MUHAMMAD **MUJTABA** SP22-BSE-036

PROGRAMMING FUNDAMENTAL

SIR **RIZWAN** RASHID

2ND SEMESTER

CUI ISB

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**LAB** ASSIGNMENT 3

LAB 7: CODE

import java.util.Scanner;  
  
public class Lab7Recursion {  
  
 *// ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
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 // ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++* static void question9(){  
 Scanner input = new Scanner(System.in);  
 System.out.print("Enter a real number: ");  
 int num = input.nextInt();  
 System.out.print("Enter power: ");  
 int power = input.nextInt();  
 System.out.println("Result is " + power (num, power));  
 }  
 public static int power(int n, int p){  
 if ( p == 0) return 1;  
 else return n \* power(n , p-1);  
 }  
  
 *// ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
 // ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
 // ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
 // ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++* static void question10(){  
 Scanner input = new Scanner(System.in);  
 System.out.print("Enter non negative number to print pattern 1: ");  
 int n1 = input.nextInt();  
 printPattern1(n1, n1+1);  
 System.out.println();  
 System.out.print("Enter non negative number to print pattern 2: ");  
 int n2 = input.nextInt();  
 printPattern2(n2, n2+1);  
 System.out.println();  
 System.out.print("Enter non negative number to print pattern 3: ");  
 int n3 = input.nextInt();  
 printPattern3(n3, n3+1);  
 System.out.println();  
 System.out.print("Enter non negative number to print pattern 4: ");  
 int n4 = input.nextInt();  
 printPattern4(n4);  
*//Q10PartA* System.out.println();  
 System.out.println("Question 10 Part A");  
 System.out.println("Enter sequence of integers: ");  
 int seq = input.nextInt();  
 System.out.println("Reverse order is ");  
 reverse(seq);  
*//Q10PartB* System.out.println();  
 System.out.println("Question 10 Part B");  
 System.out.println("Enter integer number to find binary: ");  
 int num = input.nextInt();  
 System.out.println("Binary number of " + num + " is " + binary(num));  
*//Q10PartC* System.out.println();  
 System.out.println("Question 10 Part C");  
 int array[] = {5, 10, 9, 8, 1};  
 System.out.println("Enter integer to find index in Array ");  
 int x = input.nextInt();  
 int low = 0;  
 int binsearch = binarySearch(array, low, array.length - 1, x);  
 if (binsearch == -1) System.out.println(x + " is not present");  
 else System.out.println("Index of " + x + " is " + binsearch);  
 }  
 *//Pattern1* public static void printPattern1(int n, int x){  
 if(n>=1){  
 printSpace1(n);  
 printStar1(n, x);  
 System.out.println();  
 printPattern1(n-1, x);}  
 }  
 public static void printSpace1(int n){  
 if ((n-1)>=1){System.out.print(" ");printSpace1(n-1);}  
 }  
 public static void printStar1(int n, int x){  
 if(x-n>=1){System.out.print("\* ");printStar1(n+1, x);}  
 }  
  
  
 *//Pattern2* public static void printPattern2(int n, int x){  
 if(n>=1){  
 printSpace2(n);  
 printStar2(n, x);  
 System.out.println();  
 printPattern2(n-1, x);}  
 }  
 public static void printSpace2(int n){if (n>=1){System.out.print(" ");printSpace2(n-1);}}  
 public static void printStar2(int n, int x){if(x-n>=1){System.out.print("\*"); printStar2(n+1, x);}}  
  
 *//Pattern3* public static void printPattern3(int n, int x){  
 if (n>0){printStar3(n, x);  
 System.out.println();  
 printPattern3(n-1, x);}  
 }  
 public static void printStar3(int n, int x){  
 if (x-n>=1){System.out.print("\*");printStar3(n+1, x);}  
 }  
 *//Pattern 4* public static void printPattern4(int n){  
 if (n>0){  
 printStar4(n);  
 System.out.println();  
 printPattern4(n-1);}  
 }  
 public static void printStar4(int n){  
 if (n>0){System.out.print("\*");printStar4(n-1);}  
 }  
  
 *//Method Part A reverse* public static void reverse(int seq){  
 if (seq < 10){System.out.println(seq);return; }  
 else {System.out.print(seq % 10);reverse(seq / 10);}}  
  
 *//Method Part B Binary* public static int binary(int num){  
 if (num == 0) return 0;  
 else return (num % 2 + 10 \* binary(num / 2));  
 }  
 *//Method Binary Search* public static int binarySearch(int array[], int low, int leng, int x){  
 if (leng >= low){  
 int mid = low + (leng - 1) / 2;  
 if (array[mid] == x) return mid;  
 if (array[mid] > x) return binarySearch(array, low, mid - 1, x); *//present in left side* return binarySearch(array, mid + 1, leng, x); *//present in right side* }  
 return -1;  
 }  
 *// ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
 // ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
 // ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++  
 // ++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++* public static void main(String[] args){  
 question9();  
 question10();  
 }  
}

LAB 8 : CODE

import java.io.\*; import java.util.\*;  
  
public class Lab8 {  
  
 public void rateFood(){  
 int[] totalRatings = new int[10];  
 Scanner s = new Scanner(System.in);  
 System.out.print("Rate the quality of food in your cafe (1-10).");  
 for(int n = 0; n < 10; n++){  
 System.out.print("Response . " + n + ": ");  
 int rating = s.nextInt();  
 totalRatings[n] = rating;  
 System.out.print("\n");  
 }  
 int summary = 0;  
 for(int n = 0; n < 10; n++){ summary += totalRatings[n]; }  
 summary /= 10;  
 System.out.print("Average food quality: ");  
 System.out.print((summary > 5) ? "tastes good -)" : "awful :-(");  
 }  
  
 public void modify(int[] arr){  
 for(int i = 0; i < arr.length(); i++) arr[i] \*= 3;  
 }  
  
 public void reverseCopy(int[] from, int[] to){  
 if(from.length() != to.length()) return ;  
 for(int i = 0; i < from.length(); i++){  
 to[to.length() - i] = from[i];  
 }  
 }  
  
 public static void main(String[] args){  
 rateFood();  
 int[] arr = new int[10]; modify(arr);  
 int[] A = {1,2,3}; int[] B = new int[3];  
 reverseCopy(A, B);  
 System.out.print("" + B[0] + " " + B[1] + " " + B[2]);  
 }  
}

LAB 10: CODE

QUESTION . 1

class Lab10\_Question1 {  
 public static void main(String[] args){  
 Scanner input = new Scanner(System.in);  
 int[][] arr = new int[3][4];  
 for (int i = 0; i < 3; i++)  
 for (int j = 0; j < 4; j++){  
 System.out.println("Enter element at " + i + "X" + j + " in Matrix");  
 arr[i][j] = input.nextInt();}  
 System.out.println("Matrix is ");  
 for(int i=0; i < arr.length; i++) {  
 for(int j=0; j < arr[i].length; j++)  
 System.out.print(arr[i][j] + " ");  
 System.out.println(); }  
 int row1 = rowPSum(arr, 0);  
 int row2 = rowPSum(arr, 1);  
 int row3 = rowPSum(arr, 2);  
 int col1 = colPSum(arr, 0);  
 int col2 = colPSum(arr, 1);  
 int col3 = colPSum(arr, 2);  
 int col4 = colPSum(arr, 3);  
 if ((row1>row2) && (row1>row3))  
 System.out.println("Sum of Prime numbers in Row 1 is Max");  
 else if ((row2>row1) && (row2>row3))  
 System.out.println("Sum of Prime numbers in Row 2 is Max");  
 else System.out.println("Sum of Prime numbers in Row 3 is Max");  
 if ((col1>col2) && (col1>col3) && (col1>col4))  
 System.out.println("Sum of Prime numbers in Column 1 is Max");  
 else if ((col2>col1) && (col2>col3) && (col2>col4))  
 System.out.println("Sum of Prime numbers in Column 2 is Max");  
 else if ((col3>col1) && (col3>col2) && (col3>col4))  
 System.out.println("Sum of Prime numbers in Column 3 is Max");  
 else System.out.println("Sum of Prime numbers in Column 4 is Max");  
 }public static int rowPSum(int arr[][], int row){  
 int sum = 0;  
 for (int i = 0; i < 4; i++) {  
 for(int j = 2 ; j <= arr[row][i]/2; j++){  
 if (arr[row][i] % j == 0) break;  
 else sum = sum + arr[row][i]; }  
 }  
 return sum;  
 }  
 public static int colPSum(int arr[][], int col){  
 int sum = 0;  
 for (int i = 0; i < 3; i++) {  
 for(int j = 2; j <= arr[i][col]/2; j++){  
 if(arr[i][col] % j == 0) break;  
 else sum = sum + arr[i][col]; }  
 }  
 return sum;  
 }  
}

QUESTION . 2

import java.util.\*;  
public class Lab10\_Question2{  
 public static void main(String[]args){  
 Scanner input=new Scanner(System.in);  
 int[][] array= new int [3] [4];  
 int max=0;int row=0;int col=0;int max2=0;  
 for (int rows=0; rows<array.length;rows++){  
 int count=0;  
 System.out.println("Enter elements of row"+(rows+1));  
 for (int cols=0; cols< array[0].length; cols++){  
 array [rows][cols]=input.nextInt();  
 if (array[rows][cols]%2==0) count++;  
 if(count>max){max=count; row=rows+1;}  
 }  
 }  
 for (int cols=0; cols<array[0].length;cols++){  
 int count2=0;  
 for (int rows=0; rows< array.length; rows++){  
 if (array[rows][cols]%2==0) count2++;  
 if(count2>max2){max2=count2;col=cols+1;}}  
 }  
 print2D(array);  
 if (max>max2)System.out.println("Row having max prime no is: " + row);  
 else System.out.println("col having max prime no is: " + col);  
 }  
 public static void print2D(int mat[][]) {  
 for (int[] row : mat)  
 System.out.println(Arrays.toString(row));  
 }  
}

QUESTION . 3

import java.util.\*;  
  
public class Lab10\_Question3 {  
  
 public static void main(String args[]) {  
 int row1, col1, row2, col2;  
 Scanner s = new Scanner(System.in);  
 *// Input dimensions of First Matrix: A* System.out.print("Enter number of rows in first matrix: ");  
 row1 = s.nextInt();  
 System.out.print("Enter number of columns in first matrix: ");  
 col1 = s.nextInt();  
 *// Input dimensions of second matrix: B* System.out.print("Enter number of rows in second matrix: ");  
 row2 = s.nextInt();  
 System.out.print("Enter number of columns in second matrix: ");  
 col2 = s.nextInt();  
 *// Requirement check for matrix multiplication* if (col1 != row2) {  
 System.out.println("Matrix multiplication is not possible");  
 return;  
 }  
 int a[][] = new int[row1][col1];  
 int b[][] = new int[row2][col2];  
 int c[][] = new int[row1][col2];  
 *// Input the values of matrices* System.out.println("\nEnter values for matrix A : ");  
 for (int i = 0; i < row1; i++) {  
 for (int j = 0; j < col1; j++) a[i][j] = s.nextInt();  
 }  
 System.out.println("\nEnter values for matrix B : ");  
 for (int i = 0; i < row2; i++) {  
 for (int j = 0; j < col2; j++) b[i][j] = s.nextInt();  
 }  
 *// Perform matrix multiplication  
 // Using for loop* System.out.println("\nMatrix multiplication is : ");  
 for (int i = 0; i < row1; i++) {  
 for (int j = 0; j < col2; j++) {  
 *// Initialize the element C(i,j) with zero* c[i][j] = 0;  
 *// Dot product calculation* for (int k = 0; k < col1; k++) {  
 c[i][j] += a[i][k] \* b[k][j];  
 }  
 System.out.print(c[i][j] + " ");  
 }  
 System.out.println();  
 }  
 }  
}