1. Write a program to reverse a word using loop? (Not to use inbuilt functions)

Sample Input:

String: TEMPLE

Sample Output:

Reverse String: ELPMET

ANSWER:

public class ReverseWord

{

public static void main(String[] args)

{

String inputString = "TEMPLE";

String outputString = reverseWord(inputString);

System.out.println("Original String: " + inputString);

System.out.println("Reversed String: " + outputString);

}

private static String reverseWord(String inputStr)

{

char[] charArray = inputStr.toCharArray();

int start = 0;

int end = charArray.length - 1;

while (start < end)

{

char temp = charArray[start];

charArray[start] = charArray[end];

charArray[end] = temp;

start++;

end--;

}

return new String(charArray);

}

}

2.Write a program to convent the given string to integer?

Sample Input:

String: 1234

Sample Output:

Out put String: 1234

ANSWER :

public class StringToIntegerConverter

{

public static void main(String[] args)

{

String inputString = "1234";

try {

int outputInteger = Integer.parseInt(inputString);

System.out.println("Output Integer: " + outputInteger);

} catch (NumberFormatException e) {

System.out.println("Invalid input. Please provide a valid numeric string.");

}

}

}

3.Write a program to check the entered user name is valid or not. Get both the inputs from the user.

ANSWER:

public class StringToIntegerConverter

{

public static void main(String[] args)

{

String inputString = "1234";

try {

int outputInteger = Integer.parseInt(inputString);

System.out.println("Output Integer: " + outputInteger);

}

catch (NumberFormatException e) {

System.out.println("Invalid input. Please provide a valid numeric string.");

}

}

}

4.Write a program that would sort a list of names in alphabetical order Ascending or Descending, choice get from the user?

Sample Input:

Banana

Carrot

Radish

Apple

Jack

Order(A/D) : A

Sample Output:

Apple

Banana

Carrot

Jack

Radish

ANSWER:

import java.util.Scanner;

public class SortNames {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

ArrayList<String> namesList = new ArrayList<>();

System.out.println("Enter names (Enter an empty string to finish):");

String name;

do {

System.out.print("Name: ");

name = scanner.nextLine();

if (!name.isEmpty()) {

namesList.add(name);

}

} while (!name.isEmpty());

System.out.print("Enter sorting order (A for Ascending, D for Descending): ");

char sortOrder = scanner.next().charAt(0);

sortNames(namesList, sortOrder);

System.out.println("Sorted Names:");

for (String sortedName : namesList) {

System.out.println(sortedName);

}

scanner.close();

}

private static void sortNames(ArrayList<String> names, char sortOrder) {

if (sortOrder == 'A' || sortOrder == 'a') {

Collections.sort(names);

} else if (sortOrder == 'D' || sortOrder == 'd') {

Collections.sort(names, Collections.reverseOrder());

}

}

}

5.Write a program to print the special characters separately and print number of Special characters in the line?

ANSWER:

import java.util.Scanner;

public class SpecialCharacterCounter {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a line of text: ");

String inputLine = scanner.nextLine();

System.out.println("Special characters in the line:");

int specialCharacterCount = 0;

for (char character : inputLine.toCharArray()) {

if (isSpecialCharacter(character)) {

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

specialCharacterCount++;

}

}

System.out.println("\nNumber of special characters: " + specialCharacterCount);

scanner.close();

}

private static boolean isSpecialCharacter(char ch) {

return !Character.isLetterOrDigit(ch) && !Character.isWhitespace(ch);

}

}

6,Write a program to print the number of vowels in the given statement?

Sample Input:

Saveetha School of Engineering

Sample Output:

Number o vowels = 12

ANSWER:

import java.util.Scanner;

public class VowelCounter {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a statement: ");

String inputStatement = scanner.nextLine();

int vowelCount = countVowels(inputStatement);

System.out.println("Number of vowels: " + vowelCount);

scanner.close();

}

private static int countVowels(String inputStr) {

int count = 0;

for (char character : inputStr.toLowerCase().toCharArray()) {

if (isVowel(character)) {

count++;

}

}

return count;

}

private static boolean isVowel(char character) {

return "aeiou".indexOf(character) != -1;

}

}

7.Write a program to print consonants and vowels separately in the given word

Sample Input:

Given Word: Engineering

Sample Output:

Consonants: n g n r n g

Vowels: e i e ei

ANSWER:

import java.util.Scanner;

public class SeparateConsonantsAndVowels {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a word: ");

String inputWord = scanner.nextLine();

String consonants = getConsonants(inputWord);

String vowels = getVowels(inputWord);

System.out.println("Consonants: " + consonants);

System.out.println("Vowels: " + vowels);

scanner.close();}

private static String getConsonants(String inputStr) {

StringBuilder consonants = new StringBuilder();

for (char character : inputStr.toCharArray()) {

if (isConsonant(character)) {

consonants.append(character).append(" ");

}

}

return consonants.toString().trim();

}

private static String getVowels(String inputStr) {

StringBuilder vowels = new StringBuilder();

for (char character : inputStr.toCharArray()) {

if (isVowel(character)) {

vowels.append(character).append(" ");

}

}

return vowels.toString().trim();}

private static boolean isConsonant(char character) {

return Character.isLetter(character) && !isVowel(character);

}

private static boolean isVowel(char character) {

return "aeiouAEIOU".indexOf(character) != -1;

}

}

8.Write a program that finds whether a given character is present in a string or not. In case it is present it prints the index at which it is present. Do not use built-in find functions to search the character.

Sample Input:

Enter the string: I am a programmer

Enter the character to be searched: p

Sample Output:

P is found in string at index: 8

Note: Check for non available Character in the given statement as Hidden Test case.

ANSWER:

import java.util.Scanner;

public class CharacterSearch {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the string: ");

String inputString = scanner.nextLine();

System.out.print("Enter the character to be searched: ");

char searchChar = scanner.next().charAt(0);

findAndPrintIndex(inputString, searchChar);

scanner.close()

;}

private static void findAndPrintIndex(String inputStr, char searchChar) {

boolean found = false;

for (int i = 0; i < inputStr.length(); i++) {

if (inputStr.charAt(i) == searchChar) {

System.out.println(searchChar + " is found in string at index: " + i);

found = true;

break;

}

}

if (!found) {

System.out.println(searchChar + " is not present in the given string.");

}

}

}

9.Write a program to arrange the letters of the word alphabetically in reverse order

Sample Input:

Enter the word: MOSQUE

Sample Output:

Alphabetical Order: U S Q O M E

Test Case:

1. HYPOTHECATION
2. MATRICULATION
3. MANIPULATION

ANSWER:

import java.util.Scanner;

public class CharacterSearch {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the string: ");

String inputString = scanner.nextLine();

System.out.print("Enter the character to be searched: ");

char searchChar = scanner.next().charAt(0);

findAndPrintIndex(inputString, searchChar);

scanner.close();

}

private static void findAndPrintIndex(String inputStr, char searchChar) {

boolean found = false;

for (int i = 0; i < inputStr.length(); i++) {

if (inputStr.charAt(i) == searchChar) {

System.out.println(searchChar + " is found in string at index: " + i);

found = true;

break;

}

}

if (!found) {

System.out.println(searchChar + " is not present in the given string.");

}

}

}

10.Write a program that accepts a string from user and displays the same string after removing vowels from it.

Sample Input & Output:

Enter a string: we can play the game

The string without vowels is: w cn ply thgm

ANSWER:

import java.util.Scanner;

public class RemoveVowels {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a string: ");

String inputString = scanner.nextLine();

String withoutVowels = removeVowels(inputString);

System.out.println("The string without vowels is: " + withoutVowels);

scanner.close();

}

private static String removeVowels(String inputStr) {

StringBuilder result = new StringBuilder();

for (char character : inputStr.toCharArray()) {

if (!isVowel(character)) {

result.append(character);

}

}

return result.toString();

}

private static boolean isVowel(char character) {

return "aeiouAEIOU".indexOf(character) != -1;

}

}

11.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

ANSWER:

import java.util.Scanner;

public class MatrixMultiplication {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the dimensions of the first matrix:");

System.out.print("Rows: ");

int rows1 = scanner.nextInt();

System.out.print("Columns: ");

int cols1 = scanner.nextInt();

System.out.println("Enter the dimensions of the second matrix:");

System.out.print("Rows: ");

int rows2 = scanner.nextInt();

System.out.print("Columns: ");

int cols2 = scanner.nextInt();

if (cols1 != rows2) {

System.out.println("Matrix multiplication is not possible with the given dimensions.");

} else {

int[][] matrix1 = inputMatrix("Enter elements for the first matrix:", rows1, cols1, scanner);

int[][] matrix2 = inputMatrix("Enter elements for the second matrix:", rows2, cols2, scanner);

int[][] resultMatrix = multiplyMatrices(matrix1, matrix2);

System.out.println("Matrix Multiplication Result:");

displayMatrix(resultMatrix);

}

scanner.close();

}

private static int[][] inputMatrix(String message, int rows, int cols, Scanner scanner) {

System.out.println(message);

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

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

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

System.ut.print("Enter element at position (" + (i + 1) + ", " + (j + 1) + "): ");

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

}

}

return matrix;

}

private static int[][] multiplyMatrices(int[][] matrix1, int[][] matrix2) {

int rows1 = matrix1.length;

int cols1 = matrix1[0].length;

int cols2 = matrix2[0].length;

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

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

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

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

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

}

}

}

return resultMatrix;

}

private static void displayMatrix(int[][] matrix) {

for (int[] row : matrix) {

for (int element : row) {

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

}

System.out.println();

}

}

}

12.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

import java.util.Scanner;

ANSWER:

public class MatrixAddition {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the dimensions of the matrices:");

System.out.print("Rows: ");

int rows = scanner.nextInt();

System.out.print("Columns: ");

int[][] matrix1 = inputMatrix("Enter elements for the first matrix:", rows, cols, scanner);

int[][] matrix2 = inputMatrix("Enter elements for the second matrix:", rows, cols, scanner);

int[][] sumMatrix = addMatrices(matrix1, matrix2);

System.out.println("Matrix Addition Result:");

displayMatrix(sumMatrix);

scanner.close();

}

private static int[][] inputMatrix(String message, int rows, int cols, Scanner scanner) {

System.out.println(message);

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

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

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

System.out.print("Enter element at position (" + (i + 1) + ", " + (j + 1) + "): ");

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

}

}

return matrix;

}

private static int[][] addMatrices(int[][] matrix1, int[][] matrix2) {

int rows = matrix1.length;

int cols = matrix1[0].length;

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

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

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

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

}

}

return sumMatrix;

}

private static void displayMatrix(int[][] matrix) {

for (int[] row : matrix) {

for (int element : row) {

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

}

System.out.println();

}

}

}

13.Write a program for Merge two sorted arrays using Array list

Input: arr1[] = { 1, 3, 4, 5}, arr2[] = {2, 4, 6, 8}

Output: arr3[] = {1, 2, 3, 4, 4, 5, 6, 8}

ANSWER:

import java.util.ArrayList;

import java.util.Arrays;

import java.util.List;

public class MergeSortedArrays {

public static void main(String[] args) {

int[] arr1 = {1, 3, 4, 5};

int[] arr2 = {2, 4, 6, 8};

List<Integer> mergedList = mergeArrays(arr1, arr2);

Integer[] mergedArray = mergedList.toArray(new Integer[0]);

System.out.println("Merged Array: " + Arrays.toString(mergedArray));

}

private static List<Integer> mergeArrays(int[] arr1, int[] arr2) {

List<Integer> mergedList = new ArrayList<>();

int i = 0, j = 0;

while (i < arr1.length && j < arr2.length) {

if (arr1[i] < arr2[j]) {

mergedList.add(arr1[i]);

i++;

} else if (arr1[i] > arr2[j]) {

mergedList.add(arr2[j]);

j++;

} else {

mergedList.add(arr1[i]);

mergedList.add(arr2[j]);

i++;

j++;

}

}

while (i < arr1.length) {

mergedList.add(arr1[i]);

i++;

}

while (j < arr2.length) {

mergedList.add(arr2[j]);

j++;

}

return mergedList;

}

}

14.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 = 16

Test cases:

1. Array of elements = {26, 28, 37, 26, 33, 31, 29}

2. Array of elements = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, .19}

3. Array of elements = {0, 160, 180, 270, 160, 230, 210, 190, 0}

4. Array of elements = {200, 180, 180, 270, 160, 270, 270, 190, 200}

5. Array of elements = {100, 100, 100, 100, 100, 100, 100, 100, 100}

ANSWER:

import java.util.Arrays;

import java.util.HashMap;

import java.util.Map;

public class MeanMedianMode {

public static void main(String[] args) {

double[] array = {16, 18, 27, 16, 23, 21, 19};

double mean = calculateMean(array);

double median = calculateMedian(array);

double mode = calculateMode(array);

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

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

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

double[] testArray1 = {26, 28, 37, 26, 33, 31, 29};

double[] testArray2 = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, 0.19};

double[] testArray3 = {0, 160, 180, 270, 160, 230, 210, 190, 0};

double[] testArray4 = {200, 180, 180, 270, 160, 270, 270, 190, 200};

double[] testArray5 = {100, 100, 100, 100, 100, 100, 100, 100, 100};

System.out.println("\nTest Case 1:");

displayStatistics(testArray1);

System.out.println("\nTest Case 2:");

displayStatistics(testArray2);

System.out.println("\nTest Case 3:");

displayStatistics(testArray3);

System.out.println("\nTest Case 4:");

displayStatistics(testArray4);

System.out.println("\nTest Case 5:");

displayStatistics(testArray5);

}

private static double calculateMean(double[] array) {

double sum = 0;

for (double num : array) {

sum += num;

}

return sum / array.length;

}

private static double calculateMedian(double[] array)

{

Arrays.sort(array);

if (array.length % 2 == 0) {

int mid1 = array.length / 2 - 1;

int mid2 = array.length / 2;

return (array[mid1] + array[mid2]) / 2.0;

} else {

int mid = array.length / 2;

return array[mid];

}

}

pivate static double calculateMode(double[] array) {

Map<Double, Integer> frequencyMap = new HashMap<>();

for (double num : array) {

frequencyMap.put(num, frequencyMap.getOrDefault(num, 0) + 1);

}

double mode = 0;

int maxFrequency = 0;

for (Map.Entry<Double, Integer> entry : frequencyMap.entrySet()) {

if (entry.getValue() > maxFrequency) {

maxFrequency = entry.getValue();

mode = entry.getKey();

}

}

return mode;

}

private static void displayStatistics(double[] array) {

double mean = calculateMean(array);

double median = calculateMedian(array);

double mode = calculateMode(array);

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

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

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

}

}

15.Write a program to find the number of composite numbers in an array of elements

Sample Input;:

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

Sample Output:  
Number of Composite Numbers = 5

Test cases:

1. Array of elements = {26, 28, 37, 26, 33, 31, 29}

2. Array of elements = {1.6, 1.8, 2.7, 1.6, 2.3, 2.1, .19}

3. Array of elements = {0, 160, 180, 270, 160, 230, 210, 190, 0}

4. Array of elements = {200, 180, 180, 270, 270, 270, 190, 200}

5. Array of elements = {100, 100, 100, 100, 100, 100, 100, 100}

ANSWER:

public class CompositeNumberCounter {

public static void main(String[] args) {

int[] array = {16, 18, 27, 16, 23, 21, 19};

int compositeCount = countCompositeNumbers(array);

System.out.println("Number of Composite Numbers = " + compositeCount);

int[] testArray1 = {26, 28, 37, 26, 33, 31, 29};

int[] testArray2 = {1, 160, 180, 270, 160, 230, 210, 190, 0};

int[] testArray3 = {0, 160, 180, 270, 160, 230, 210, 190, 0};

int[] testArray4 = {200, 180, 180, 270, 270, 270, 190, 200};

int[] testArray5 = {100, 100, 100, 100, 100, 100, 100, 100};

System.out.println("\nTest Case 1:");

displayCompositeCount(testArray1);

System.out.println("\nTest Case 2:");

displayCompositeCount(testArray2);

System.out.println("\nTest Case 3:");

displayCompositeCount(testArray3);

System.out.println("\nTest Case 4:");

displayCompositeCount(testArray4);

System.out.println("\nTest Case 5:");

displayCompositeCount(testArray5);

}

private static int countCompositeNumbers(int[] array) {

int compositeCount = 0;

for (int num : array) {

if (isComposite(num)) {

compositeCount++;

}

}

return compositeCount;

}

private static boolean isComposite(int num) {

if (num < 2) {

return false;

}

for (int i = 2; i <= Math.sqrt(num); i++) {

if (num % i == 0) {

return true;

}

}

return false;

}

private static void displayCompositeCount(int[] array) {

int compositeCount = countCompositeNumbers(array);

System.out.println("Number of Composite Numbers = " + compositeCount);

}

}

16.Write a program to print Right Triangle Star Pattern

Sample Input:: n = 5

Output:

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

ANSWER:

import java.util.Scanner;

public class RightTriangleStarPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the number of rows for the right-angled triangle: ");

int numRows = scanner.nextInt();

printRightTriangle(numRows);

}

private static void printRightTriangle(int numRows) {

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

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

System.out.print(" ");

}

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

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

}

System.out.println();

}

}

}

17,Write a program to print the below pattern?

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  |  |  |  | 1 |  |  |  |  |
|  |  |  | 1 |  | 1 |  |  |  |
|  |  | 1 |  | 2 |  | 1 |  |  |
|  | 1 |  | 3 |  | 3 |  | 1 |  |
| 1 |  | 4 |  | 6 |  | 4 |  | 1 |
|  |  |  |  |  |  |  |  |  |

**ANSWER:**

import java.util.Scanner;

public class CharacterPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

char characterToPrint = scanner.next().charAt(0);

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

int maxTimes = scanner.nextInt();

printCharacterPattern(characterToPrint, maxTimes);

}

private static void printCharacterPattern(char characterToPrint, int maxTimes) {

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

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

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

}

System.out.println();

}

}

}

18.Write a program to print rectangle symbol pattern.

Get the symbol as input from user

ANSWER:

import java.util.Scanner;

public class RectangleSymbolPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the symbol to create the rectangle pattern: ");

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

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

int numRows = scanner.nextInt();

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

int numCols = scanner.nextInt();

printRectanglePattern(symbol, numRows, numCols);

}

private static void printRectanglePattern(char symbol, int numRows, int numCols) {

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

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

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

}

System.out.println();

}

}

}

1

19.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

ANSWER:

import java.util.Scanner;

public class PatternPrint {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int num = scanner.nextInt();

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

int maxTimes = scanner.nextInt();

printPattern(num, maxTimes);

scanner.close();

}

static void printPattern(int num, int maxTimes) {

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

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

System.out.print(num);

}

System.out.println();

}

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

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

System.out.print(num);}

System.out.println();

}

}

}

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

ANSWER:

import java.util.Scanner;

public class InvertedFullPyramid {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int numRows = scanner.nextInt();

printInvertedPyramid(numRows);

scanner.close();

}

static void printInvertedPyramid(int numRows) {

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

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

System.out.print(" ");

}

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

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

}

System.out.println();

}

}

}

21.Write a program to print the following pattern

Sample Input:

Enter the Character to be printed: %

Max Number of time printed: 3

%

% %

% % %

ANSWER:

import java.util.Scanner;

public class CharacterPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

char ch = scanner.next().charAt(0);

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

int maxTimes = scanner.nextInt();

printCharacterPattern(ch, maxTimes);

scanner.close();

}

static void printCharacterPattern(char ch, int maxTimes) {

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

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

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

}

System.out.println();

}

}

}

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

ANSWER:

import java.util.Scanner;

public class HollowSquarePattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the side length of the hollow square: ");

int sideLength = scanner.nextInt();

printHollowSquare(sideLength);

scanner.close();

}

static void printHollowSquare(int sideLength) {

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

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

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

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

} else {

System.out.print(" ");

}

}

System.out.println();

}

}

}

23.Write a program to print the below pattern

1

2 2

3 3 3

4 4 4 4

ANSWER:

import java.util.Scanner;

public class NumberTrianglePattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int numRows = scanner.nextInt();

printNumberTriangle(numRows);

scanner.close();

}

static void printNumberTriangle(int numRows) {

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

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

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

}

System.out.println();

}

}

}

24.Write a program to print the below pattern

1

4 9

16 25 36

49 64 81 100

ANSWER:

import java.util.Scanner;

public class SquareNumberPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int numRows = scanner.nextInt();

printSquareNumberPattern(numRows);

scanner.close();

}

static void printSquareNumberPattern(int numRows) {

int currentNumber = 1;

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

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

System.out.print(" ");

}

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

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

currentNumber++;

}

System.out.println();

}

}

}

25.Write a program to print the below pattern

1

2 2

3 3 3

4 4 4 4

3 3 3

2 2

1

ANSWER:

import java.util.Scanner;

public class NumberTriangleMirrorPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int numRows = scanner.nextInt();

printNumberTriangleMirror(numRows);

scanner.close();

}

static void printNumberTriangleMirror(int numRows) {

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

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

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

}

System.out.println();

}

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

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

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

}

System.out.println();

}

}

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

ANSWER:

import java.util.Scanner;

public class HollowSquareDollarPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter the side length of the hollow square: ");

int sideLength = scanner.nextInt();

printHollowSquareDollar(sideLength);

scanner.close();

}

static void printHollowSquareDollar(int sideLength) {

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

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

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

System.out.print("$");

} else {

System.out.print(" ");

}

}

System.out.println();

}

}

}

27.Write a program to print inverted pyramid pattern.

Input: no of rows: 3

Output

\*\*\*\*\*

\*\*\*

\*

ANSWER:

import java.util.Scanner;

public class InvertedPyramidPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int numRows = scanner.nextInt();

printInvertedPyramid(numRows);

scanner.close();

}

static void printInvertedPyramid(int numRows) {

int spaces = 0;

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

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

System.out.print(" ");}

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

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

System.out.println();

spaces++;

}

}

}

28.Write a program to reverse a number using loop?(Get the input from user)

Sample Input:

Number: 14567

Sample Output:

Reverse Number: 76541

Test cases:

1. -45721
2. 000
3. AD1947
4. !@#$%
5. 145\*999=144855

ANSWER:

import java.util.Scanner;

public class ReverseNumber {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a number to reverse: ");

if (scanner.hasNextInt()) {

int number = scanner.nextInt();

int reversedNumber = reverseNumber(number);

System.out.println("Reverse Number: " + reversedNumber);

} else {

System.out.println("Invalid input. Please enter a valid integer.");

}

scanner.close();

}

static int reverseNumber(int number) {

int reversedNumber = 0;

while (number != 0) {

int digit = number % 10;

reversedNumber = reversedNumber \* 10 + digit;

number /= 10;

}

return reversedNumber;

}

}

29.Write a program to convert the given decimal to binary and print the reverse of the binary decimal.

Input: 11

Output: 13

Explanation: (11)10 = (1011)2.

After reversing the bits we get:

(1101)2 = (13)10.

Test cases:

1. 25
2. Eighteen
3. 12
4. -18
5. 34.5

ANSWER:

import java.util.Scanner;

public class ReverseBinary {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter a decimal number: ");

if (scanner.hasNextInt()) {

int decimalNumber = scanner.nextInt();

if (decimalNumber < 0) {

System.out.println("Invalid input. Please enter a non-negative integer.");

} else {

String binaryRepresentation = decimalToBinary(decimalNumber);

System.out.println("Binary Representation: " + binaryRepresentation);

int reversedDecimal = reverseBinary(binaryRepresentation);

System.out.println("Reversed Decimal: " + reversedDecimal);

}

} else {

System.out.println("Invalid input. Please enter a valid integer.");

}

scanner.close();

}

static String decimalToBinary(int decimalNumber) {

return Integer.toBinaryString(decimalNumber);

}

static int reverseBinary(String binaryRepresentation) {

int reversedDecimal = 0;

int length = binaryRepresentation.length();

for (int i = length - 1; i >= 0; i--) {

char bit = binaryRepresentation.charAt(i);

if (bit == '1') {

reversedDecimal += Math.pow(2, length - 1 - i);

}

}

return reversedDecimal;

}

}

30.Write a program to find whether the person is eligible for vote or not. And if that particular person is not eligible, then print how many years are left to be eligible.

Sample Input:

Enter your age: 7

Sample output:

You are allowed to vote after 11 years

Test cases:

1. 25
2. Eighteen
3. 12
4. -18
5. 34.5

ANSWER:

import java.util.Scanner;

public class EligibilityForVote {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.print("Enter your age: ");

if (scanner.hasNextInt()) {

int age = scanner.nextInt();

if (age < 0) {

System.out.println("Invalid age. Please enter a non-negative integer.");

} else {

checkEligibilityForVote(age);

}

} else {

System.out.println("Invalid input. Please enter a valid integer for age.");

}

scanner.close();

}

static void checkEligibilityForVote(int age) {

final int VOTING\_AGE = 18;

if (age >= VOTING\_AGE) {

System.out.println("You are eligible to vote!");

} else {

int yearsLeft = VOTING\_AGE - age;

System.out.println("You are allowed to vote after " + yearsLeft + " years.");

}

}

}