestAmongNumbers [Java Application] C:\Progran
Enter first number
10
Enter second number
20
Enter third number
30
Enter fourth number
40
Enter fifth number
50
Smallest number among 10 , 20 , 30 , 40 , 50 is 10
```

30. WAP to print book details (Book name, Book author, Book price, Number of pages) by reading bookname

Code:

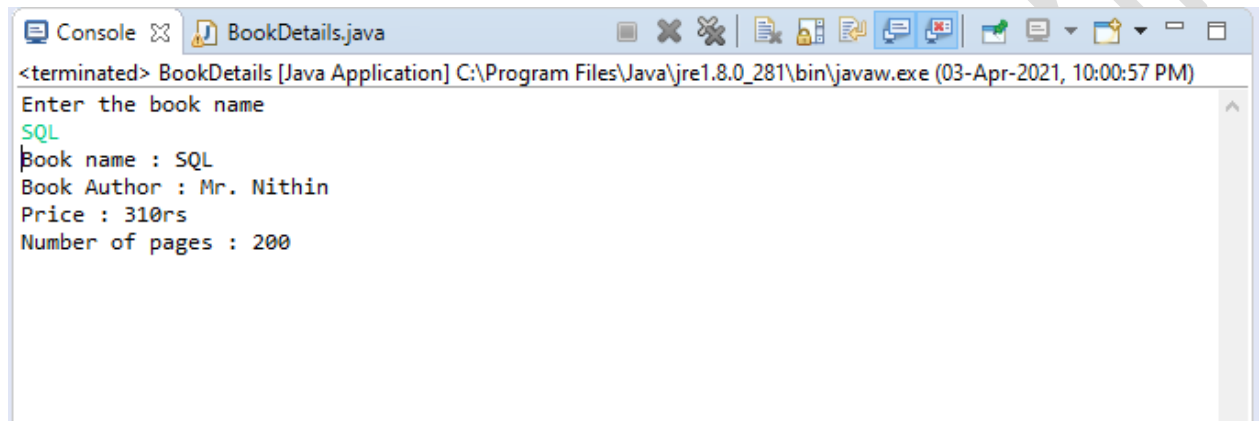
```
import java.util.Scanner;
public class BookDetails {
    public static void main(String[] args) {
        Scanner scan = new Scanner(System.in);
        System.out.println("Enter the book name");
        String bookName= scan.next();
        switch(bookName)
        {
            case "aptitude":
            {
                System.out.println("Book name : Aptitude ");
                System.out.println("Book Author : RS Agarwal ");
                System.out.println("Price : 400rs ");
                System.out.println("Number of pages : 210");
                break;
            }
            case "corejava":
            {
                System.out.println("Book name : Corejava ");
                System.out.println("Book Author : Mr. Sunil ");
                System.out.println("Price : 450rs ");
                System.out.println("Number of pages : 237");
                break;
            }
            case "web-technologies":
            {
                System.out.println("Book name : Web Technologies ");
                System.out.println("Book Author : Mr. Mahesh ");
                System.out.println("Price : 270rs ");
                System.out.println("Number of pages : 250");
                break;
            }
            case "SQL":
            {
                System.out.println("Book name : SQL ");
                System.out.println("Book Author : Mr. Nithin ");
                System.out.println("Price : 310rs ");
                System.out.println("Number of pages : 200");
                break;
            }
            default:
            {
                System.out.println("Sorry!! The book details you are
                looking for, is not available in our Database");
            }
        }
    }
}
```


Output 1:-



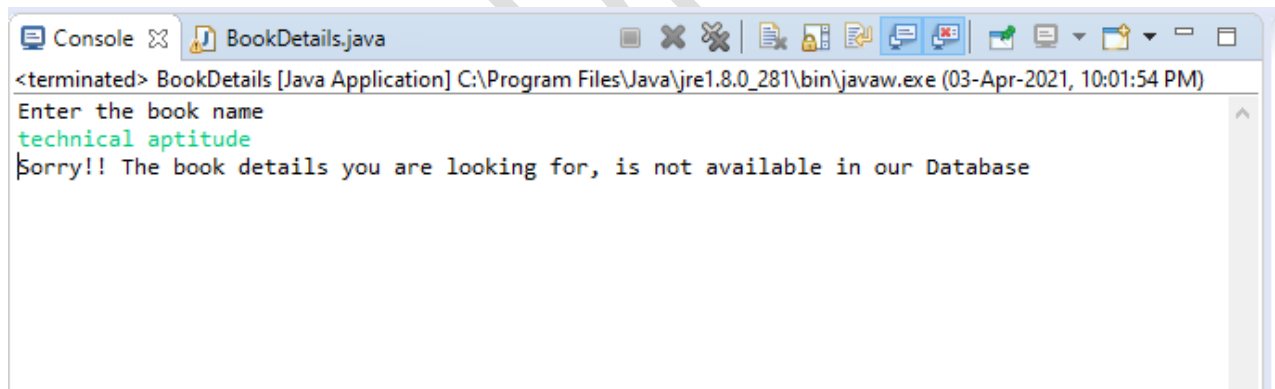
```
<terminated> BookDetails [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 9:59:22 PM)
Enter the book name
corejava
Book name : Corejava
Book Author : Mr. Sunil
Price : 450rs
Number of pages : 237
```

Output 2 :-



```
<terminated> BookDetails [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 10:00:57 PM)
Enter the book name
SQL
Book name : SQL
Book Author : Mr. Nithin
Price : 310rs
Number of pages : 200
```

Output 3 :-



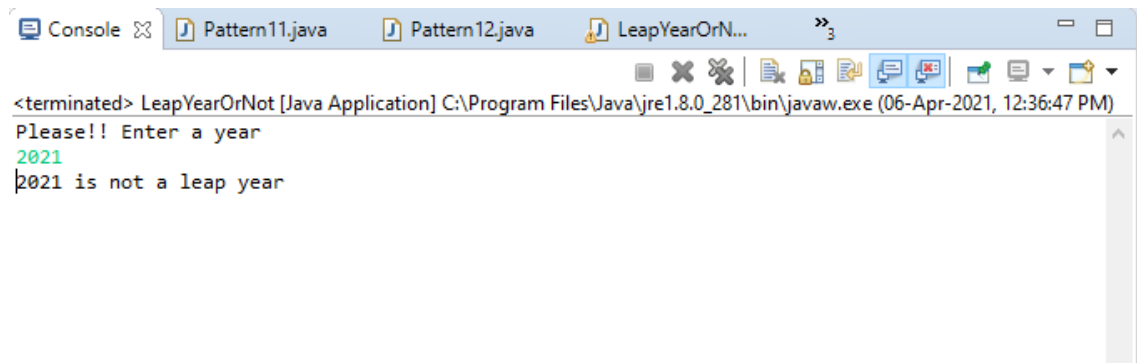
```
<terminated> BookDetails [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (03-Apr-2021, 10:01:54 PM)
Enter the book name
technical aptitude
Sorry!! The book details you are looking for, is not available in our Database
```

31. WAP to check whether the given year is Leap year or not

Code :

```
import java.util.Scanner;
public class LeapYearOrNot
{
    public static void main(String[] args)
    {
        Scanner scan = new Scanner(System.in);
        System.out.println("Please!! Enter a year");
        int year = scan.nextInt();
        boolean leap=false;
        if(year%4==0)
        {
            leap=true;
            if(year%100==0)
            {
                leap=false;
                if(year%400==0)
                {
                    leap=true;
                }
                else
                {
                    leap=true;
                }
            }
            else
            {
                leap=true;
            }
        }
        else
        {
            leap=false;
        }
        if(leap)
        {
            System.out.println(year + " is a leap year");
        }
        else
        {
            System.out.println(year + " is not a leap year");
        }
    }
}
```

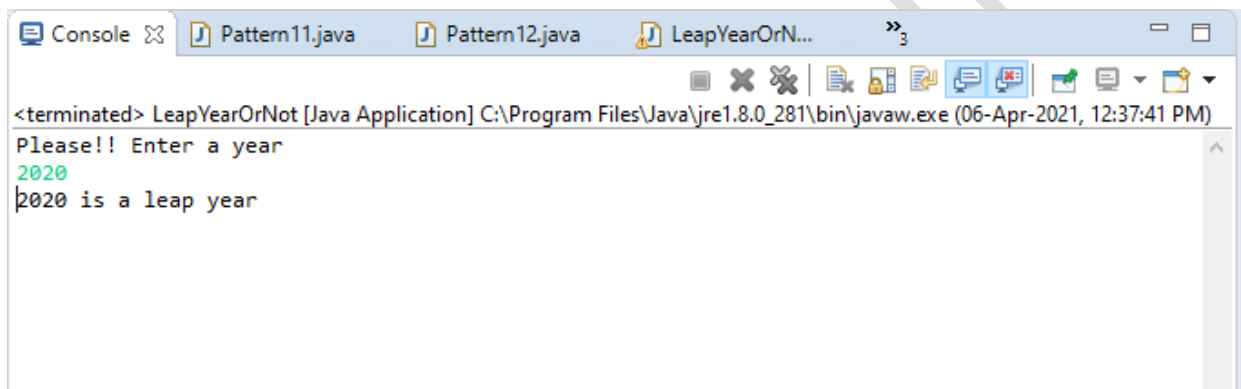
Output 1:-



The screenshot shows a Java IDE window with three tabs: 'Console', 'Pattern11.java', and 'Pattern12.java'. The 'Console' tab is active, displaying the output of a Java application named 'LeapYearOrNot'. The application path is 'C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (06-Apr-2021, 12:36:47 PM)'. The console text reads: '<terminated> LeapYearOrNot [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (06-Apr-2021, 12:36:47 PM)', 'Please!! Enter a year', '2021' (in green), and '2021 is not a leap year'.

```
<terminated> LeapYearOrNot [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (06-Apr-2021, 12:36:47 PM)
Please!! Enter a year
2021
2021 is not a leap year
```

Output 2:-



The screenshot shows a Java IDE window with three tabs: 'Console', 'Pattern11.java', and 'Pattern12.java'. The 'Console' tab is active, displaying the output of a Java application named 'LeapYearOrNot'. The application path is 'C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (06-Apr-2021, 12:37:41 PM)'. The console text reads: '<terminated> LeapYearOrNot [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (06-Apr-2021, 12:37:41 PM)', 'Please!! Enter a year', '2020' (in green), and '2020 is a leap year'.

```
<terminated> LeapYearOrNot [Java Application] C:\Program Files\Java\jre1.8.0_281\bin\javaw.exe (06-Apr-2021, 12:37:41 PM)
Please!! Enter a year
2020
2020 is a leap year
```

PATTERN PROGRAMS

1. WAP to display the given output

```
| * * * *
| *
| *
| *
```

Code :

```
public class Pattern1 {
    public static void main(String[] args)
    {
        for(int i=1;i<=4;i++)
        {
            for(int j=1;j<=4;j++)
            {
                if(j==1 || i==1)
                {
                    System.out.print("* ");
                }
            }
            System.out.println();
        }
    }
}
```

2. WAP to display the given output

```
|      *
      *
      *
      *
*  *  *  *
```

Code :

```
public class Pattern2
{
    public static void main(String[] args)
    {
        for(int i=1;i<=4;i++)
        {
            for(int j=1;j<=4;j++)
            {
                if(i==4 || j==4)
                {
                    System.out.print("* ");
                }
                else
                {
                    System.out.print("  ");
                }
            }
            System.out.println();
        }
    }
}
```

3. WAP to display the given output

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

Code :

```
public class Pattern3 {

    public static void main(String[] args)
    {
        int n=4;
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=n;j++)
            {
                if(i==1||j==1||i==n||j==n)
                {
                    System.out.print("* ");
                }
                else
                {
                    System.out.print("  ");
                }
            }
            System.out.println();
        }
    }
}
```

4. WAP to display the given output

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

Code :

```
public class Pattern4 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=n;j++)
            {
                System.out.print(j+ " ");
            }
            System.out.println(" ");
        }
    }
}
```

5. WAP to display the given output

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

Code :

```
public class Pattern5 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=n;j++)
            {
                System.out.print(i+ " ");
            }
            System.out.println(" ");
        }
    }
}
```

6. WAP to display the given output

```
|* * * *
1 2 3 4
* * * *
1 2 3 4
```

Code :

```
public class Pattern6
{
    public static void main(String[] args)
    {
        int n=4;
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=n;j++)
            {
                if(i%2 !=0)
                {
                    System.out.print("*"+ " ");
                }
                else
                {
                    System.out.print(j+ " ");
                }
            }
            System.out.println(" ");
        }
    }
}
```


7. WAP to display the given output

```
a b c d
1 2 3 4
a b c d
1 2 3 4
```

Code :

```
public class Pattern7
{
    public static void main(String[] args)
    {
        int n=4;

        for(int i=1;i<=n;i++)
        {
            char m= 'a';
            for(int j=1;j<=n;j++)
            {
                if(i%2 !=0)
                {
                    System.out.print(m++ + " ");
                }
                else
                {
                    System.out.print(j+ " ");
                }
            }
            System.out.println(" ");
        }
    }
}
```

8. WAP to display the given output

```
a 1 b 2
c 3 d 4
e 5 f 6
g 7 h 8
```

Code :

```
public class Pattern8
{
    public static void main(String[] args)
    {
        int n=4;
        char m='a';
        int o=1;
        for(int i=1;i<=n;i++)
        {
            for(int j=1;j<=n;j++)
            {
                if(j%2 !=0)
                {
                    System.out.print(m++ + " ");
                }
                else
                {
                    System.out.print(o++ + " ");
                }
            }
            System.out.println(" ");
        }
    }
}
```

9. WAP to display the given output

```
a b c d e
1 2 3 4 5
+ + + + +
1 2 3 4 5
a b c d e
```

Code :

```
public class Pattern9 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=0;i<n;i++)
        {
            char m= 'a';
            int k=1;
            for(int j=0;j<n;j++)
            {
                if(i==n/2)
                {
                    System.out.print("+ " + " ");
                }
                else if(i%2!=0)
                {
                    System.out.print(k++ + " ");
                }
                else
                {
                    System.out.print(m++ + " ");
                }
            }
            System.out.println(" ");
        }
    }
}
```

10. WAP to display the given output

```
e d c b a
1 2 3 4 5
e d c b a
1 2 3 4 5
```

Code :

```
public class Pattern10 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=0;i<n-1;i++)
        {
            char m= 'e';
            int k=1;
            for(int j=0;j<n;j++)
            {
                if(i%2 ==0)
                {
                    System.out.print(m-- + " ");
                }
                else
                {
                    System.out.print(k++ + " ");
                }
            }
            System.out.println(" ");
        }
    }
}
```

11. WAP to display the given output

```
1 2 3 4 5
6 7 8 9 1
2 3 4 5 6
7 8 9 1 2
```

Code :

```
public class Pattern11 {  
    public static void main(String[] args)  
    {  
        int n =5;  
        int k=1;  
  
        for(int i=0;i<n-1;i++)  
        {  
            for(int j=0;j<n;j++)  
            {  
                System.out.print(k++ + " ");  
                if(k>9)  
                {  
                    k=1;  
                }  
            }  
            System.out.println();  
        }  
    }  
}
```

12. WAP to display the given output

```
1   a   3   c
5   e   7   g
9   i  11   k
13  m  15   o
```

Code :

```
public class Pattern12
{
    public static void main(String[] args)
    {
        int n=4;
        int k=1;
        char m='a';
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(j%2==0)
                {
                    System.out.print(k+ "   ");
                    k+=2;
                }
                else
                {
                    System.out.print(m+ "   ");
                    m += 2;
                }
            }
            System.out.println();
        }
    }
}
```

13. WAP to display the given output

Bharath Uppalanchi

14. WAP to display the given output (Fibonacci numbers)

```
1  2  3  5
8  13 21 34
55 89 144 233
377 610 987 1597
```

Code :

```
public class Pattern14 {

    public static void main(String[] args)
    {
        int n= 4;
        int n1=0;
        int n2=1;

        for (int i=0;i<n;i++)
        {
            for (int j=0;j<n;j++)
            {
                int n3 = n1 + n2;
                System.out.print(n3+ " ");
                n1=n2;
                n2=n3;
            }
            System.out.println();
        }
    }
}
```


15. WAP to display the given output

```
* * * *
|
*      *
*      *
*      *
* * * *
```

Code :

```
public class Pattern15
{
    public static void main(String[] args)
    {
        int n=4;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i==0||j==0||i==n-1||j==n-1)
                {
                    System.out.print("* ");
                }
                else
                {
                    System.out.print("  ");
                }
            }
            System.out.println();
        }
    }
}
```

16. WAP to display the given output

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

Code :

```
public class Pattern16 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                if(i==0 || j==0 || i==n-1 || j==n-1 || i==j)
                {
                    System.out.print("*" + " ");
                }
                else
                {
                    System.out.print("  ");
                }
            }
            System.out.println();
        }
    }
}
```

17. WAP to display the given output

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

Code :

```
public class Pattern17 {

    public static void main(String[] args)
    {
        int n=5;
        for(int i=0; i<n; i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i==0 || j==0 || i==n-1 || j==n-1 || i+j==n-1)
                {
                    System.out.print("*"+ " ");
                }
                else
                {
                    System.out.print("  ");
                }
            }
            System.out.println();
        }
    }
}
```

18. WAP to display the given output

```
|* * * * *
* *   * *
*   *   *
* *   * *
* * * * *
```

Code :

```
public class Pattern18 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=0; i<n; i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i==0||j==0||i==n-1||j==n-1||i+j==n-1 ||i==j)
                {
                    System.out.print("*" + " ");
                }
                else
                {
                    System.out.print("  ");
                }
            }
            System.out.println();
        }
    }
}
```

19. WAP to display the given output

```

*
* *
* * *
```

Code :

```
public class Pattern19 {
    public static void main(String[] args)
    {
        int n=3;
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                if(i>=j)
                {
                    System.out.print("*"+" ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

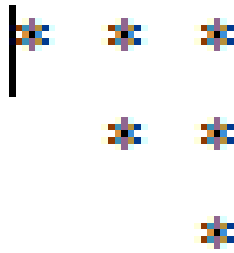
20. WAP to display the given output

```
|      *
      *  *
     *  *  *
```

Code :

```
public class Pattern20 {
    public static void main(String[] args)
    {
        int n=3;
        for(int i=0; i<n; i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i+j>=n-1)
                {
                    System.out.print("* ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

21. WAP to display the given output



Code :

```
public class Pattern21 {
    public static void main(String[] args)
    {
        int n=3;
        for(int i=n-1; i>=0; i--)
        {
            for(int j=0;j<n;j++)
            {
                if(i<=j)
                {
                    System.out.print("* ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

22. WAP to display the given output

```

*  *  *
|  *  *
*  *
*

```

Code :

```
public class Pattern22 {

    public static void main(String[] args)
    {
        int n=3;
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                if(i+j<n)
                {
                    System.out.print("* ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```


23. WAP to display the given output

```
1
2 3
4 5 6
7 8 9 10
```

Code :

```
public class Pattern23 {
    public static void main(String[] args)
    {
        int n=4;
        int k=1;
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                if(i>=j)
                {
                    System.out.print(k++ + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

24. WAP to display the given output

```
1
a b
2 3 4
c d e f
```

Code :

```
public class Pattern24 {
    public static void main(String[] args)
    {
        int n=4;
        int k=1;
        char ch='a';
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                if(i>=j)
                {
                    if(i%2==0)
                    {
                        System.out.print(k++ + " ");
                    }
                    else
                    {
                        System.out.print(ch++ + " ");
                    }
                }
            }
            System.out.println();
        }
    }
}
```

25. WAP to display the given output

```
5 4 3 2 1
a b c d
5 4 3
a b
5
```

Code :

```
public class Pattern25 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=0; i<n; i++)
        {
            int k=n;
            char ch='a';
            for(int j=0; j<n; j++)
            {
                if(i<=j)
                {
                    if(i%2==0)
                    {
                        System.out.print(k-- + " ");
                    }
                    else
                    {
                        System.out.print(ch++ + " ");
                    }
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

26. WAP to display the given output

Bharath Uppalanchi

27. WAP to display the given output

```
|           e
          e d
        e d c
      e d c b
    e d c b a
```

Code:

```
public class Pattern27 {
    public static void main(String[] args)
    {
        int n=5;
        for(int i=0;i<n;i++)
        {
            char ch= (char) (97+n-1);
            for(int j=0;j<n;j++)
            {
                if(i+j>=n-1)
                {
                    System.out.print(ch-- + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

28. WAP to display the given output

```
|      1
      1 2
     1 2 3
    1 2 3 4
```

Code:

```
public class Pattern28
{
    public static void main(String[] args)
    {
        int n=4;
        for(int i=0;i<n;i++)
        {
            int k=1;
            for(int j=0;j<n;j++)
            {
                if(i+j>=n-1)
                {
                    System.out.print(k++ + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

29. WAP to display the given output

```
1
3 5
7 9 11
13 15 17 19
```

Code:

```
public static void main(String[] args)
{
    int n=4;
    int k=1;
    for(int i=0;i<n;i++)
    {
        for(int j=0;j<n;j++)
        {
            if(i>=j)
            {
                System.out.print(k + " ");
                k+=2;
            }
        }
        System.out.println();
    }
}
```

30. WAP to display the given output

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

Code:

```
public class Pattern30 {
    public static void main(String[] args)
    {
        int n=3;
        int sp=n-1;
        int ch = 1;

        for(int i=0;i<n;i++)
        {
            int k=1;
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(k++ + " ");
            }
            sp--;
            ch+=2;
            System.out.println();
        }
    }
}
```


31. WAP to display the given output

```
|    1
  2 2 2
3 3 3 3 3
```

Code:

```
public class Pattern31 {

    public static void main(String[] args)
    {
        int n=3;
        int sp=n-1;
        int ch = 1;
        int k=1;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(k+ " ");
            }
            sp--;
            ch+=2;
            k++;
            System.out.println();
        }
    }
}
```

32. WAP to display the given output

```
|      1
      1 1 1
     1 1 1 1 1
```

Code:

```
public class Pattern32 {

    public static void main(String[] args)
    {
        int n=3;
        int sp=n-1;
        int ch = 1;
        int k=1;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(k+ " ");
            }
            sp--;
            ch+=2;

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

33. WAP to display the given output

```
|      1
      3 3 3
     5 5 5 5 5
```

Code:

```
public class Pattern33 {

    public static void main(String[] args)
    {
        int n=3;
        int sp=n-1;
        int ch = 1;
        int k=1;
        int o=1;
        for(int i=0;i<n;i++)
        {
            if(o%2!=0)
            {
                for(int j=0;j<sp;j++)
                {
                    System.out.print(" ");
                }
                for(int m=0;m<ch;m++)
                {
                    System.out.print(k+ " ");
                }
            }
            sp--;
            ch+=2;
            k+=2;

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

34. WAP to display the given output

```
|      A
      B B B
     C C C C C
```

Code:

```
public class Pattern34 {

    public static void main(String[] args)
    {
        int n=3;
        int sp=n-1;
        int ch = 1;
        char ch2='A';

        for(int i=0;i<n;i++)
        {
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(ch2 + " ");
            }
            sp--;
            ch+=2;
            ch2++;

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

35. WAP to display the given output

```
|
      *
    * * *
  * * * * *
* * * * * * *
* * * * * * *
```

Code:

```
public class Pattern35 {

    public static void main(String[] args)
    {
        int n=5;
        int sp=n-1;
        int ch = 1;
        String ch2="*";

        for(int i=0;i<n;i++)
        {
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(ch2 + " ");
            }
            sp--;
            ch+=2;

            System.out.println();

        }

    }

}
```

36. WAP to display the given output

```

|      A
|      B B B
|      C C C C C

```

Code:

```
public class Pattern36 {

    public static void main(String[] args)
    {
        int n=3;
        int sp=n-1;
        int ch = 1;
        char ch2='A';

        for(int i=0;i<n;i++)
        {
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(ch2 + " ");
            }
            sp--;
            ch+=2;
            ch2++;

            System.out.println();

        }

    }

}
```

37. WAP to display the given output

```
|      A
      A B A
     A B C B A
```

Code:

```
public class Pattern37 {
    public static void main(String[] args)
    {
        int n=3;
        int sp=n-1;
        int ch = 1;
        for(int i=0;i<n;i++)
        {
            char ch2='A';

            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(ch2 + " ");
                if(m<ch/2)
                {
                    ch2++;
                }
                else
                {
                    ch2--;
                }
            }
            sp--;
            ch+=2;
            ch2++;

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

38. WAP to display the given output

```
|      1
      3 2 1
     5 4 3 2 1
    7 6 5 4 3 2 1
```

Code:

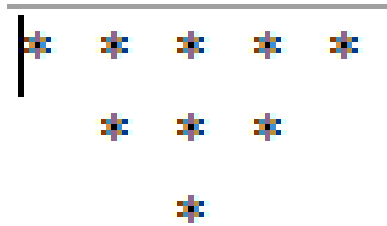
```
public class Pattern38 {

    public static void main(String[] args)
    {
        int n= 4;
        int sp= n-1;
        int ch=1;

        for(int i=0;i<n;i++)
        {
            int v=1;
            if(i>0)
            {
                v=1+(2*i);
            }
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int k=0;k<ch;k++)
            {
                System.out.print(v-- + " ");
            }
            sp--;
            ch +=2;

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


39. WAP to display the given output



Code:

```
public class Pattern39 {  
    public static void main(String[] args)  
    {  
        int n=3;  
  
        int sp=0;  
        int k=n+(n-1);  
        for(int i=0;i<n;i++)  
        {  
            for(int m=0;m<sp;m++)  
            {  
                System.out.print(" ");  
            }  
            for(int j=0;j<k;j++)  
            {  
                System.out.print("*" + " ");  
            }  
            sp++;  
            k -=2;  
            System.out.println();  
        }  
    }  
}
```

40. WAP to display the given output

```
7 7 7 7 7 7 7
 5 5 5 5 5
  3 3 3
   1
```

Code:

```
public class Pattern40 {  
    public static void main(String[] args)  
    {  
        int n=4;  
        int sp=0;  
        int k=2*n-1;  
        for(int i=0;i<n;i++)  
        {  
            for(int m=0;m<sp;m++)  
            {  
                System.out.print(" ");  
            }  
            for(int j=0;j<k;j++)  
            {  
                System.out.print(k + " ");  
            }  
            sp++;  
            k -=2;  
            System.out.println();  
        }  
    }  
}
```

41. WAP to display the given output

```
|      *
      * * *
    * * * * *
      * * *
        *
```

Code:

```
public class Pattern41 {
    public static void main(String[] args)
    {
        int n=5;
        int sp=n/2;
        int ch = 1;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print("*" + " ");
            }
            if(i<n/2)
            {
                sp--;
                ch+=2;
            }
            else
            {
                sp++;
                ch-=2;
            }

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

42. WAP to display the given output

```
|  A
  A B A
A B C B A
  A B A
    A
```

Code:

```
public class Pattern42 {
    public static void main(String[] args)
    {
        int n=5;
        int sp=n/2;
        int ch = 1;
        for(int i=0;i<n;i++)
        {
            char k='A';
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(k+ " ");
                if(m<ch/2)
                {
                    k++;
                }
                else
                {
                    k--;
                }
            }
            if(i<n/2)
            {
                sp--;
                ch+=2;
            }
            else
            {
                sp++;
                ch-=2;
            }
            System.out.println();
        }
    }
}
```

43. WAP to display the given output

```
|   1
  1 2 1
1 2 3 2 1
  1 2 1
    1
```

Code:

```
public class Pattern43 {
    public static void main(String[] args)
    {
        int n=5;
        int sp= n/2;
        int ch=1;
        for(int i=0;i<n;i++)
        {
            int k=1;
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(k+ " ");
                if(m<ch/2)
                {
                    k++;
                }
                else
                {
                    k--;
                }
            }
            if(i<n/2)
            {
                sp--;
                ch+=2;
            }
            else
            {
                sp++;
                ch-=2;
            }
            System.out.println();
        }
    }
}
```

44. WAP to display the given output

```
  D C B A B C D
    D C B C D
      D C D
        D
```

Code:

```
public class Pattern44 {

    public static void main(String[] args)
    {

        int n=4;
        int sp=0;
        int ch=(2*n)-1;
        for(int i=0;i<n;i++)
        {
            char k= (char)(65+(n-1));
            for(int j=0;j<sp;j++)
            {
                System.out.print(" ");
            }
            for(int m=0;m<ch;m++)
            {
                System.out.print(k+ " ");
                if(m<ch/2)
                {
                    k--;
                }
                else
                {
                    k++;
                }
            }
            sp++;
            ch-=2;
            System.out.println();
        }

    }

}
```

45. WAP to display the given output

```

*
* *
* * * *

```

Code:

```
public class Pattern45 {

    public static void main(String[] args)
    {
        int n=3;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    System.out.print("*" + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            for(int m=0;m<n;m++)
            {
                if(i+m>=n-1)
                {
                    System.out.print("*"+ " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

46. WAP to display the given output

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

Code:

```
public class Pattern46 {  
    public static void main(String[] args) {  
        int n=3;  
        for(int i=0;i<n;i++)  
        {  
            for(int j=0;j<n;j++)  
            {  
                if(i>=j)  
                {  
                    System.out.print("*" + " ");  
                }  
                else  
                {  
                    System.out.print(" ");  
                }  
            }  
            for(int m=0;m<n;m++)  
            {  
                if(i>=m)  
                {  
                    System.out.print("*" + " " );  
                }  
                else  
                {  
                    System.out.print(" ");  
                }  
            }  
            System.out.println();  
        }  
    }  
}
```


47. WAP to display the given output

```
1      1
1 2    1 2
1 2 3  1 2 3
```

Code:

```
public class Pattern47 {

    public static void main(String[] args) {
        int n=3;
        for(int i=0;i<n;i++)
        {
            int k=1;
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    System.out.print(k++ + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            k=1;
            for(int m=0;m<n;m++)
            {
                if(i>=m)
                {
                    System.out.print(k++ + " " );
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

48. WAP to display the given output

```
A
A B
A B C
A B C
A B C
A B C
```

Code:

```
public class Pattern48 {

    public static void main(String[] args) {
        int n=3;
        for(int i=0;i<n;i++)
        {
            char ch='A';
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    System.out.print(ch++ +" ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            ch='A';
            for(int j=0;j<n;j++)
            {
                if(i+j>=n-1)
                {
                    System.out.print(ch++ +" ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}
```

49. WAP to display the given output

```
1
3 2
6 5 4
10 9 8 7
```

Code:

```
public class Pattern49 {

    public static void main(String[] args) {
        int n=4;
        int k=1;
        for(int i=0;i<n;i++)
        {
            if(i!=0)
            {
                k+=(i*2)+1;
            }
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    System.out.print(k-- + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }

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

50. WAP to display the given output

```
1      1
2 3    3 2
4 5 6  6 5 4
7 8 9 10 10 9 8 7
```

Code:

```
public class Pattern50 {
    public static void main(String[] args)
    {
        int n=4;
        int k=1;
        int h=1;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    System.out.print(k++ + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }

            if(i!=0)
            {
                h+= (i*2)+1;
            }
            for(int m=0;m<n;m++)
            {
                if(i>=m)
                {
                    System.out.print(h-- + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }

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

51. WAP to display the given output

```
1          1
2 3        2 3
4 5 6      3 4 5
7 8 9 10   4 5 6 7
```

Code:

```
public class Pattern51 {

    public static void main(String[] args) {
        int n=4;
        int k1=1;
        int k2=1;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    System.out.print(k1++ + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }
            System.out.print(" ");
            if(i!=0)
            {
                k2=i+1;
            }
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    System.out.print(k2++ + " ");
                }
                else
                {
                    System.out.print(" ");
                }
            }

            System.out.println();
        }

    }

}
```

52. WAP to display the given output

```
1
3 2
4 5 6
10 9 8 7
```

Code:

```
public class Pattern52 {

    public static void main(String[] args) {
        int n=4;
        int k=1;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i>=j)
                {
                    if(i%2==0)
                    {
                        System.out.print(k + " " );
                    }
                    k++;
                }
            }
            int l=k-1;
            for(int m=0;m<n;m++)
            {
                if(i>=m)
                {
                    if(i%2!=0)
                    {
                        System.out.print(l + " " );
                    }
                    l--;
                }
            }
            System.out.println();
        }
    }
}
```

53. WAP to display the given output

```
* * * *
* * $ *
* * @ *
* * * *
```

Code:

```
public class Pattern53 {

    public static void main(String[] args) {
        int n=4;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i==1 && j==2)
                {
                    System.out.print("$" + " ");
                }
                else if(i==2 && j==2)
                {
                    System.out.print("@" + " ");
                }
                else
                {
                    System.out.print("*" + " ");
                }
            }
            System.out.println();
        }
    }
}
```

54. WAP to display the given output

```
|* * * *
* * * *
* ? * *
* * * *
```

Code:

```
public class Pattern54 {
    public static void main(String[] args) {
        int n=4;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i==2 && j==1)
                {
                    System.out.print("? " + " ");
                }
                else
                {
                    System.out.print("* " + " ");
                }
            }
            System.out.println();
        }
    }
}
```


55. WAP to display the given output

```
@ @ @ @
? ? ? ?
$ $ $ $
@ @ @ @
```

Code:

```
public class Pattern55 {
    public static void main(String[] args) {
        int n=4;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i==1)
                {
                    System.out.print("? " + " ");
                }
                else if(i==2)
                {
                    System.out.print("$ " + " ");
                }
                else
                {
                    System.out.print("@ " + " ");
                }
            }
            System.out.println();
        }
    }
}
```

56. WAP to display the given output

```
1 1 1 1
2 2 @ ?
3 3 $ 3
4 4 4 4
```

Code:

```
public class Pattern56 {

    public static void main(String[] args) {
        int n=4;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(i==0)
                {
                    System.out.print("1" + " ");
                }
                else if(i==3)
                {
                    System.out.print("4" + " ");
                }
                else if((i==1 && j==0) || (i==1 && j==1))
                {
                    System.out.print("2" + " ");
                }
                else if((i==1 && j==2))
                {
                    System.out.print("@" + " ");
                }
                else if((i==1 && j==3))
                {
                    System.out.print "?" + " ";
                }
                else if((i==2 && j==2))
                {
                    System.out.print("$" + " ");
                }
                else
                {
                    System.out.print("3" + " ");
                }
            }
            System.out.println();
        }
    }
}
```

57. WAP to display the given output

```
* * * @
* * @ *
* @ * *
@ * * *
```

Code:

```
public class Pattern57 {

    public static void main(String[] args) {
        int n=4;
        int k=n;
        for(int i=0;i<n;i++)
        {
            for(int j=0;j<n;j++)
            {
                if(j==k-1)
                {
                    System.out.print("@" + " ");
                }
                else
                {
                    System.out.print("*" + " ");
                }
            }
            k-=1;
            System.out.println();
        }
    }
}
```

58. WAP to display the given output

```
$ * * *  
* $ * *  
* * $ *  
* * * $
```

Code:

```
public class Pattern58 {  
    public static void main(String[] args) {  
        int n=4;  
  
        for(int i=0;i<n;i++)  
        {  
            for(int j=0;j<n;j++)  
            {  
                if(i==j)  
                {  
                    System.out.print("$" + " ");  
                }  
                else  
                {  
                    System.out.print("*" + " ");  
                }  
            }  
  
            System.out.println();  
        }  
    }  
}
```

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