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|  | | Lab Assignment . 2 | | | | |  | |
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|  | | | | MujtabaSP22-BSE-036 |  | | | |
|  | | | | Nov 19, 2022—Programming Fundamentals—Sir Rizwan Rashid |  | | | |
|  | | |  | | |  | | |

**LAB . 5**

QUESTION . 1

**a)**

import java.util.Scanner;  
public class Question1A {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 System.out.print("Enter the starting number: ");  
 int a = input.nextInt();  
 System.out.print("Enter the ending number: ");  
 int b = input.nextInt();  
 int i = a;  
 System.out.print(a);  
 while (b > i) { i += 1; System.out.print(" " + i); }  
 }  
}

**b)**

import java.util.Scanner;  
public class Question1B {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 System.out.print("Enter the starting number: ");  
 int a = input.nextInt();  
 System.out.print("Enter the ending number: ");  
 int b = input.nextInt();  
 if (a < b) {  
 int i = a;  
 System.out.print(a);  
 while (b > i) {i += 1;System.out.print(" " + i);}  
 } else if (a > b) {  
 int f = a;  
 System.out.print(a);  
 while (f > b) {f -= 1;System.out.print(" " + f);}  
 } else { System.out.print("1st and 2nd number are same and no number is lie b/w them"); }  
 }  
}

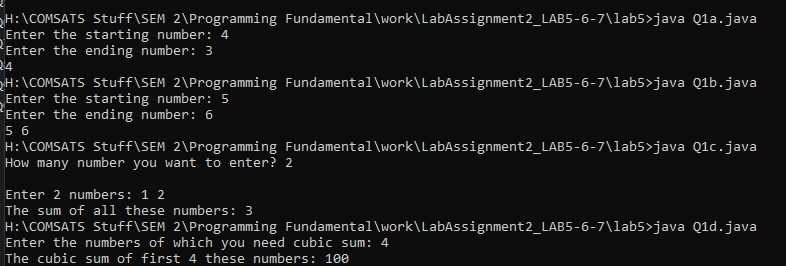
**c)**

import java.util.Scanner;  
public class Question1C {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 int sum = 0, a, numbers, i = 0;  
 System.out.print("How many number you want to enter? ");  
 numbers = input.nextInt();  
 System.out.println("");  
 System.out.print("Enter " + numbers + " numbers: ");  
 while (i < numbers) {a = input.nextInt();sum += a; i += 1; }  
 System.out.print("The sum of all these numbers: " + sum);  
 }  
}

**d)**

import java.util.Scanner;  
public class Question1D {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 int sum = 0, numbers, i = 1;  
 System.out.print("Enter the numbers of which you need cubic sum: ");  
 numbers = input.nextInt();  
 while (i <= numbers) {sum += i \* i \* i;i += 1; }  
 System.out.print("The cubic sum of first " + numbers + " these numbers: " + sum);  
 }  
}

**output:**

****

QUESTION . 2

import java.util.Scanner;  
import java.util.Scanner;  
public class Q2 {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 System.out.print("Enter any integer to find factorial: ");  
 int fact = input.nextInt();  
 int i = 0, mul = 1, a = fact;  
 while (fact > i) {mul \*= a;a -= 1;i += 1;}  
 System.out.print("factorial of " + fact + " is: " + mul);  
 }  
}

Text

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QUESTION . 3

import java.util.Scanner;  
public class Q3 {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 int count = 0, num, numbers, i = 0;  
 System.out.print("How many number you want to enter? ");  
 numbers = input.nextInt();  
 System.out.println("");  
 System.out.print("Enter " + numbers + " numbers: ");  
 while (i < numbers) {  
 num = input.nextInt();  
 if (num == 0) {count += 1;}  
 i += 1;  
 }  
 System.out.print("There are " + count + " Zero in the numbers");  
 }  
}



QUESTION . 4

import java.util.Scanner;  
public class Q4 {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 System.out.print("Enter the length of sequence: ");  
 int length = input.nextInt();  
 int i = 0, seq, check = 0;  
 System.out.println("Enter the sequence: ");  
 while (length > i) {  
 seq = input.nextInt();  
 if (seq != 0) {check = i; }  
 i += 1;  
 }  
 System.out.print("The lenght of sequence is: " + check);  
 }  
}

Text

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QUESTION . 5

import java.util.Scanner;  
public class Q5 {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 int check = 0;  
 System.out.print("Enter any integer(0 to end): ");  
 int num = input.nextInt();  
 while (num != 0) {  
 if (num > check) {check = num;}  
 System.out.print("Enter any integer(0 to end): ");  
 num = input.nextInt();  
 }  
 System.out.print("Largest number is: " + check);  
 }  
}

Text

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QUESTION . 6

import java.util.Scanner;  
  
public class Q6 {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 int check = 0, i = 0;  
 System.out.println("Enter the sequence(0 to end): ");  
 int num = input.nextInt();  
 while (num != 0) {  
 if (num >= check) {check = num;i += 1;}  
 num = input.nextInt();  
 }  
 System.out.print("The index of largest number is: " + i);  
 }  
}

Text

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QUESTION . 7

import java.util.Scanner;  
public class Q7 {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 int check = 0;  
 System.out.print("Enter any integer(0 to end): ");  
 int num = input.nextInt();  
 while (num != 0) {  
 if (num % 2 == 0) {check += 1;}  
 System.out.print("Enter any integer(0 to end): ");  
 num = input.nextInt();  
 }  
 System.out.print("Total even number : " + check);  
 }  
}

Text

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QUESTION . 8

import java.util.Scanner;  
public class Q8 {  
 public static void main(String[] args) {  
 Scanner input = new Scanner(System.in);  
 System.out.println("Enter sequence(0 to end): ");  
 int seq = input.nextInt();  
 int check = 0, neighbor = 0;  
 while (seq != 0) {  
 seq = input.nextInt();  
 if (seq > check) {neighbor += 1;}  
 check = seq;  
 }  
 System.out.print("Number greater than its previous number is:" + neighbor);  
  
 }  
}

Text

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QUESTION . 9

**a)**

public class Q9a {  
 public static void main(String[] args) {  
 for (int i = 1; i <= 5; i++) {  
 for (int k = 4; k >= i; k--) { System.out.print(" ");}  
 for (int j = 1; j <= i; j++) {System.out.print("\*");}  
 System.out.print("\n");  
 }  
 }  
}

**b)**

public class Q9b {  
 public static void main(String[] args) {  
 for (int i = 1; i <= 5; i++) {  
 for (int k = 4; k >= i; k--) {System.out.print(" ");}  
 for (int j = 1; j <= i; j++) {System.out.print("\*");}  
 System.out.print("\n");  
 }  
 }  
 }

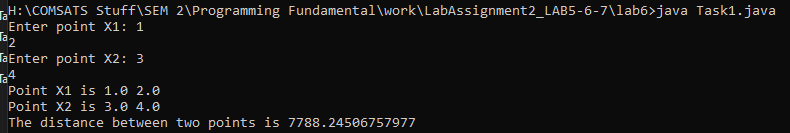
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**LAB . 6**

QUESTION . 1

import java.util.Scanner;  
public class Task1{  
 public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.print("Enter point X1: ");  
 double x1 = myObj.nextDouble();  
 double y1 = myObj.nextDouble();  
 System.out.print("Enter point X2: ");  
 double x2 = myObj.nextDouble();  
 double y2 = myObj.nextDouble();  
 System.out.println("Point X1 is " + x1 + " "+ y1);  
 System.out.println("Point X2 is " + x2 + " "+ y2);  
 double radius = 6371.01;  
 double d = radius \* Math.acos(Math.sin(x1) \* Math.sin(x2) +( Math.cos(x1) \* Math.cos(x2) \* Math.cos(y1 - y2)));  
 System.out.print("The distance between two points is "+ d);  
 }  
}



QUESTION . 2

import java.util.Scanner;  
public class Task2{  
 public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.println("Enter a number from (0 -- 127): ");  
 int Character = myObj.nextInt();  
 char alphabet = (char)Character;  
 System.out.print("The Character for ascii Code "+ Character + " is: " + alphabet);  
  
 System.out.print("Enter an alphabet: ");  
 String string = myObj.next();  
 char alpha;   
 System.out.print(alpha);  
 }  
}

QUESTION . 3

public class Task4{  
 public static void main(String[] args) {  
 int number = (int)(Math.random() \* 127) ;  
 char alphabet = (char)number;  
 System.out.println(number);  
 System.out.println(alphabet);  
  
 }  
}

A screenshot of a computer

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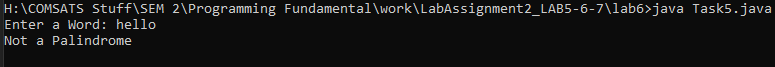
QUESTION . 4

import java.util.Scanner;  
public class Task5{  
public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.print("Enter a Word: ");  
 String word = myObj.next();  
 int length = word.length();  
 String newWord = "";  
 for (int i = (length-1); i >= 0; i--) {  
 char newChar = word.charAt(i);  
 newWord += newChar;  
 }  
 if (word.equalsIgnoreCase(newWord)) {  
 System.out.println("Palindrome");   
 }  
 else{  
 System.out.println("Not a Palindrome");  
 }  
 }  
}



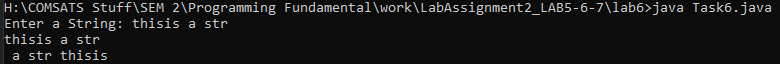
QUESTION . 5

import java.util.Scanner;  
public class Task6{  
 public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.print("Enter a String: ");  
 String Sentence = myObj.nextLine();  
 System.out.println(Sentence);  
 int length = Sentence.length();  
 String sub = Sentence.substring(0,length);  
 int firstIndex = sub.indexOf(' ');  
 int lastIndex = sub.lastIndexOf(' ');  
 System.out.print(sub.substring(firstIndex,length) + ' ' + sub.substring(0,firstIndex).trim());  
  
  
 }  
}



QUESTION . 6

import java.util.Scanner;  
public class Task7{  
 public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.println("Enter a Word: ");  
 String word = myObj.next();  
 int firstIndex = word.indexOf('f');  
 int lastIndex = word.lastIndexOf('f');  
   
  
 System.out.print("f occurs at indices " + firstIndex + ' ' + lastIndex);  
  
 }  
}



QUESTION . 7

import java.util.Scanner;  
public class Task8{  
 public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.print("Enter a Sentence: ");  
 String sentence = myObj.nextLine();  
 int length = sentence.length();  
 int firstindex = sentence.indexOf('h');  
 int lastIndex = sentence.lastIndexOf('h');  
 System.out.print(sentence.substring(0,firstindex)+sentence.substring(lastIndex+1,length));  
 }  
}

Text

Description automatically generated

QUESTION . 8

import java.util.Scanner;  
public class Task9{  
 public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.println("Enter a Sentence: ");  
 String Sentence = myObj.nextLine();  
 int length = Sentence.length();  
 int firstIndex = Sentence.indexOf('h');  
 int lastIndex = Sentence.lastIndexOf('h');  
 String sub = Sentence.substring(firstIndex+1,lastIndex-1);  
 String newSentence = sub.replace('h','H');  
 System.out.print(Sentence.substring(0,firstIndex+1) + newSentence +" "+ Sentence.substring(lastIndex,length));   
 }  
}

QUESTION . 9

import java.util.Scanner;  
public class Task10{  
 public static void main(String[] args) {  
 Scanner myObj = new Scanner(System.in);  
 System.out.print("Enter a String: ");  
 String sentence = myObj.nextLine();  
 System.out.println(sentence.charAt(2));  
 int length = sentence.length();  
 System.out.println(sentence.charAt(length-1));  
 for (int i = 0 ; i < length; i++) {System.out.print(sentence.charAt(i));}  
 System.out.println();  
 for(int i = 0;i<length-2;i++){System.out.print(sentence.charAt(i));}  
 System.out.println();  
 for (int i = 0;i<length;i++) {  
 if(i % 2 != 0){continue;}  
 else{System.out.print(sentence.charAt(i));}  
 }  
 System.out.println();  
 for (int i = 0;i<length;i++) {  
 if(i % 2 == 0){continue;}  
 else{System.out.print(sentence.charAt(i));}  
 }  
 System.out.println();  
 for (int i = (length-1);i>=0;i--) {System.out.print(sentence.charAt(i));}  
 System.out.println();  
 for (int i = (length-1);i>=0;i--) {  
 if (i % 2 != 0) {continue;}  
 else System.out.print(sentence.charAt(i));  
 }  
 System.out.println();  
 System.out.println(length);  
 }  
}

Text

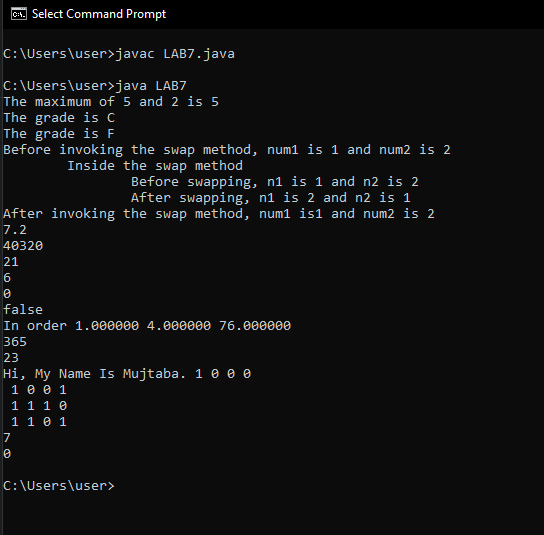
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**LAB . 7**

Code

*// - START  
  
// ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  
  
// NAME: MUHAMMAD MUJTABA SP22-BSE-036  
// WORK: LAB 7 ACTIVITIES  
// TEACHER: SIR RIZWAN RASHID  
  
// NOTE:  
// I wrote all lab activities in class Activities { }  
// and all graded activities in class Graded { }  
// then I tested all of these in class LAB7 { }  
// which is our main class.  
  
// ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  
  
  
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// ALL LAB ACTIVITIES HERE:*import java.util.\*;  
import java.io.\*;  
  
class Activities {  
  
  
 *// ACTIVITY . 1:* public static int max(int num1, int num2){  
 if (num1 == num2) return -1; *// if both are equal?* return num1 > num2 ? num1 : num2;  
 }  
  
  
 *// ACTIVITY . 2:* public static void printGrade(double score){  
 if(score >= 90.0){ System.out.println('A'); }  
 else if(score >= 80.0){ System.out.println('B'); }  
 else if (score >= 70.0){ System.out.println('C'); }  
 else if (score >= 60.0){ System.out.println('D'); }  
 else { System.out.println('F'); }  
 }  
  
  
 *// ACTIVITY . 3:* public static void swap(int n1, int n2) {  
 System.out.println("\tInside the swap method");  
 System.out.println("\t\tBefore swapping, n1 is " + n1 + " and n2 is " + n2);  
 int temp = n1;  
 n1 = n2;  
 n2 = temp;  
 System.out.println("\t\tAfter swapping, n1 is " + n1 + " and n2 is " + n2);  
 }  
  
  
 *// ACTIVITY . 4:* public static double max(double num1, double num2){  
 if (num1 == num2) return -1; *// if both are equal?* return num1 > num2 ? num1 : num2;  
 }  
 public static double max(double num1, double num2, double num3){  
 return max(max(num1, num2), num3);  
 }  
  
  
 *// ACTIVITY . 5:* public static long factorial(int n){  
 if (n == 0) return 1; *// Base case* else return n \* factorial(n - 1); *// Recursive call* }  
  
  
 *// ACTIVITY . 6:* public static long fib(long index) {  
 if (index == 0) return 0; *// Base case* else if (index == 1) return 1; *// Base case* else return fib(index - 1) + fib(index - 2); *// Reduction and recursive calls* }  
  
 *// MAIN METHOD (FOR TESTING ALL FUNCTIONS, WILL BE CALLED IN ANOTHER CLASS):* public static void test() {  
  
 *// ACTIVITY . 1 TEST:* int i = 5, j = 2;  
 int k = max(i, j);  
 System.out.println("The maximum of " + i + " and " + j + " is " + k);  
  
  
 *// ACTIVITY . 2 TEST:* System.out.print("The grade is ");  
 printGrade(78.5);  
 System.out.print("The grade is ");  
 printGrade(59.5);  
  
  
 *// ACTIVITY . 3 TEST:  
 // Declare and initialize variables* int num1 = 1;  
 int num2 = 2;  
 System.out.println("Before invoking the swap method, num1 is " + num1 + " and num2 is " + num2);  
 *// Invoke the swap method to attempt to swap two variables* swap(num1, num2);  
 System.out.println("After invoking the swap method, num1 is" + num1 + " and num2 is " + num2);  
  
  
 *// ACTIVITY . 4,5,6 TEST:* System.out.println(max(4.0,7.2,6.0));  
 System.out.println(factorial(8));  
 System.out.println(fib(8));  
 }  
  
}  
 *// ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  
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// ALL GRADED ACTIVITIES HERE:*class Graded {  
  
 *// ACTIVITY . 1:* public static int sumDigits(long n){  
 int sum = 0;  
 while (n != 0){ sum += n % 10; n /= 10; }  
 return sum;  
 }  
 public static int reverse(int num){  
 int reversed = 0;  
 while(num != 0) {  
 int lastDigit = num % 10;  
 reversed \*= 10 + lastDigit;  
 num /= 10; *// remove last digit* }  
 return reversed;  
 }  
  
  
 *// ACTIVITY . 2:* public static boolean isPalindrome(int number){ return number == reverse(number); }  
  
  
 *// ACTIVITY . 3:* public static void displaySortedNumbers(double x, double y, double z){  
 double max = Math.max(x, Math.max(y, z));  
 double min = Math.min(x, Math.min(y, z));  
 double mid = x + y + z - max - min;  
 System.out.printf("In order %f %f %f%n", min, mid, max);  
 }  
  
  
 *// ACTIVITY . 4:* public static int numberOfDaysInAYear(int year){ return 365; }  
  
  
 *// ACTIVITY . 5:* public static int countLetters(String s){ return s.length(); }  
  
  
 *// ACTIVITY . 6:* public static void capitalize(String s){  
 StringBuilder str = new StringBuilder(s);  
 char c = s.charAt(0);  
 for (int i = 0; i < s.length() - 1; c = s.charAt(i)){  
 if (i == 0){ str.setCharAt(i, Character.toUpperCase(c)); i++; continue; }  
 if (Character.isAlphabetic(c) && (s.charAt(i - 1) == ' ')){ str.setCharAt(i, Character.toUpperCase(c)); }  
 i++;  
 }  
 System.out.print(str);  
 }  
  
  
 *// ACTIVITY . 7:* public static void matNxN(int N){  
 for (int i = 0; i < N; i++){  
 for (int j = 0; j < N; j++){  
 System.out.print(" " + (int)(Math.random() \* 2));  
 }  
 System.out.print('\n');  
 }  
 }  
  
 *// ACTIVITY . 8:* public static int countVowels(String s){  
 int n = 0;  
 char c = s.charAt(0);  
 for (int i = 0; i < s.length() - 1; c = s.charAt(i)){  
 if (Character.toUpperCase(c) == 'A' || Character.toUpperCase(c) == 'E'  
 || Character.toUpperCase(c) == 'I' || Character.toUpperCase(c) == 'O'  
 || Character.toUpperCase(c) == 'U'){ n++; }  
 i++;  
 }  
 return n;  
 }  
  
 *// ACTIVITY . 9:* public static int power(int A, int N){  
 if(N <= 0) return 0;  
 return A \* (power(A, N - 1));  
 }  
  
 *// ACTIVITY . 10: \*\*\* DIFFICULT \*\*\* DIFFICULT \*\*\* DIFFICULT \*\*\*  
 // USE RECURSION HERE, LEFT FOR LATER* public static void patterns\_reverse\_int2bin\_binSearch(){  
 *// -* }  
  
 public static void test(){  
 System.out.println(sumDigits(123));  
 System.out.println(reverse(123));  
 System.out.println(isPalindrome(121));  
 displaySortedNumbers(4.0, 1.0, 76.0);  
 System.out.println(numberOfDaysInAYear(2022));  
 System.out.println(countLetters("Hi, My name is Mujtaba."));  
 capitalize("hi, my name is mujtaba.");  
 matNxN(4);  
 System.out.println(countVowels("hi, my name is mujtaba."));  
 System.out.println(power(2,4));  
 }  
  
}  
 *// ::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::::  
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// Main class:*public class LAB7 {  
 public static void main(String [] args){  
 Activities.test();  
 Graded.test();  
 }  
}  
*// - END*

Output



THANK YOU