```java
40.) public class Hallow Square {
        public static void main (String args []){
                intn =8;
                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();
                }
        }
}
```

41) ## sum of n-digit Number

```java
public class NumSum {
        public static void main (String [] args) {
                int n=123, sum=0;
                while (n!=0) {
                        int rem = n%10;
                        sum+= rem;
                        n= n/10;
                }
                System.out.println (sum);
        }
}
```

Square root :-

42

```java
public class SquareRoot {
    public static void main (String [] args) {
        int n = 81;
        double sqrt = Math.pow (n, 0.5);
        System.out.println (sqrt);
    }
}
```

Matrix Multiplication :-

43)

```java
public class Matrix Multiplication {
    public static void main (String [] args) {
        int arr1 [3] [3] = {{ 1,2,3}, {4,5,6}, {7,8,9}};
        int arr2 [3] [3] = {{1, 2, 3}, {4,5,6}, {7,8,9}};
        int arr3 [3] [3] = {{}, {}, {}};
        for (int i = 0; i < 3; i++) {
            for (int j = 0; j < 3; j++) {
                for (int k = 0; k < 3; k++) {
                    int sum += arr1[i][k] * arr2[k][j]
                }
            }
        }
        System.out.println (arr3);
    }
}
```

1:

44) Inverted Pyramid Pattern

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

Medium

1) Composite :-

```java
public class Composite {
    public static void main (String[] args) {
        int arr[] = {4, 54, 29, 71, 7, 59, 98, 233};
        int com = 0, pri = 0, i, j, c = 0;
        for (i = 0 ; i < arr.length ; i++) {
            for (int j = 1; j < arr[i] ; j++) {
                if (arr[i] % j == 0) {
                    c++;
                }
            }
            if (c > 1)
                com++;
            else
                pri++;
        }
        System.out.println(" com);
        System.out.println (pri);
```

2) Max & Min

```java
public class Max Min {
    public static void main (String [] args) {
        int arr [] = { 14, 16, 8 }, 36, 25, 89, 34);
        int len = arr.length;
        for ( int i = 0; i < len; i++) {
            for ( int j = i+1; j < len; j++) {
                if (arr [i] > arr [j]) {
                    int temp = arr[i];
                    arr (i) = arr [j];
                    arr [i] = temp;
                }
            }
        }
        int m = 1, n = 3;
        int max = arr [len - m];
        int min = arr [n - 1];
        int Diff = max - min;
        System.out.println (Diff);
    }
}
```

3) ATM

```java
public class ATM {
    public static void main ( String [] args) {
        int n1 = 500, d1 = 4, n2 = 100, d2 = 20, n3 = 200, d3 = 30;
        int Total = (n1 * d1) + (n2 * d2) + (n3 * d3);
        System.out.println("Total :- " + Total);
    }
}
```

4) String Palindrome

```java
public class StringPalindrome {
    public static void main (String[] args) {
        String s1 = "MADAM";
        String s2 = "";
        int len = s1.length();
        for (int i = len-1; i >= 0; i--) {
            s2 = s2 + s1.charAt(i);
        }
        if (s1.equals(s2))
            System.out.print("Palindrome");
        else
            System.out.println("Not Palindrome");
    }
}
```

5) Binary

```java
public class Binary {
    public static void main (String[] args) {
        int dec = 15;
        String bin = Integer.toBinaryString(dec);
        String oct = Integer.toOctalString(dec);
        System.out.print("Binary Number " + bin);
        System.out.println("Octal Number " + oct);
    }
}
```

6.) <u>Organization</u> :-

```java
public class Organization {
    public static void main (string () args.) {
        Scanner input. new Scanner (System.in);
        int . a, b;
        double bonus. o ;
        System out. print (" Enter grade    ");
        char a1 = input.next() .charAt (0);
        System out. print (" Salary :   ");
        int b1. input.next Int ();
        if (a1 == 'A') {
            bonus = b1 ^ (0.05);
            if (b1 < 1000) {
                bonus = bonus+ b1 ^ (0.02);
            }
            System.out.println ("salary = "+ b1);
            System.out. println (" Bonus " + bonus);
            System.out.printen ("To be paid:-" +(b1+ bonus));

        }
        else if (a1 == 'B') {
            bonus = b1 ^ (0.1);
            if (b1 < 10000) {
                bonus += b ^ (0.02);
                System.out. println ("Salary: "+ Salary );
                System.out.println (" Bonus "+ Bonus);
                System.out. println ("To be paid +(b2+ bonus));
            }
        }
        else {
            System.out. println (" Invalid    Grade ");
        }
    }
}
```