LAB ASSIGNMENT – 1

```java
// 1. Check Palindrum or not
import java.util.Scanner;

public class Pali {
    public static void main(String args[])
    {
        int x,number, y,temp=0;
        Scanner in=new Scanner(System.in);
        System.out.println("Enter any number: ");
        number=in.nextInt();
        y = number;
        while(number!=0)
        {
            x=number%10;
            temp=temp*10+x;
            number=number/10;
        }
        if(temp==y)
        {
            System.out.println("Number is Palindrome");
        }
        else
        {
            System.out.println("not Palindrome");
        }
    }
}
```

Output:

```
PS D:\Study\Classses\OOPS> cd "d:\Study\Classses\OOPS\Assignment 1\" ; if ($?) { javac Pali.java } ; if ($?) { java Pali }
Enter any number:
121
Number is Palindrome
PS D:\Study\Classses\OOPS\Assignment 1>
```

```java
// 2. Prime number check

import java.util.Scanner;

public class prime {

    public static void main(String[] args) {

        int num;
```

```java
        Scanner in = new Scanner(System.in))
        System.out.println("Enter the number");
        num = in.nextInt();

    boolean flag = false;
    for (int i = 2; i <= num / 2; ++i) {
      // condition for nonprime number
      if (num % i == 0) {
        flag = true;
        break;
      }
    }

    if (!flag)
      System.out.println(num + " is a prime number.");
    else
      System.out.println(num + " is not a prime number.");
  }
}
```

Output:

```java
// 3. Factorial of a number
import java.util.Scanner;

public class Fact {
    public static void main(String[] args) {
        int number, res=1;
        Scanner in=new Scanner(System.in);
        System.out.println("Enter any number: ");
        number=in.nextInt();
        for(int i = 1; i<=number; i++){
            res = res * i;
        }
        System.out.println(number+"! = "+res);
    }
}
```

Output:

```java
// 4. GCD of 2 numbers
import java.util.*;

public class GCD {
    public static void main(String[] args) {
        int num1, num2, gcd = 1;
        try (Scanner in = new Scanner(System.in)) {
            System.out.println("Enter first number");
            num1 = in.nextInt();
            System.out.println("Enter second number");
            num2 = in.nextInt();
        }
        for (int i = 1; i <= num1 && i <= num2; ++i) {

            // check if i perfectly divides both num1 and num2
            if (num1 % i == 0 && num2 % i == 0)
                gcd = i;
        }

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

    }
}
```

Output:
```
PS D:\Study\Classses\OOPS> cd "d:\Study\Classses\OOPS\Assignment 1\" ; if ($?) { javac GCD.java } ; if ($?) { java GCD }
Enter first number
2
Enter second number
4
GCD of 2 and 4 is 2
```

```java
// 5. LCM of 2 numbers
import java.util.*;
public class LCM {
    public static void main(String[] args) {
        int num1, num2, lcm;
        try (Scanner in = new Scanner(System.in)) {
            System.out.println("Enter first number");
            num1 = in.nextInt();
            System.out.println("Enter second number");
            num2 = in.nextInt();
        }
        lcm = (num1 > num2) ? num1 : num2;
        while (true) {
            if (lcm % num1 == 0 && lcm % num2 == 0) {
                System.out.printf("The LCM of %d and %d is %d.", num1, num2, lcm);
                break;
            }
            ++lcm;
        }
    }
}
```

```
Output:
```
```
Enter first number
2
Enter second number
4
The LCM of 2 and 4 is 4.
```

```
// 6. Prime number between a range

import java.util.Scanner;

public class PrimeRange {
    public static void main(String[] args) {
        int num1, num2;
        try (Scanner in = new Scanner(System.in)) {
            System.out.println("Enter first number");
            num1 = in.nextInt();
            System.out.println("Enter second number");
            num2 = in.nextInt();
        }
        while (num1 < num2) {
            boolean flag = false;

            for(int i = 2; i <= num1/2; ++i) {
                // condition for nonprime number
                if(num1 % i == 0) {
                    flag = true;
                    break;
                }
            }

            if (!flag && num1 != 0 && num1 != 1)
                System.out.print(num1 + " ");

            ++num1;
        }
    }
}
```

```
Output:
```
```
Enter first number
1
Enter second number
10
2 3 5 7
```

```
// 7. Angstrom Number in range

import java.util.*;

class AngRange {
    public static void main(String[] args) {
        int num1, num2;
```

```java
            try (Scanner sc = new Scanner(System.in)) {
                System.out.println("Enter the first number ::");
                num1 = sc.nextInt();
                System.out.println("Enter the second number ::");
                num2 = sc.nextInt();
            }
            for(int number = num1 + 1; number < num2; ++number) {
                int digits = 0;
                int result = 0;
                int originalNumber = number;

                // number of digits calculation
                while (originalNumber != 0) {
                  originalNumber /= 10;
                  ++digits;
                }

                originalNumber = number;

                // result contains sum of nth power of its digits
                while (originalNumber != 0) {
                  int remainder = originalNumber % 10;
                  result += Math.pow(remainder, digits);
                  originalNumber /= 10;
                }

                if (result == number) {
                  System.out.print(number + " ");
                }
            }
        }
}
```

Output:
```
PS D:\Study\Classses\OOPS> cd "d:\Study\Classses\OOPS\Assignment 1\" ; if ($?) { javac AngRange.java } ; if ($?) { java AngRange }
Enter the first number ::
1
Enter the second number ::
1000
2 3 4 5 6 7 8 9 153 370 371 407
```

```java
// 8. Fibonacii Series
import java.util.*;
class Fibo{
    public static void main(String args[]){
        int n;
        try (Scanner in = new Scanner(System.in)) {
            System.out.println("Enter the last number");
            n = in.nextInt();
```

```java
        }
        System.out.print("0, 1, ");
        int n1 = 0, n2 = 1;
        for(int i = 2; i<=n-1; i++, n1++,n2++){
            int sum = n1 + n2;
            System.out.print(sum+", ");


        }
    }
}
```

Output:

```java
// 9. Multiplication TableCellEditor
import java.util.*;
class MultiTable{
    public static void main(String args[]){
        int n;
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the last number");
        n = in.nextInt();
        int r;
        System.out.println("");
        System.out.println("Multiplication  Table of 1 is: ");
        for(int j = 1; j<=n; j++){
            for(int i = 1; i<=10; i++){
                r = j * i;
                System.out.println(j+" X "+i+" = "+r);
            }
            System.out.println("");
            System.out.println("Multiplication  Table of "+j+1+"is: ");
        }
    }
}
```

Output:

```
Enter the last number
3

Multiplication  Table of 1 is:
1 X 1 = 1
1 X 2 = 2
1 X 3 = 3
1 X 4 = 4
1 X 5 = 5
1 X 6 = 6
1 X 7 = 7
1 X 8 = 8
1 X 9 = 9
1 X 10 = 10

Multiplication  Table of 2is:
2 X 1 = 2
2 X 2 = 4
2 X 3 = 6
2 X 4 = 8
2 X 5 = 10
2 X 6 = 12
2 X 7 = 14
2 X 8 = 16
2 X 9 = 18
2 X 10 = 20

Multiplication  Table of 3is:
3 X 1 = 3
3 X 2 = 6
3 X 3 = 9
3 X 4 = 12
3 X 5 = 15
3 X 6 = 18
3 X 7 = 21
3 X 8 = 24
3 X 9 = 27
3 X 10 = 30
```

```java
// partern 1
import java.util.*;
class P1{
    public static void main(String args[]){
        int n;
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the row size");
        n = in.nextInt();

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

Output:
Enter the row size
5
*
* *
* * *
* * * *
* * * * *

```java
// partern P2
import java.util.*;
class P2{
    public static void main(String args[]){
        int n;
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the row size");
        n = in.nextInt();

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

Output:
Enter the row size
5
1

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

// partern P3
import java.util.*;
class P3{
    public static void main(String args[]){
        int n;
        Scanner in = new Scanner(System.in);
        System.out.println("Enter the row size");
        n = in.nextInt();

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

Output:
Enter the row size
5
1
2 2
3 3 3
4 4 4 4
5 5 5 5 5
```

```java
// partern P4
import java.util.*;

class P4 {
    public static void main(String args[]) {
        int k = 1;
        for (int r = 1; r <= 5; r++) {
            for (int c = 1; c <= r; c++) {
                System.out.print(k+" ");
                k++;
            }
            System.out.println();
        }

    }
}

Output:
1
2 3
4 5 6
7 8 9 10
11 12 13 14 15

// Partern 5
import java.util.Scanner;

public class P5 {
    public static void main(String[] args) {
        Scanner sc = new Scanner(System.in);
        System.out.print("Enter n: ");
```

```java
        int n = sc.nextInt();
        for (int i = 1; i <= n; i++) {
            for (int j = 1; j <= i; j++) {
                if ((i + j) % 2 == 0) {
                    System.out.print("1 ");
                } else {
                    System.out.print("0 ");
                }
            }
            System.out.println();
        }
    }
}

Output:
Enter n: 5
1
0 1
1 0 1
0 1 0 1
1 0 1 0 1

// import java.util.*;

// Pattern 6
public class P6{
    public static void main(String[] args){
        int n = 5;
        // Scanner in = new Scanner(System.in);
        int i, j, k, l;
        //Syste.out.println("Enter the number of row");
        for(i=1;i<=n;i++) {
            for(j=i;j<=n-1;j++) {
                System.out.print(" ");
                System.out.print(" ");
            }
            for(j=1;j<=i;j++) {
                System.out.print(j);
                System.out.print(" ");
```

```java
        }
        for(j=i-1;j>=1;j--) {
            System.out.print(j);
            System.out.print(" ");
        }
        System.out.println();
    }
    k=1;
    for(i=4;i>=n-k && k<=4 ;i--,k++) {
        for(j=i;j<=n-1;j++) {
            System.out.print(" ");
            System.out.print(" ");
        }
        for(j=1;j<=i;j++) {
            System.out.print(j);
            System.out.print(" ");

        }
        for(j=i-1;j>=1;j--) {
            System.out.print(j);
            System.out.print(" ");
        }
        System.out.println();
    }

    // int i,j,x=5,l=0,k;
    // for(i=1;i<10;i++)
    // {
    //   k=1;
    //   for(j=1;j<10;j++)
    //   {
    //       if(j<x-l || j>x+l)
    //       {
    //           System.out.print("  ");
    //       }
    //       else
    //       {
    //           System.out.print(k+" ");
    //           if(j<5)
```

```java
        //              {
        //                  k++;
        //              }
        //              else
        //              {
        //                  k--;
        //              }
        //          }
        //      }
        //      if(i<5)
        //      {
        //          l++;
        //      }
        //      else
        //      {
        //          l--;
        //      }
        //      System.out.println();
        // }
    }
}

Output:
        1
      1 2 1
    1 2 3 2 1
  1 2 3 4 3 2 1
1 2 3 4 5 4 3 2 1
  1 2 3 4 3 2 1
    1 2 3 2 1
      1 2 1
        1


// Pattern 7
class P7{
    public static void main(String[] args){
        int i, j, k=1, n = 5, s=0;
        for(i=1; i<=n; i++){
```

```java
            if(i%2!=0){
                for(j=1; j<=i;j++,k++){
                    s = k;
                }
                for(j=1; j<=i;j++, s--){
                    System.out.print(s);
                    System.out.print(" ");
                }
            }
            else{
                for(j=1; j<=i;j++,k++){
                    System.out.print(k);
                    System.out.print(" ");
                }
            }
            System.out.println();
        }
    }
}

Output:
1
2 3
6 5 4
7 8 9 10
15 14 13 12 11

class P8{
    public static void main(String[] args){
        int n = 101;
        //Scanner in = new Scanner(System.in);
        int i, j, k, l;
        //Syste.out.println("Enter the number of row");
        for(i=1, k=97;i<=5;i++,k++) {
            for(j=i;j<=n-1;j++) {
                System.out.print(" ");
                System.out.print(" ");
            }
            for(j=97;j<=k;j++) {
```

```
            System.out.print((char)j);
            System.out.print(" ");
        }
        for(j=k-1;j>=97;j--) {
            System.out.print((char)j);
            System.out.print(" ");
        }
        System.out.println();
    }
  }
}
```

Output:
```
                a
            a   b   a
        a   b   c   b   a
      a   b   c   d   c   b   a
    a   b   c   d   e   d   c   b   a
```