**LAB 10 DSA**

**Name: Noor Fatima**

**Roll No:21sw062**

**Section: II**

1. Write a program to find the factorial of a number using recursion. Take input from user.
2. import java.util.Scanner;  
     
   public class Main {  
     
    static int recursiveFactorial(int no){  
    if(no==0)  
    {  
    return 1;  
    }  
    return no\*(*recursiveFactorial*(no-1));  
    }  
    public static void main(String[] args) {  
     
    System.*out*.println("Enter the number : ");  
    Scanner sc = new Scanner(System.*in*);  
    int a= sc.nextInt();  
    int fac= *recursiveFactorial*(a);  
    System.*out*.println(fac);  
     
     
     
    }  
   }

**Output : Enter the number :**

**5**

**120**

1. Write a program to use recursion as a loop to print numbers 1 to n. Take n as input from user.

public class Main0 {  
  
 static void printNumber(int number){  
 if(number<=0){  
 return ;  
 }else {  
 System.*out*.println(number);  
 *printNumber*(number-1);  
 }  
 }  
 public static void main(String[] args) {  
 int no=9;  
 *printNumber*(no);  
  
  
 }  
}

**Output: 9 8 7 6 5 4 3 2 1**

1. Write a java program that generate Fibonacci series.

import java.util.Scanner;  
  
public class Main1 {  
  
 static int FabonaciiSeries(int a){  
 if(a<=1)return a;  
 return *FabonaciiSeries*(a-1)+*FabonaciiSeries*(a-2);  
 }  
 public static void main(String[] args) {  
  
 System.*out*.println("Enter how many no you want to print in in the series ");  
 Scanner sc = new Scanner(System.*in*);  
 int a= sc.nextInt();  
 for (int i=0;i<a;i++){  
 System.*out*.print(*FabonaciiSeries*(i)+" ");  
 }  
  
  
 }  
}

Output: Enter how many no you want to print in in the series

11

0 1 1 2 3 5 8 13 21 34 55

Process finished with exit code 0

1. Write a java program that implements binary search using recursive technique.

import java.util.Scanner;  
  
public class Main2 {  
 public static int binarySearch(int[] array, int target, int low, int high) {  
 if (low > high) {  
 return -1;  
 }  
 int mid = (low + high) / 2;  
 if (array[mid] == target) {  
 return mid;  
 } else if (array[mid] < target) {  
 return *binarySearch*(array, target, mid + 1, high);  
 } else {  
 return *binarySearch*(array, target, low, mid - 1);  
 }  
 }  
  
 public static void main(String[] args) {  
 int[] array = {1, 2, 3, 4, 5, 6, 7, 8, 9};  
 Scanner sc = new Scanner(System.*in*);  
 int target = sc.nextInt();  
 int result = *binarySearch*(array, target, 0, array.length - 1);  
  
 if (result == -1) {  
 System.*out*.println("Element not found");  
 } else {  
 System.*out*.println("Element found at index: " + result);  
 }  
 }  
}

Enter the no you want to search

9

Element found at index: 8

Process finished with exit code 0