CSA0978 Programming in Java for Web Applications Development

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1. Write a program to print Right Triangle Star Pattern

Sample Input:: n = 5

Output:

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

# PROGRAM:

import java.util.Scanner;

class righttriangle {

public static void main(String[] args) {

Scanner sc = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int n = sc.nextInt();

for(int i=1; i<=n; i++) {

for(int j=1; j<=(n-i); j++) {

System.out.print(" ");

}

for(int k=1; k<=i; k++) {

System.out.print("\* ");

}

System.out.println();

}

}

}

2. Write a program to print the below pattern?

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

# PROGRAM:

import java.util.\*;

class pattern {

public static void main(String[] args) {

int rows = 5;

int coef = 1;

for(int i = 0; i < rows; i++) {

for(int space = 1; space < rows - i; space++) {

System.out.print(" ");

}

for(int j = 0; j <= i; j++) {

if(j == 0 || i == 0) {

coef = 1;

} else {

coef = coef \* (i - j + 1) / j;

}

System.out.print(coef + " ");

}

System.out.println();

}

}

}

3. Write a program to print rectangle symbol pattern. Get the symbol as input from user

# PROGRAM:

import java.util.Scanner;

class rectangle {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the symbol to use for the pattern: ");

char symbol = input.next().charAt(0);

System.out.print("Enter the number of rows: ");

int rows = input.nextInt();

System.out.print("Enter the number of columns: ");

int columns = input.nextInt();

for (int i = 1; i <= rows; i++) {

for (int j = 1; j <= columns; j++) {

if (i == 1 || i == rows || j == 1 || j == columns) {

System.out.print(symbol + " ");

} else {

System.out.print(" ");

}

}

System.out.println();

}

}

}

4. Write a program to print the following pattern

Sample Input:

Enter the number to be printed: 1

Max Number of time printed: 3

1

11

111

11

1

# PROGRAM:

import java.util.Scanner;

class invertedfullpyramid{

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int numRows = input.nextInt();

for (int i = numRows; i >= 1; i--) {

for (int j = numRows - i; j >= 1; j--) {

System.out.print(" ");

}

for (int k = i \* 2 - 1; k >= 1; k--) {

System.out.print("\*");

}

System.out.println();

}

}

}

5. Write a program to print the Inverted Full Pyramid pattern?

# PROGRAM:

import java.util.Scanner;

class invertedfullpyramid{

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int numRows = input.nextInt();

for (int i = numRows; i >= 1; i--) {

for (int j = numRows - i; j >= 1; j--) {

System.out.print(" ");

}

for (int k = i \* 2 - 1; k >= 1; k--) {

System.out.print("\*");

}

System.out.println();

}

}

}

6. Write a program to print the following pattern

Sample Input:

Enter the Character to be printed: %

Max Number of time printed: 3

%

% %

% % %

# PROGRAM:

import java.util.Scanner;

class characterpattern {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the Character to be printed: ");

char c = input.next().charAt(0);

System.out.print("Max Number of times printed: ");

int maxPrints = input.nextInt();

for (int i = 1; i <= maxPrints; i++) {

for (int j = 1; j <= i; j++) {

System.out.print(c + " ");

}

System.out.println();

}

}

}

7. Write a program to print hollow square symbol pattern?

# PROGRAM:

import java.util.Scanner;

class hollowsquare {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the size of the square: ");

int size = input.nextInt();

for (int i = 1; i <= size; i++) {

for (int j = 1; j <= size; j++) {

if (i == 1 || i == size || j == 1 || j == size) {

System.out.print("\*");

} else {

System.out.print(" ");

}

}

System.out.println();

}

}

}

8. Write a program to print the below pattern

1

2 2

3 3 3

4 4 4 4

# PROGRAM:

import java.util.Scanner;

class numberpatternbelow {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int numRows = input.nextInt();

for (int i = 1; i <= numRows; i++) {

for (int j = 1; j <= i; j++) {

System.out.print(i + " ");

}

System.out.println();

}

}

}

9. Write a program to print the below pattern

1

4 9

16 25 36

49 64 81 100

PROGRAM:

import java.util.Scanner;

class numbernatternnine {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int numRows = input.nextInt();

int count = 1;

for (int i = 1; i <= numRows; i++) {

for (int j = 1; j <= i; j++) {

System.out.print(count \* count + " ");

count++;

}

System.out.println();

}

}

}

10. Write a program to print the below pattern

1

2 2

3 3 3

4 4 4 4

3 3 3

2 2

1

# PROGRAM:

import java.util.Scanner;

class numbernatternnine {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int numRows = input.nextInt();

int count = 1;

for (int i = 1; i <= numRows; i++) {

for (int j = 1; j <= i; j++) {

System.out.print(count \* count + " ");

count++;

}

System.out.println();

}

}

}

11. Write a program to print hollow Square Dollar pattern?

# PROGRAM:

import java.util.Scanner;

class hollowsquaredollarpattern {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int numRows = input.nextInt();

for (int i = 1; i <= numRows; i++) {

System.out.print("$ ");

}

System.out.println();

for (int i = 2; i <= numRows - 1; i++) {

System.out.print("$ ");

for (int j = 2; j <= numRows - 1; j++) {

System.out.print(" ");

}

System.out.print("$ ");

System.out.println();

}

if (numRows > 1) {

for (int i = 1; i <= numRows; i++) {

System.out.print("$ ");

}

System.out.println();

}

}

}

12. Write a program to print inverted pyramid pattern.

Input: no of rows: 3

Output

\*\*\*\*\*

\*\*\*

\*

# PROGRAM:

import java.util.Scanner;

class invertedpyramid {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int rows = scanner.nextInt();

int count = 0;

for (int i = rows; i >= 1; i--) {

for (int j = 1; j <= count; j++) {

System.out.print(" ");

}

for (int j = 1; j <= i \* 2 - 1; j++) {

System.out.print("\*");

}

System.out.println();

count++;

}

scanner.close();

}

}

13. Write a program for matrix multiplication?

Sample Input:

Mat1 = 1 2

5 3

Mat2 = 2 3

4 1

Sample Output:

Mat Sum = 10 5

22 18

# PROGRAM:

import java.util.Scanner;

class matrixmultiplication {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of rows in matrix1: ");

int rows1 = scanner.nextInt();

System.out.print("Enter the number of columns in matrix1: ");

int cols1 = scanner.nextInt();

int[][] matrix1 = new int[rows1][cols1];

System.out.println("Enter the values for matrix1:");

for (int i = 0; i < rows1; i++) {

for (int j = 0; j < cols1; j++) {

matrix1[i][j] = scanner.nextInt();

}

}

System.out.print("Enter the number of rows in matrix2: ");

int rows2 = scanner.nextInt();

System.out.print("Enter the number of columns in matrix2: ");

int cols2 = scanner.nextInt();

int[][] matrix2 = new int[rows2][cols2];

System.out.println("Enter the values for matrix2:");

for (int i = 0; i < rows2; i++) {

for (int j = 0; j < cols2; j++) {

matrix2[i][j] = scanner.nextInt();

}

}

if (cols1 != rows2) {

System.out.println("Error: The number of columns in matrix1 must be equal to the number of rows in matrix2.");

} else {

int[][] productMatrix = new int[rows1][cols2];

for (int i = 0; i < rows1; i++) {

for (int j = 0; j < cols2; j++) {

int sum = 0;

for (int k = 0; k < cols1; k++) {

sum += matrix1[i][k] \* matrix2[k][j];

}

productMatrix[i][j] = sum;

}

}

System.out.println("Product of the two matrices is:");

for (int i = 0; i < rows1; i++) {

for (int j = 0; j < cols2; j++) {

System.out.print(productMatrix[i][j] + " ");

System.out.println();

}

}

scanner.close();

}

}

}

14. Write a program for matrix addition?

Sample Input:

Mat1 = 1 2

5 3

Mat2 = 2 3

4 1

Sample Output:

Mat Sum = 3 5

9 4

# PROGRAM:

import java.util.Scanner;

class matrixaddition {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the number of rows: ");

int rows = input.nextInt();

System.out.print("Enter the number of columns: ");

int cols = input.nextInt();

int[][] matrix1 = new int[rows][cols];

int[][] matrix2 = new int[rows][cols];

int[][] sum = new int[rows][cols];

System.out.println("Enter the elements of matrix1:");

for (int i = 0; i < rows; i++) {

for (int j = 0; j < cols; j++) {

matrix1[i][j] = input.nextInt();

}

}

System.out.println("Enter the elements of matrix2:");

for (int i = 0; i < rows; i++) {

for (int j = 0; j < cols; j++) {

matrix2[i][j] = input.nextInt();

}

}

for (int i = 0; i < rows; i++) {

for (int j = 0; j < cols; j++) {

sum[i][j] = matrix1[i][j] + matrix2[i][j];

}

}

System.out.println("Matrix Sum:");

for (int[] row : sum) {

for (int col : row) {

System.out.print(col + " ");

}

System.out.println();

}

}

}

15. Find the Mean, Median, Mode of the array of numbers?

Sample Input;:

Array of elements = {16, 18, 27, 16, 23, 21, 19}

Sample Output:

Mean = 20

Median = 19

Mode = 161

# PROGRAM:

import java.util.\*;

class meanmedianmode {

public static void main(String[] args) {

Scanner input = new Scanner(System.in);

System.out.print("Enter the size of the array: ");

int n = input.nextInt();

int[] arr = new int[n];

int sum = 0;

System.out.println("Enter the elements of the array:");

for(int i=0; i<n; i++) {

arr[i] = input.nextInt();

sum += arr[i];

}

double mean = (double) sum / n;

System.out.println("Mean = " + mean);

Arrays.sort(arr);

double median;

if(n % 2 == 0) {

median = (double) (arr[(n/2) - 1] + arr[n/2]) / 2;

} else {

median = arr[n/2];

}

System.out.println("Median = " + median);

int mode = arr[0], maxCount = 0, count = 1;

for(int i=1; i<n; i++) {

if(arr[i] == arr[i-1]) {

count++;

} else {

if(count > maxCount) {

maxCount = count;

mode = arr[i-1];

}

count = 1;

}

}

if(count > maxCount) {

mode = arr[n-1];

}

System.out.println("Mode = " + mode);

}

}