# **Week 0: Extra Assignments**

| 1. Read the word “Crossroads” from the user and Print the word “Crossroads” Less Than 8 times without using any loop or goto statement. |
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| *import java.util.Scanner;*  *public class Crossroads {*  *public static void main(String[] args) {*  *Scanner s=new Scanner(System.in);*  *System.out.println("Enter a name : ");*  *String name=s.next();*  *String name4=name+"\n"+name+"\n"+name+"\n"+name+"\n";*  *String name8=name4+name4;*  *System.out.println("Entered name is : \n"+name8);*  *}*  *}* |
| 1. Write a Program for pattern shown below   1  1 1  1 2 1  1 2 3 1  1 2 3 4 1  1 2 3 4 5 1 |
| *public class Pattern {*  *public static void main(String[] args) {*  *for(int i=0;i<=5;i++) {*  *for (int j=1;j<=5-i;j++) {*  *System.out.print(" ");*  *}*  *for(int k=1;k<=i;k++) {*  *System.out.print(k+" ");*  *}*  *System.out.print("1");*  *System.out.println();*  *}*  *}*  *}* |
| 1. Write a program to compare two strings without using string functions. |
| *import java.util.Scanner;*  *public class Strings {*  *public static void main(String[] args) {*  *Scanner s=new Scanner(System.in);*  *String s1,s2;*  *int i,len1,len2,flag=0;*  *System.out.println("Enter string 1 : ");*  *s1=s.nextLine();*  *System.out.println("Enter string 2 : ");*  *s2=s.nextLine();*  *len1=s1.length();*  *len2=s2.length();*  *char str1[]=s1.toCharArray();*  *char str2[]=s2.toCharArray();*  *if(len1==len2) {*  *for(i=0;i<len1;i++) {*  *if(str1[i]!=str2[i]) {*  *flag=1;*  *break;*  *}*  *}*  *if(flag==1){*  *System.out.println("The two strings are not SAME !!!");*  *}else {*  *System.out.println("The two strings are SAME");*  *}}else {*  *System.out.println("The two strings are not SAME !!!");*  *}*  *}*  *}* |
| 1. Write a menu driven program to perform following Operations without using Library functions.    * + 1. STRING LENGTH        2. STRING CONCATENATION        3. STRING REVERSE 2. The program should not end until the user exits the program by giving an input to the program to exit. The menu Should contain an option to exit. 3. The program should Contain 4 Functions Excluding main():    1. STRINGLENGTH()    2. STRINGCONCATENATION()    3. STRINGREVERSE()    4. EXIT() |
| *Code of the program & screenshot of the output.*  *#include <stdio.h>*  *int get\_string\_length(char \*);*  *void concatenate\_strings(char \*, char \*);*  *void reverse\_string(char \*);*  *void main()*  *{*  *int choice = 0, length;*  *char string\_1[100], string\_2[100];*  *do*  *{*  *printf("1.Get string length\n2.String concatenation\n3.Reverse string\n4.Exit\n\nEnter your choice : ");*  *scanf("%d", &choice);*  *switch (choice)*  *{*  *case 1:*    *printf("\nEnter a string : ");*  *scanf("%s", string\_1);*    *length = get\_string\_length(string\_1);*  *printf("String length is %d\n\n", length);*    *break;*  *case 2:*  *printf("\nEnter string 1 : ");*  *scanf("%s", string\_1);*    *printf("Enter string 2 : ");*  *scanf("%s", string\_2);*    *concatenate\_strings(string\_1, string\_2);*    *break;*  *case 3:*  *printf("Enter a string : ");*  *scanf("%s", string\_1);*    *reverse\_string(string\_1);*    *break;*  *case 4:*  *break;*  *default:*  *printf("Invalid choice\n\n");*  *}*    *} while (choice != 4);*  *}*    *int get\_string\_length(char \*string)*  *{*  *int count = 0;*  *for (int i = 0; string[i] != '\0'; i++)*  *count++;*  *return count;*  *}*    *void concatenate\_strings(char \*string1, char \*string2)*  *{*  *int string1\_length, string2\_length;*  *char concatenated\_string[200];*    *string1\_length = get\_string\_length(string1);*  *string2\_length = get\_string\_length(string2);*    *for (int i = 0; i < (string1\_length + string2\_length) + 1; i++)*  *{*  *if (i < string1\_length)*  *concatenated\_string[i] = string1[i];*  *else*  *concatenated\_string[i] = string2[i - string1\_length];*  *}*    *printf("Concatenated string : %s\n\n", concatenated\_string);*  *}*    *void reverse\_string(char \*string)*  *{*  *char reversed\_string[200];*  *int string\_length = get\_string\_length(string);*    *for (int i = 0; i < string\_length; i++)*  *reversed\_string[i] = string[string\_length - i - 1];*    *printf("Reversed string : %s\n\n", reversed\_string);*  *}* |
| 1. Write a Program to copy one string to another without using String Functions? |
| *Code of the program & screenshot of the output.*  *#include <stdio.h>*  *int get\_string\_length(char \*);*  *void copy\_string(char \*);*  *void main()*  *{*  *char string[100];*    *printf("Enter a string : ");*  *scanf("%s", string);*    *copy\_string(string);*  *}*    *int get\_string\_length(char \*string)*  *{*  *int count = 0;*  *for (int i = 0; string[i] != '\0'; i++)*  *count++;*  *return count;*  *}*    *void copy\_string(char \*string)*  *{*  *int string\_length = get\_string\_length(string);*  *char copy[100];*    *for (int i = 0; i < string\_length; i++)*  *copy[i] = string[i];*    *printf("String (string) : %s\nCopied String (copy) : %s\n", string, copy);*  *}* |
| 1. Read some Malayalam Movie Names from User And Sort it? |
| *import java.util.Scanner;*  *public class Movies{*  *public static void main(String[] args){*    *Scanner sc=new Scanner(System.in);*  *String temp;*  *int number=5;*  *String[] names= new String[number];*    *System.out.println("Enter your 5 Favorite Movie names : ");*  *for(int i=0;i<number;i++){*  *names[i]=sc.nextLine();*  *}*  *for(int i=0;i<number;i++)*  *{*  *for(int j=i+1;j<number;j++)*  *{*  *if(names[i].compareTo(names[j])>0){*  *temp=names[i];*  *names[i]=names[j];*  *names[j]=temp;*  *}*  *}*  *}*  *System.out.print("After sorting names in alphabetical order: \n");*  *for(int i=0;i<number-1;i++)*  *{*  *System.out.print(names[i]+"\n");*  *}*  *System.out.print(names[number-1]);*  *}*  *}* |
| 1. Write a program to read the string “India is my country” from the user and find the position of the word “is”? |
| *import java.util.Scanner;*  *public class India {*  *public static void main(String[] args) {*  *Scanner sc=new Scanner(System.in);*  *System.out.println("Type a sentence : ");*  *String str=sc.nextLine();*  *String arr[]=str.split(" ");*  *String word="is";*  *for(int i=0;i<=arr.length;i++)*  *if(word.equals(arr[i])) {*  *int j=i+1;*  *System.out.println("The word 'is' is at position : "+j);*  *}*  *}*  *}* |
| 1. Read random numbers [ 22,87,178,34,10,45,22,89,31] from user and sort numbers in descending Order? |
| *import java.util.Scanner;*  *public class Sorting {*  *public static void main(String[] args) {*  *Scanner s=new Scanner (System.in);*  *System.out.println("Enter size : ");*  *int size=s.nextInt();*  *int i,j,temp;*  *int[] values=new int[50];*  *System.out.println("Enter values : ");*  *for(i=0;i<size;i++) {*  *values[i]=s.nextInt();*  *}*  *System.out.println("values in descending order : ");*  *for(i=0;i<size;i++) {*  *for(j=i+1;j<size;j++) {*  *if(values[i]<values[j]) {*  *temp=values[i];*  *values[i]=values[j];*  *values[j]=temp;*  *}*  *}*  *}*  *for(i=0;i<size;i++) {*  *System.out.print(values[i]+" ");*  *}*  *}*  *}* |
| 1. Read a character from the user and find the ASCII code of that character? |
| *import java.util.Scanner;*  *public class Extra9 {*  *public static void main(String[] args) {*  *Scanner sc=new Scanner(System.in);*  *System.out.println("Enter a character : ");*  *char character=sc.next().charAt(0);*  *int ascii=character;*  *System.out.println("The ASCII code of "+character+ " is "+ascii);*  *}*  *}* |
| 1. Write a program to print the following pattern     A  A B A  A B C B A  A B C D C B A |
| *public class Pattern {*  *public static void main(String[] args) {*  *int alphabet=65;*  *for(int i=0;i<=3;i++) {*  *for(int j=3;j>=i;j--) {*  *System.out.print(" ");*  *}*  *for(int k=0;k<=i;k++) {*  *System.out.print((char) (alphabet+k));*  *}*  *for(int l=i-1;l>=0;l--) {*  *System.out.print((char) (alphabet+l));*  *}*  *System.out.println();*  *}*  *}*  *}* |
| 1. Read some numbers from the user and find the repeating numbers?   Eg:  Input : 2 9 4 6 9 4  Output : 9 4 |
| *import java.util.Scanner;*  *public class Repeating {*  *public static void main(String[] args) {*  *Scanner sc = new Scanner(System.in);*  *System.out.println("Enter a size :");*  *int size=sc.nextInt();*  *int i,j,count=0;*  *int[] numbers=new int[size];*  *System.out.println("Enter numbers :");*  *for(i=0;i<size;i++) {*  *numbers[i]=sc.nextInt();*  *}*  *System.out.println("Repeating numbers are : ");*  *for(i=0;i<size-1;i++) {*  *count=0;*  *if(numbers[i]!=-1) {*  *for(j=i+1;j<size;j++) {*  *if(numbers[i]==numbers[j]) {*  *numbers[j]=-1;*  *count++;*  *}*  *}*  *}*  *if(count>0) {*  *System.out.print(numbers[i]+" ");*  *}*  *}*  *}*  *}* |
| 1. Read a line of text from the user , Find the number of Alphabets, Digits and Special characters?   Eg,  Input : hello, Welcome to District B-13  Output :-  Number of Alphabets in the string is : 23  Number of Digits in the string is : 2  Number of Special characters in the string is : 7 |
| *import java.util.Scanner;*  *public class Numbers {*  *public static void main(String[] args) {*  *Scanner sc=new Scanner(System.in);*  *System.out.println("Type a line of text : ");*  *String str=sc.nextLine();*  *int alphabet=0;*  *int digit=0;*  *int space=0;*  *int other=0;*  *char[] ch=str.toCharArray();*  *for(int i=0;i<str.length();i++) {*  *if(Character.isLetter(ch[i])) {*  *alphabet++;*  *}*  *else if(Character.isDigit(ch[i])) {*  *digit++;*  *}*  *else if(Character.isSpaceChar(ch[i])) {*  *space++;*  *}*  *else {*  *other++;*  *}*  *}*  *int special=other+space;*  *System.out.println("Number of Alphabets in the string is : "+alphabet);*  *System.out.println("Number of Digits in the string is : "+digit);*  *System.out.println("Number of Special Characters in the string is : "+special);*  *}*  *}* |
| 1. Read random numbers from the user, find the maximum number in the list of numbers?    1. Use at least one function    2. The function should return a value to main function |
| *import java.util.Scanner;*  *public class MaxValue {*  *public static void main(String[] args) {*  *int result;*  *result= maximumNumber();*  *System.out.println("The maximums number is : "+result);*  *}*  *private static int maximumNumber() {*  *Scanner sc=new Scanner (System.in);*  *System.out.println("Enter size : ");*  *int size=sc.nextInt();*  *System.out.println("Enter numbers : ");*  *int[] array=new int[size];*  *for(int i=0;i<size;i++) {*  *array[i]=sc.nextInt();*  *}*  *int max=array[0];*  *for(int i=0;i<size;i++) {*  *if(max<array[i]) {*  *max=array[i];*  *}*  *}*  *return max;*  *}*  *}* |
| 1. Read a random number (n) from the user and Generate nth Fibonacci    1. Must use Recursion |
| *import java.util.Scanner;*  *public class Fibonacci {*  *public static void main(String[] args) {*  *Scanner sc=new Scanner(System.in);*  *System.out.println("Enter a number : ");*  *int n=sc.nextInt();*  *if(n<0) {*  *System.out.println("Enter a positive number");*  *}else {*  *System.out.println("Fibonacci value of "+n+" is "+fib(n));*  *}*  *}*    *public static int fib(int n) {*  *if(n<=1)*  *return n;*  *else*  *return fib(n-1)+fib(n-2);*  *}*  *}* |
| 1. Write a program to print following pattern   \* \*  \* \* \* \*  \* \* \* \* \* \*  \* \* \* \* \* \* \* \*  \* \* \* \* \* \* \* \* \* \*  \* \* \* \* \* \* \* \* \* \* \* \*  \* \* \* \* \* \* \* \* \* \* \* \* \* \*  \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \*  \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* \* |
| *public class Star {*  *public static void main(String[] args) {*  *int space=18;*  *for(int i=1;i<=10;i++) {*  *for(int j=1;j<=i;j++) {*  *System.out.print("\*");*  *}*  *for(int k=1;k<=space;k++) {*  *System.out.print(" ");*  *}*  *for(int p=1;p<=i;p++) {*  *System.out.print("\*");*  *}*  *System.out.println();*  *space=space-2;*  *}*  *}*  *}* |
| 1. It's your first day at school. Your teacher asked the students to meet every other student in the class and to introduce themselves. The teacher asked them to do handshakes when they meet each other.     If there are n number of students in the class then find the total number of handshakes made by the students.  Program to find the maximum number of handshakes is discussed here. Given a positive integer n, find out the total number of handshakes possible.  Eg,  Input : 15 // Total Number of students  Output :105 //Maximum Number of Handshakes |
| *import java.util.Scanner;*  *public class Extra16 {*  *public static void main(String[] args) {*  *Scanner sc=new Scanner(System.in);*  *System.out.println("Enter the total number of students :");*  *int total=sc.nextInt();*  *int sum=0;*  *for(int i=1;i<total;i++) {*  *sum=sum+i;*  *}*  *System.out.println("Maximum number of handshakes is : "+sum);*  *}*  *}* |
| 1. Read two numbers from the user and swap those two numbers using Pointer. |
| *#include <stdio.h>*  *#include <stdlib.h>*  *int main(void) {*  *int num1,num2,\*ptr\_num1,\*ptr\_num2,temp;*  *setbuf(stdout,NULL);*  *printf("Enter number 1 : ");*  *scanf("%d",&num1);*  *printf("Enter number 2 : ");*  *scanf("%d",&num2);*  *ptr\_num1=&num1;*  *ptr\_num2=&num2;*  *temp=\*ptr\_num2;*  *\*ptr\_num2=\*ptr\_num1;*  *\*ptr\_num1=temp;*  *printf("Numbers after swapping : \n");*  *printf("Number1 : %d \nNumber2 : %d",num1,num2);*  *return EXIT\_SUCCESS;*  *}* |
| 1. Convert the lowercase characters in a word into uppercase   Eg,  Input : Hello  Output : HELLO |
| *import java.util.Scanner;*  *public class Extra18 {*  *public static void main(String[] args) {*  *Scanner sc=new Scanner(System.in);*  *System.out.println("Enter a word : ");*  *String word=sc.next();*  *System.out.println("Word in upper case : ");*  *System.out.println(word.toUpperCase());*  *}*  *}* |
| 1. Write a program to calculate the charge for parcel:   If the weight of the parcel is less than 500gm or equal to 500gm then the parcel charge will be Rs. 200, Otherwise there is an additional charge of Rs.170 per each extra 500gm |
| *import java.util.Scanner;*  *public class Extra19 {*  *public static void main(String[] args) {*  *Scanner sc=new Scanner(System.in);*  *System.out.println("Enter the parcel weight in grams : ");*  *float weight=sc.nextFloat();*  *if(weight<=500) {*  *System.out.println("Parcel charge is : 200 ");*  *}else {*  *System.out.println("Parcel charge is : ");*  *System.out.println(200+( weight-500)\*0.34);*  *}*  *}*  *}* |
| 1. Write a program to perform the following calculation:    1. Matrix addition    2. Matrix multiplication    3. Matrix subtraction    4. Matrix transpose  * Program should be a menu driven program. * Program should have Functions with arguments and Return Value.   + List Functions:     - matrix\_addition()     - matrix\_multiplication()     - matrix\_subtraction()     - matrix\_transpose()     - exit() * Do not exit the program until the user enters the input to exit the program. |
| *Code of the program & screenshot of the output.*  *import java.util.Scanner;*    *public class matrix\_operations {*    *public static void main(String[] args) {*    *int choice, rows, cols, rows1, rows2, cols1, cols2;*  *int matrix1[][] = new int[30][30];*  *int matrix2[][] = new int[30][30];*  *int resultMatrix[][] = new int[70][70];*    *Scanner scan = new Scanner(System.in);*    *do {*  *System.out.print("1 . Matrix Addition\n");*  *System.out.print("2 . Matrix Multiplication\n");*  *System.out.print("3 . Matrix subtraction\n");*  *System.out.print("4 . Matrix Transpose\n");*  *System.out.print("5 . Exit\n");*  *System.out.print("Enter you choice : ");*    *choice = scan.nextInt();*    *switch (choice) {*  *case 1:*  *System.out.print("\nEnter number of rows : ");*  *rows = scan.nextInt();*    *System.out.print("Enter number of columns : ");*  *cols = scan.nextInt();*    *System.out.print("\nEnter values into first Matrix : \n");*  *matrix1 = readMatrix(rows, cols);*    *System.out.print("Enter values into second Matrix : \n");*  *matrix2 = readMatrix(rows, cols);*    *resultMatrix = matrixAddition(matrix1, matrix2, rows, cols);*    *System.out.print("\nSum of Entered Matrices : \n\n");*  *displayMatrix(resultMatrix, rows, cols);*  *break;*    *case 2:*  *System.out.print("\nEnter number of rows of Matrix 1 : ");*  *rows1 = scan.nextInt();*    *System.out.print("Enter number of columns of Matrix 1 : ");*  *cols1 = scan.nextInt();*    *System.out.print("Enter number of rows of Matrix 2 : ");*  *rows2 = scan.nextInt();*    *System.out.print("Enter number of columns of Matrix 2 : ");*  *cols2 = scan.nextInt();*    *if (rows1 != cols2) {*  *System.out.print("\n\nMultiplication not possible...Try again\n\n");*  *} else {*  *System.out.print("\nEnter values into Matrix 1 : \n");*  *matrix1 = readMatrix(rows1, cols1);*    *System.out.print("Enter values into Matrix 2 : \n");*  *matrix2 = readMatrix(rows2, cols2);*    *System.out.print("Result Matrix of multiplication : \n\n");*  *resultMatrix = matrixMultiplication(matrix1, matrix2, rows1, cols1, rows2, cols2);*  *displayMatrix(resultMatrix, cols2, rows1);*  *}*    *break;*    *case 3:*  *System.out.print("\nEnter number of rows : ");*  *rows = scan.nextInt();*    *System.out.print("\nEnter number of columns : ");*  *cols = scan.nextInt();*    *System.out.print("\nEnter values into first Matrix : \n");*  *matrix1 = readMatrix(rows, cols);*    *System.out.print("\nEnter values into second Matrix : \n");*  *matrix2 = readMatrix(rows, cols);*    *resultMatrix = matrixSubstraction(matrix1, matrix2, rows, cols);*  *System.out.print("\nSubstract result of Entered Matrices : \n\n");*    *displayMatrix(resultMatrix, rows, cols);*  *break;*    *case 4:*  *System.out.print("\nEnter number of rows : ");*  *rows = scan.nextInt();*    *System.out.print("\nEnter number of columns : ");*  *cols = scan.nextInt();*    *System.out.print("\nEnter values of Matrix : \n");*  *matrix1 = readMatrix(rows, cols);*  *resultMatrix = transposeMatrix(matrix1, rows, cols);*    *System.out.print("\nTranspose matrix of Entered Matrix : \n\n");*  *displayMatrix(resultMatrix, rows, cols);*  *break;*    *case 5:*  *System.out.print("Program exited");*  *System.exit(0);*  *break;*  *default:*  *System.out.print("\nInvalid Entry...Try again\n\n");*  *break;*  *}*    *} while (choice != 5);*    *}*    *private static int[][] transposeMatrix(int[][] matrix, int rows, int cols) {*  *int resultMatrix[][] = new int[70][70];*  *for (int i = 0; i < cols; i++) {*  *for (int j = 0; j < rows; j++) {*  *resultMatrix[i][j] = matrix[j][i];*  *}*  *}*  *return resultMatrix;*  *}*    *static int[][] matrixSubstraction(int[][] matrix1, int[][] matrix2, int rows, int cols) {*    *int resultMatrix[][] = new int[70][70];*    *for (int i = 0; i < rows; i++) {*  *for (int j = 0; j < cols; j++) {*  *resultMatrix[i][j] = matrix1[i][j] - matrix2[i][j];*  *}*  *}*  *return resultMatrix;*    *}*    *static int[][] matrixMultiplication(int[][] matrix1, int[][] matrix2, int rows1, int cols1, int rows2, int cols2) {*    *int i, j, k;*    *int resultMatrix[][] = new int[50][50];*    *for (i = 0; i < rows1; i++) {*  *for (j = 0; j < cols2; j++) {*  *resultMatrix[i][j] = 0;*  *for (k = 0; k < rows2; k++) {*  *resultMatrix[i][j] += matrix1[i][k] \* matrix2[k][j];*  *}*  *}*  *}*    *return resultMatrix;*  *}*    *static int[][] readMatrix(int rows, int cols) {*    *Scanner scan = new Scanner(System.in);*  *int[][] matrix = new int[30][30];*    *for (int i = 0; i < rows; i++) {*  *for (int j = 0; j < cols; j++) {*  *matrix[i][j] = scan.nextInt();*  *}*  *}*    *return matrix;*  *}*    *static int[][] matrixAddition(int[][] matrix1, int[][] matrix2, int rows, int cols) {*  *int resultMatrix[][] = new int[70][70];*    *for (int i = 0; i < rows; i++) {*  *for (int j = 0; j < cols; j++) {*  *resultMatrix[i][j] = matrix1[i][j] + matrix2[i][j];*  *}*  *}*    *return resultMatrix;*  *}*    *static void displayMatrix(int[][] matrix, int rows, int cols) {*  *for (int i = 0; i < rows; i++) {*  *for (int j = 0; j < cols; j++) {*  *System.out.print(matrix[i][j] + " ");*  *}*  *System.out.println();*  *}*  *System.out.println();*  *}*  *}* |