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Assignment-4

1. Write a program to print numbers from 10 to 110.

```
import java.util.Scanner;
class PrintNumber{
    public static void main(String[] args){
        Scanner sk= new Scanner(System.in);
        System.out.println("Enter the number how much you print");
        int n = sk.nextInt();
        for(int i=10;i<=110;i++){
            System.out.println("Print number b/w 10-110 ="+i);
        }

    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Print1.java
10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61
62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87 88 89 90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106 107 108 109 11
0
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>
```

2. Write a program to calculate the sum of all numbers from 1 to 100.

```
class Calculate2{
public static void main(String[] args){
    int sum=0;
    int i;
    for( i=1;i<=100;i++){
        sum=sum+i;

    }
    System.out.println("sum of 1-100 = "+sum);
}
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Calculate2.java
sum of 1-100 = 5050
```

3. Write a program to print the multiplication table of a given number.

```
import java.util.Scanner;

class Mul3{
    public static void main(String[] args)
    {
        Scanner sk =new Scanner(System.in);
        System.out.print("Enter the number : "); // to see the table of
that number
        int n=sk.nextInt();
        for(int i=1;i<=10;i++){
            int k=n*i;
            System.out.println( "Multiply of " +n+" * "+i+" = "+k);

        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Mul3.java
Enter the number : 6
Multiply of 6 * 1 = 6
Multiply of 6 * 2 = 12
Multiply of 6 * 3 = 18
Multiply of 6 * 4 = 24
Multiply of 6 * 5 = 30
Multiply of 6 * 6 = 36
Multiply of 6 * 7 = 42
Multiply of 6 * 8 = 48
Multiply of 6 * 9 = 54
Multiply of 6 * 10 = 60
```

4. Write a program to find the factorial of a given number.

```
import java.util.Scanner;
class fact4{
    public static void main(String[] args)
    {
        Scanner sk =new Scanner(System.in);
        System.out.print("Enter the number : "); // to print facorial
```

```
        int n=sk.nextInt();
        int fact=1;
        for(int i=n;i>=1;i--){
            fact=fact*i;
        }
        System.out.println("factorial of "+n+" is: "+fact);

    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java fact4.java
Enter the number : 5
factorial of 5 is: 120
```

5. Write a program to check if a given number is prime.

```
import java.util.Scanner;
class Prime5{
    public static void main(String[] args)
    {
        Scanner sk =new Scanner(System.in);
        System.out.print("Enter the number : "); // to check prime or
not
        int n=sk.nextInt();
        int count=0;
        for(int i=1;i<=n;i++){
            if(n%i == 0){
                count++;
            }
        }
        if(count==2){
            System.out.println("Prime number");
        }
        else{
            System.out.println("Not prime number");
        }


    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Prime5.java
Enter the number : 65
Not prime number

C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Prime5.java
Enter the number : 5
Prime number
```

6. Write a program to print the Fibonacci series up to a given number of terms.

```
import java.util.Scanner;
class Fib6{
    public static void main(String[] args)
    {
        int a=0,b=1,c;
        Scanner sk =new Scanner(System.in);
        System.out.print("Enter how many term : "); // to print
Fibonacci series
        int n=sk.nextInt();
        System.out.print("Fibonacci Series : ");
        System.out.print(a+" "+b+" ");
        for(int i=2;i<n;i++){
            c=a+b;
        System.out.print(+c+" ");
        a=b;
        b=c;
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Fib6.java
Enter how many term : 8
Fibonacci Series : 0 1 1 2 3 5 8 13
```

7. Write a program to calculate the sum of digits of a given number.

```java
import java.util.Scanner;
class Dig7{
    public static void main(String[] args){
        Scanner sk = new Scanner(System.in);
        System.out.print("Enter the number:"); //sum of digit
        int n = sk.nextInt();
        int r,sum=0;
        while(n!=0){
            r=n%10;
            sum=sum+r;
            n=n/10;
        }
        System.out.println("Sum of digit:"+sum);

    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Dig7.java
Enter the number:345
Sum of digit:12
```

8. Write a program to check if a given number is a palindrome.

```
import java.util.Scanner;
class Pal8{
    public static void main(String[] args){
        int r,rs=0;
        Scanner sk = new Scanner(System.in);
        System.out.print("Enter the number:"); // to check palindrone
number
        int n = sk.nextInt();
        int m = n;
        while(n!=0){
            r=n%10;
            rs=rs*10+r;
            n=n/10;
        }
        if(m == rs) {
        System.out.println("palindrone");
        }
      else{
    System.out.println("not palindrone");
       }
 }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Pal8.java
Enter the number: 131
Palindrome
```

9. Write a program to find the sum of all odd numbers between 1 and 50.

```
import java.util.Scanner;
```

```
class Sumodd9{
    public static void main(String[] args){
    int sum = 0;
    for(int i= 1;i<=50;i++){
        if(i%2 != 0){
        sum=sum+i;
     }
 }
     System.out.println("Sum of all odd number:"+sum);

 }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  Sumodd9.java
Sum of all odd number:625
```

10. Write a program to find the sum of all even numbers between 1 and 50.

```
import java.util.Scanner;
class Sumeven10{
    public static void main(String[] args){
    int sum = 0;
    for(int i= 1;i<=50;i++){
        if(i%2 == 0){
        sum=sum+i;
     }
 }
     System.out.println("Sum of all even number:"+sum);

 }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  Sumeven10.java
Sum of all even number:650
```

11. Write a program to check if a given number is Armstrong.

```java
import java.util.Scanner;
class Armstrong11{
    public static void main(String[] args){
    int temp=0,sum=0,r,count=0;
    Scanner sk = new Scanner(System.in);
    System.out.print("Enter the number:");
    int n=sk.nextInt();
    int m=n;

    //Count the number of digit
    temp=n;
    while(temp!=0){
        count++;
        temp=temp/10;
    }

    while(n!=0){


        r=n%10;
        sum=sum+(int)Math.pow(r,count);
        n=n/10;
    }
    if(m==sum){
        System.out.println("Armstrong number");
    }

    else{
     System.out.println("not Armstrong number");
    }

    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  Armstrong11.java
Enter the number:371
Armstrong number
```

12. Write a program to reverse a given number.

```
import java.util.Scanner;
class reverse12{
    public static void main(String[] args){
        int rs=0,r;
        Scanner sk= new Scanner(System.in);
        System.out.print("Enter the number : ");
        int n = sk.nextInt();
        while(n!=0){
         r=n%10;
         rs=rs*10+r;
         n=n/10;

        }
        System.out.println(rs);
    }

}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  reverse12.java
Enter the number : 123
321
```

13. Write a program to calculate the power of a number using a loop.

```
import java.util.Scanner;

class power13{
    public static void main(String[] args){
        int cal=1;
        Scanner sk = new Scanner(System.in);
        System.out.print("Enter the number for base value:");
 int n  = sk.nextInt();
        System.out.print("Enter the number for exponential value:");
 int m = sk.nextInt();
        for(int i=1;i<=m;i++){
           cal=cal*n;
        }


        System.out.println("Cal pow of num: "+cal);
    }

}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java power13.java
Enter the number for base value:3
Enter the number for exponential value:2
Cal pow of num: 9
```

14. Write a program to find the greatest common divisor (GCD) of two numbers.

```
class GCD14 {

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

        System.out.print("Enter the first number: ");
        int num1 = sk.nextInt();

        System.out.print("Enter the second number: ");
        int num2 = sk.nextInt();

        int a = num1;
        int b = num2;
```

```
        // Euclidean Algorithm to find GCD
        while (b != 0) {
            int temp = b;
            b = a % b;
            a = temp;
        }

        System.out.println("GCD of " + num1 + " and " + num2 + " is: "
+ a);

        sk.close();
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java GCD14.java
Enter the first number: 30
Enter the second number: 20
GCD of 30 and 20 is: 10
```

15. Write a program to check if a given string is a palindrome.

```
import java.util.Scanner;

class PalString15 {
    public static void main(String[] args) {
        Scanner sk = new Scanner(System.in);

        System.out.println("Enter the string:");
        String str = sk.nextLine();  // Correct type: String with
capital 'S'

        int len = str.length();

        for (int i = 0; i < len / 2; i++) {
            // Fix missing closing parenthesis
            if (Character.toLowerCase(str.charAt(i)) !=
Character.toLowerCase(str.charAt(len - 1 - i))) {
                System.out.println("Not a palindrome.");
```

```
                sk.close();
                return;
            }
        }

        System.out.println("Palindrome.");
        sk.close();
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java PalString15.java
Enter the string:
bab
Palindrome.
```

16. Write a program to print the ASCII values of all lowercase alphabets.

```
class Ascii16 {
    public static void main(String[] args) {
        System.out.println("ASCII values of lowercase alphabets:");

        for (char ch = 'a'; ch <= 'z'; ch++) {
            System.out.println(ch + " : " + (int) ch);
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  Ascii16.java
ASCII values of lowercase alphabets:
a : 97
b : 98
c : 99
d : 100
e : 101
f : 102
g : 103
h : 104
i : 105
j : 106
k : 107
l : 108
m : 109
n : 110
o : 111
p : 112
q : 113
r : 114
s : 115
t : 116
u : 117
v : 118
w : 119
x : 120
y : 121
z : 122
```

17. Write a program to calculate the average of a list of numbers.

```
class AvgNum17{
    public static void main(String[] args){
    int num[]={10,20,30};

    int sum=0,avg=0;
    for(int i=0;i<num.length;i++){
        sum=sum+num[i];
    }
     avg=sum/num.length;
     System.out.println(avg);

            }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  AvgNum17.java
20
```

18. Write a program to check if a given year is a leap year.

```java
class LeapYear18{
    public static void main(String[] args){
    int year = 1900;
    if((year % 4 == 0 && year % 100 != 0) || (year % 400 == 0)){
        System.out.println("Leap Year");
    }
    else{
        System.out.println("Not a leap year");
    }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  LeapYear18.java
Not a leap year
```

19. Write a program to print the first 10 natural numbers in reverse order.

```java
class Naturalrev19{
    public static void main(String[] args){
        for(int i=10;i>0;i--){
            System.out.println("Reverse of Natural Number:"+i);
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  Naturalrev19.java
Reverse of Natural Number:10
Reverse of Natural Number:9
Reverse of Natural Number:8
Reverse of Natural Number:7
Reverse of Natural Number:6
Reverse of Natural Number:5
Reverse of Natural Number:4
Reverse of Natural Number:3
Reverse of Natural Number:2
Reverse of Natural Number:1
```

20. Write a program to find the sum of the first 50 natural numbers.

```
class firstNatural20{
    public static void main(String[] args){
        int sum=0;
        for(int i=0;i<=50;i++){
            sum=sum+i;
        }
        System.out.println("Sum of first 50 natural number : "+sum);

    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java firstNatural20.java
Sum of first 50 natural number : 1275
```

21. Write a program to print the factorial of numbers from 1 to 10.

```
class fact21{
    public static void main(String[] args){
        System.out.println("Print factorial number b/w 1-10");

    for(int i=1;i<=10;i++){
            int fact=1;
        for(int j=1;j<=i;j++){
            fact=fact*j;
        }

    System.out.println("factorial of "+i+" is : "+fact);
}
    }
```

```
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java fact21.java
Print factorial number b/w 1-10
factorial of 1 is : 1
factorial of 2 is : 2
factorial of 3 is : 6
factorial of 4 is : 24
factorial of 5 is : 120
factorial of 6 is : 720
factorial of 7 is : 5040
factorial of 8 is : 40320
factorial of 9 is : 362880
factorial of 10 is : 3628800
```

22. Write a program to check if a given string is a palindrome using a loop.

```
import java.util.Scanner;
  class pal22{
    public static void main(String[] args){
        Scanner sk = new Scanner(System.in);
        System.out.println("Enter the number:");
        int n = sk.nextInt();
        int m=n;
         int rs=0,r;
        while(n!=0){
            r=n%10;
            rs=rs*10+r;
            n=n/10;

        }
        if(m==rs){
            System.out.println("Palindrone Number");
        }
        else{
            System.out.println("not a palindrone number");
        }


    }
  }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java pal22.java
Enter the number:
1221
Palindrone Number
```

23. Write a program to calculate the sum of the squares of numbers from 1 to 10.

```
class Square23{

    public static void main(String[] args){
        double sum=0;
        for(int i=1;i<=10;i++){
    sum = sum+Math.pow(i,2);
        }
        System.out.println("Sum of Squares of number : "+sum);
    }
  }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Square23.java
Sum of Squares of number : 385.0
```

24. Write a program to print the even numbers between 1 and 100.

```
import java.util.Scanner;
 class EveNum24{
    public static void main(String[] args){
    System.out.println("Even Number b/w 1-100");
    for(int i= 1;i<=100;i++){
        if(i%2 == 0){
            System.out.print(i+ " ");
     }
 }


 }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>

C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java EveNum24.java
Even Number b/w 1-100
2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64 66 68 70 72 74 76 78 80 82 84 86 88 90 92 94 96 98 100
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>

C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>
```

25. Write a program to find the sum of all odd numbers between 1 and 50.

```java
import java.util.Scanner;
 class OddNum25{
    public static void main(String[] args){
    System.out.println("Even Number b/w 1-50");
    for(int i= 1;i<=50;i++){
        if(i%2 != 0){
            System.out.print(i+ " ");
     }
 }


 }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java OddNum25.java
Even Number b/w 1-50
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>
```

26. Write a program to check if a given number is a perfect number.

```java
import java.util.Scanner;
class PerNum26{
    public static void main(String[] args){
        int sum=0;
        Scanner sk = new Scanner(System.in);
        System.out.print("Enter the number: ");
        int n=sk.nextInt();
        for(int i=1;i<=n/2;i++){
            if(n%i==0){
```

```
            sum += i;

        }
                }

        if(n==sum){
            System.out.print("Perfect NUmber");
        }
        else{
            System.out.println("Not Perfect Number");
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  PerNum26.java
Enter the number: 125
Not Perfect Number
```

27. Write a program to print the ASCII values of all uppercase alphabets.

```
class AsciiUp27 {
    public static void main(String[] args) {
        System.out.println("ASCII values of lowercase alphabets:");

        for (char ch = 'A'; ch <= 'Z'; ch++) {
            System.out.println(ch + " : " + (int) ch);
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java AsciiUp27.java
ASCII values of lowercase alphabets:
A : 65
B : 66
C : 67
D : 68
E : 69
F : 70
G : 71
H : 72
I : 73
J : 74
K : 75
L : 76
M : 77
N : 78
O : 79
P : 80
Q : 81
R : 82
S : 83
T : 84
U : 85
V : 86
W : 87
X : 88
Y : 89
Z : 90
```

28. Write a program to calculate the product of the digits of a given number.

```java
import java.util.Scanner;
 class Pod28{
    public static void main(String[] args){
     Scanner sk = new Scanner(System.in);
        System.out.print("Enter the number:");
        int n = sk.nextInt();
        int mul=1,r;
        while(n!=0){
            r=n%10;
            mul=mul*r;
            n=n/10;
        }
        System.out.println("Product of digit:"+mul);
    }
 }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  Pod28.java
Enter the number:200
Product of digit:0

C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  Pod28.java
Enter the number:234
Product of digit:24
```

29. Write a program to check if a given number is a strong number.

```
import java.util.Scanner;
```

```
class Strong29{

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

        }
        return fact;
    }
    public static void main(String[] args){
        Scanner sk = new Scanner(System.in);
        System.out.print("Enter the number:");
        int n = sk.nextInt();
        int sum=0,r;
        int m=n;
        while(n!=0){
            r=n%10;
            sum=sum+fact(r);
            n=n/10;
        }
        if(m==sum){
            System.out.println("Strong Number");
        }
        else{
            System.out.println("Not Strong number");
        }
```

```
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java strong29.java
Enter the number:123
Not Strong number
```

30. Write a program to calculate the sum of the cubes of numbers from 1 to 10.

```
class SOC30{
  public static void main(String[] args){
    double sum=0;
    for(int i=1;i<=10;i++){
        sum = sum+Math.pow(i,3);
    }
    System.out.println("sum of cubes of number b/w 1-10 : "+sum);
  }

}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java SOC30.java
sum of cubes of number b/w 1-10 : 3025.0
```

31. Write a program to find the sum of all prime numbers between 1 and 100.

```
class Prime31{
    public static void main(String args[]){
        int n=100;
        int sum=0;

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

```
            boolean isprime=true;

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

                if(i%j==0){

               isprime= false;
                    break;
                }
            }
            if(isprime){
                sum=sum+i;
            }
        }
        System.out.println("Sum of Prime Number 1 to 100: "+sum);
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Prime31.java
Sum of Prime Number 1 to 100: 1060
```

32. Write a program to check if a given string is a pangram.

```
class PangramCheck32 {
    public static void main(String[] args) {
        String str = "The quick brown fox jumps over the lazy
dog".toLowerCase();

        boolean[] alphabet = new boolean[26];
        int index;

        for (int i = 0; i < str.length(); i++) {
            char ch = str.charAt(i);

            if (ch >= 'a' && ch <= 'z') {
                index = ch - 'a';
                alphabet[index] = true;
            }
```

```
        }

        boolean isPangram = true;
        for (int i = 0; i < 26; i++) {
            if (!alphabet[i]) {
                isPangram = false;
                break;
            }
        }

        if (isPangram) {
            System.out.println("The string is a pangram.");
        } else {
            System.out.println("The string is NOT a pangram.");
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java PangramCheck32.java
The string is a pangram.
```

33. Write a program to find the factorial of numbers from 1 to 10.

```
class fact33{
    public static void main(String[] args){
        System.out.println("Print factorial number b/w 1-10");

    for(int i=1;i<=10;i++){
            int fact=1;
        for(int j=1;j<=i;j++){
            fact=fact*j;
        }

    System.out.println("factorial of "+i+" is : "+fact);
}
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java fact33.java
Print factorial number b/w 1-10
factorial of 1 is : 1
factorial of 2 is : 2
factorial of 3 is : 6
factorial of 4 is : 24
factorial of 5 is : 120
factorial of 6 is : 720
factorial of 7 is : 5040
factorial of 8 is : 40320
factorial of 9 is : 362880
factorial of 10 is : 3628800
```

34. Write a program to print the odd numbers between 1 and 100.

```
import java.util.Scanner;
 class OddNum34{
    public static void main(String[] args){
    System.out.println("Odd Number b/w 1-100");
    for(int i= 1;i<=100;i++){
        if(i%2 != 0){
            System.out.print(i+ " ");
     }
 }


 }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java  OddNum34.java
Odd Number b/w 1-100
1 3 5 7 9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>
```

35. Write a program to check if a given number is a perfect square.

```
import java.util.Scanner;

class PerfectSquareCheck35 {
    public static void main(String[] args) {
        Scanner sk = new Scanner(System.in);
```

```
        System.out.print("Enter a number: ");
        int num = sk.nextInt();

        int sqrt = (int)Math.sqrt(num);

        if (sqrt * sqrt == num) {
            System.out.println(num + " is a perfect square.");
        } else {
            System.out.println(num + " is NOT a perfect square.");
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java PerfectSquareCheck35.java
Enter a number: 45
45 is NOT a perfect square.
```

36. Write a program to find the sum of the digits of a given number until the sum is a single digit.

```
import java.util.Scanner;

class SingleDigitSum36 {
    public static void main(String[] args) {
        Scanner sk = new Scanner(System.in);

        System.out.print("Enter a number: ");
        int num = sk.nextInt();
        int sum = 0;

        // Keep summing the digits until the number becomes a single
digit
        while (num > 9) {
            sum = 0;
            while (num != 0) {
                sum += num % 10;
                num = num / 10;
```

```
            }
            num = sum;
        }

        System.out.println("Single digit sum is: " + num);
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java singleDigitSum36.java
Enter a number: 3456
Single digit sum is: 9
```

37 -45. Write a program to generate the following pattern----pyramids (8-10 patterns - right angle, diamond, hallow diamond, etc.)
// 37-38

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

              System.out.println(" ");

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

```
        }
    }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Pattern.java
*
* *
* * *
* * * *
* * * * *

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

// 39

Input:

```
import java.util.Scanner;

class DiamondPattern39 {
    public static void main(String[] args) {
        Scanner sk = new Scanner(System.in);
        System.out.print("Enter n: ");
        int n = sk.nextInt();

        for (int i = 1; i <= n * 2 - 1; i++) {
            int stars = i <= n ? i : (2 * n - i);
            int spaces = n - stars;

            for (int j = 0; j < spaces; j++)
                System.out.print(" ");
            for (int j = 0; j < 2 * stars - 1; j++)
                System.out.print("*");
            System.out.println();
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java DiamondPattern39.java
Enter n: 5
    *
   ***
  *****
 *******
*********
 *******
  *****
   ***
    *
```

// 40.

```java
import java.util.Scanner;

class HollowDiamond40 {
    public static void main(String[] args) {
        Scanner sk = new Scanner(System.in);
        System.out.print("Enter n: ");
        int n = sk.nextInt();

        for (int i = 1; i <= n * 2 - 1; i++) {
            int stars = i <= n ? i : (2 * n - i);
            int spaces = n - stars;

            // Print spaces
            for (int j = 0; j < spaces; j++)
                System.out.print(" ");

            // Print stars and hollow space
            for (int j = 1; j <= 2 * stars - 1; j++) {
                if (j == 1 || j == 2 * stars - 1)
                    System.out.print("*");
                else
                    System.out.print(" ");
            }
            System.out.println();
        }
    }
}
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java HollowDiamond40.java
Enter n: 6
     *
    * *
   *   *
  *     *
 *       *
*         *
 *       *
  *     *
   *   *
    * *
     *
```

// 41.

Input:

```java
import java.util.Scanner;
   class Pattern41{
       public static void main(String[] args){
           int r,c;
           for(r=1;r<=5;r++){
               for(c=1;c<=r;c++){
                   System.out.print(" "+r);
               }
               System.out.println(" ");
           }
       }


   }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Pattern41.java
 1
 2 2
 3 3 3
 4 4 4 4
 5 5 5 5 5
```

// 42.

Input:

```
import java.util.Scanner;
    class Pattern42{
        public static void main(String[] args){
            int r,c;
            for(r=5;r>=1;r--){
                for(c=1;c<=r;c++){
                    System.out.print(" "+r);
                }
                System.out.println(" ");
            }
        }

    }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Pattern42.java
 5 5 5 5 5
 4 4 4 4
 3 3 3
 2 2
 1
```

// 43.

Input:

```
import java.util.Scanner;
    class Pattern43{
        public static void main(String[] args){
            int r,c;
            for(r=1;r<=5;r++){
                for(c=1;c<=r;c++){
                    System.out.print(" "+c);
                }
```

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

    }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Pattern43.java
 1
 1 2
 1 2 3
 1 2 3 4
 1 2 3 4 5
```

// 44.

```
import java.util.Scanner;
    class Pattern44{
        public static void main(String[] args){
            int r,c;
            int n=1;
            for(r=1;r<=5;r++){
                for(c=1;c<=r;c++){
                    System.out.print(n+" ");
                    n++;
                }
                System.out.println(" ");
            }
        }

    }
```

Output:

// 45.

Input:

```java
import java.util.Scanner;
    class Pattern45{
        public static void main(String[] args){
            int r,c;
            int n=65;
            for(r=1;r<=5;r++){
                for(c=1;c<=r;c++){
                    System.out.print((char)(n)+ " ");
                    n++;
                }
                System.out.println(" ");
            }
        }

    }
```

Output:

```
C:\Users\mahir\OneDrive\Desktop\Sublime\Assignment 4>java Pattern45.java
A
B C
D E F
G H I J
K L M N O
```