Easy level programs:-

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

Sample Input:

String: TEMPLE

Sample Output:

Reverse String: ELPMET

public class A {

public static void main(String[] args) {

String input = "TEMPLE";

String reversed = reverseWord(input);

System.out.println("Reverse String: " + reversed);

}

public static String reverseWord(String input) {

char[] chars = input.toCharArray();

int left = 0;

int right = chars.length - 1;

while (left < right) {

char temp = chars[left];

chars[left] = chars[right];

chars[right] = temp;

left++;

right--;

}

return new String(chars);

}

}

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

Sample Input:

String: 1234

Sample Output:

Out put String: 1234

public class A {

public static void main(String[] args) {

String input = "1234";

int output = convertStringToInteger(input);

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

}

public static int convertStringToInteger(String input) {

int result = 0;

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

char currentChar = input.charAt(i);

// Convert char to integer value by subtracting '0' character

int digitValue = currentChar - '0';

result = result \* 10 + digitValue;

}

return result;

}

}

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

import java.util.Scanner;

public class ValidUserName {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the username: ");

String username = scanner.nextLine();

boolean isValid = isValidUsername(username);

if (isValid) {

System.out.println("Valid username!");

} else {

System.out.println("Invalid username!");

}

scanner.close();

}

public static boolean isValidUsername(String username) {

// Add validation criteria as needed

// For example: check for length, special characters, etc.

return username.matches("^[a-zA-Z0-9\_]+$");

}

}

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

import java.util.\*;

public class SortNames {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

List<String> names = new ArrayList<>();

System.out.println("Enter names (type 'done' to finish entering names):");

while (true) {

String name = scanner.nextLine();

if (name.equals("done")) {

break;

}

names.add(name);

}

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

String order = scanner.nextLine();

if (order.equalsIgnoreCase("A")) {

Collections.sort(names);

} else if (order.equalsIgnoreCase("D")) {

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

}

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

for (String name : names) {

System.out.println(name);

}

scanner.close();

}

}

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

import java.util.Scanner;

public class SpecialCharacters {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

String input = scanner.nextLine();

int specialCharCount = 0;

System.out.println("Special characters:");

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

char ch = input.charAt(i);

if (!Character.isLetterOrDigit(ch) && !Character.isWhitespace(ch)) {

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

specialCharCount++;

}

}

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

scanner.close();

}

}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

import java.util.Scanner;

public class SpecialCharacters {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

String input = scanner.nextLine();

int specialCharCount = 0;

System.out.println("Special characters:");

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

char ch = input.charAt(i);

if (!Character.isLetterOrDigit(ch) && !Character.isWhitespace(ch)) {

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

specialCharCount++;

}

}

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

scanner.close();

}

}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

import java.util.Scanner;

import java.util.Scanner;

public class SeparateConsonantsAndVowels {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

String givenWord = scanner.nextLine().toLowerCase();

StringBuilder consonants = new StringBuilder();

StringBuilder vowels = new StringBuilder();

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

char ch = givenWord.charAt(i);

if (ch == 'a' || ch == 'e' || ch == 'i' || ch == 'o' || ch == 'u') {

vowels.append(ch).append(" ");

} else if (Character.isLetter(ch)) {

consonants.append(ch).append(" ");

}

}

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

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

scanner.close();

}

}

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.

import java.util.Scanner;

public class FindCharacter {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

String inputString = scanner.nextLine();

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

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

boolean found = false;

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

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

found = true;

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

}

}

if (!found) {

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

}

scanner.close();

}

}

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

import java.util.Arrays;

import java.util.Scanner;

public class ReverseAlphabeticalOrder {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the word:");

String input = scanner.nextLine();

char[] chars = input.toCharArray();

Arrays.sort(chars);

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

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

}

scanner.close();

}

}

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

Arrays:

import java.util.Scanner;

public class RemoveVowels {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

String input = scanner.nextLine();

String withoutVowels = input.replaceAll("[aeiouAEIOU]", "");

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

scanner.close();

}

}

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

public class MatrixAddition {

public static void main(String[] args) {

int[][] mat1 = {{1, 2}, {5, 3}};

int[][] mat2 = {{2, 3}, {4, 1}};

int[][] result = add(mat1, mat2);

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

for (int[] row : result) {

for (int num : row) {

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

}

System.out.println();

}

}

public static int[][] add(int[][] mat1, int[][] mat2) {

int row = mat1.length;

int col = mat1[0].length;

int[][] result = new int[row][col];

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

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

result[i][j] = mat1[i][j] + mat2[i][j];

}

}

return result;

}

}

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

public class MatrixAddition {

public static void main(String[] args) {

int[][] mat1 = {{1, 2}, {5, 3}};

int[][] mat2 = {{2, 3}, {4, 1}};

int[][] result = add(mat1, mat2);

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

for (int[] row : result) {

for (int num : row) {

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

}

System.out.println();

}

}

public static int[][] add(int[][] mat1, int[][] mat2) {

int row = mat1.length;

int col = mat1[0].length;

int[][] result = new int[row][col];

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

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

result[i][j] = mat1[i][j] + mat2[i][j];

}

}

return result;

}

}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}

import java.util.ArrayList;

import java.util.Arrays;

public class MergeSortedArrays {

public static void main(String[] args) {

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

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

ArrayList<Integer> arrList = mergeSortedArrays(arr1, arr2);

System.out.println("Merged Array:");

System.out.println(arrList);

}

public static ArrayList<Integer> mergeSortedArrays(int[] arr1, int[] arr2) {

ArrayList<Integer> result = new ArrayList<>();

int i = 0, j = 0;

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

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

result.add(arr1[i]);

i++;

} else {

result.add(arr2[j]);

j++;

}

}

while (i < arr1.length) {

result.add(arr1[i]);

i++;

}

while (j < arr2.length) {

result.add(arr2[j]);

j++;

}

return result;

}

}

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}

import java.util.Arrays;

public class ArrayStats {

public static void main(String[] args) {

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

Arrays.sort(array);

double mean = calculateMean(array);

double median = calculateMedian(array);

int mode = calculateMode(array);

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

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

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

}

public static double calculateMean(int[] array) {

int sum = 0;

for (int num : array) {

sum += num;

}

return (double) sum / array.length;

}

public static double calculateMedian(int[] array) {

int length = array.length;

if (length % 2 == 0) {

return (array[length / 2 - 1] + array[length / 2]) / 2.0;

} else {

return array[length / 2];

}

}

public static int calculateMode(int[] array) {

int mode = array[0];

int maxCount = 0;

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

int value = array[i];

int count = 1;

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

if (array[j] == value) {

count++;

}

}

if (count > maxCount) {

mode = value;

maxCount = count;

}

}

return 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}

public class CompositeNumbers {

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);

}

public static boolean isComposite(int n) {

if (n <= 1) {

return false;

}

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

if (n % i == 0) {

return true;

}

}

return false;

}

public static int countCompositeNumbers(int[] array) {

int count = 0;

for (int num : array) {

if (isComposite(num)) {

count++;

}

}

return count;

}

}

Patterns :

16. Write a program to print Right Triangle Star Pattern

Sample Input:: n = 5

Output:

\*

\* \*

\* \* \*

\* \* \* \*

\* \* \* \* \*

import java.util.Scanner;

public class RightTriangleStarPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Enter the value of n:");

int n = scanner.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();

}

scanner.close();

}

}

17. Write a program to print the below pattern?

1

1 1

1 2 1

1 3 3 1

1 4 6 4 1

import java.util.Scanner;

public class PatternWithNumbers {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

System.out.println("Enter value of n: ");

int n = scanner.nextInt();

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

for (int j = 0; j < n - i - 1; j++) {

System.out.print(" ");

}

int num = 1;

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

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

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

}

System.out.println();

}

scanner.close();

}

}

18. Write a program to print rectangle symbol pattern.

Get the symbol as input from user

import java.util.Scanner;

public class RectangleSymbolPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

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

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

int rows = scanner.nextInt();

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

int cols = scanner.nextInt();

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

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

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

}

System.out.println();

}

scanner.close();

}

}

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

import java.util.Scanner;

public class InvertedFullPyramidPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int rows = scanner.nextInt();

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

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

System.out.print(" ");

}

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

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

}

System.out.println();

}

scanner.close();

}

}

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

import java.util.Scanner;

public class InvertedFullPyramidPattern {

public static void main(String[] args) {

Scanner scanner = new Scanner(System.in);

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

int rows = scanner.nextInt();

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

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

System.out.print(" ");

}

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

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

}

System.out.println();

}

scanner.close();

}

}