# Level 1 Practice Programs

1. Write a program to take user input for the age of all 10 students in a class and check whether the student can vote depending on his/her age is greater or equal to 18.

**Hint =>**

1. Define an array of 10 integer elements and take user input for the student's age.
2. Loop through the array using the length property and for the element of the array check If the age is a negative number print an invalid age and if 18 or above, print The student with the age \_\_\_ can vote. Otherwise, print The student with the age \_\_\_ cannot vote.

**PROGRAM-**

**import java.util.Scanner;**

**class VotingAge**

**{**

**public static void main(String[] args)**

**{**

**Scanner input=new Scanner(System.in);**

**int[] age=new int[10];**

**System.out.println("Enter Age of all the Students: ");**

**for(int i=0;i<10;i++)**

**{**

**System.out.print("Student "+(i+1)+": ");**

**age[i]=input.nextInt();**

**}**

**//Checking Voting Eligibility**

**for(int i=0;i<10;i++)**

**{**

**if(age[i]>=18)**

**{**

**System.out.println("The STUDENT with the Age: "+age[i]+" can VOTE.");**

**}**

**else**

**{**

**System.out.println("The STUDENT cannot VOTE.");**

**}**

**}**

**input.close();**

**}**

**}**

**OUTPUT-**

**Enter Age of all the Students:**

**Student 1: 15**

**Student 2: 17**

**Student 3: 18**

**Student 4: 82**

**Student 5: 03**

**Student 6: 28**

**Student 7: 03**

**Student 8: 17**

**Student 9: 82**

**Student 10: 93**

**The STUDENT cannot VOTE.**

**The STUDENT cannot VOTE.**

**The STUDENT with the Age: 18 can VOTE.**

**The STUDENT with the Age: 82 can VOTE.**

**The STUDENT cannot VOTE.**

**The STUDENT with the Age: 28 can VOTE.**

**The STUDENT cannot VOTE.**

**The STUDENT cannot VOTE.**

**The STUDENT with the Age: 82 can VOTE.**

**The STUDENT with the Age: 93 can VOTE.**

1. Write a program to take user input for 5 numbers and check whether a number is positive, negative, or zero. Further for positive numbers check if the number is even or odd. Finally compare the first and last elements of the array and display if they equal, greater or less

**Hint =>**

1. Define an integer array of 5 elements and get user input to store in the array.
2. Loop through the array using the length If the number is positive, check for even or odd numbers and print accordingly
3. If the number is negative, print negative. Else if the number is zero, print zero.
4. Finally compare the first and last element of the array and display if they equal, greater or less

**PROGRAM-**

**import java.util.Scanner;**

**class FiveNumbers**

**{**

**public static void main(String[] args)**

**{**

**Scanner input=new Scanner(System.in);**

**int[] numbers=new int[5];**

**//Enter Numbers:**

**for(int i=0;i<5;i++)**

**{**

**System.out.print("Number "+(i+1)+":");**

**numbers[i]=input.nextInt();**

**System.out.println("");**

**}**

**//Checking Conditions**

**for(int i=0;i<5;i++)**

**{**

**if(numbers[i]!=0)**

**{**

**if(numbers[i]>0)**

**{**

**System.out.println(numbers[i]+" is POSITIVE.");**

**System.out.println("");**

**}**

**else**

**{**

**System.out.println(numbers[i]+" is NEGATIVE.");**

**System.out.println("");**

**}**

**}**

**else**

**{**

**System.out.println(numbers[i]+" is ZERO.");**

**System.out.println("");**

**}**

**}**

**System.out.println("First Number: "+numbers[0]);**

**System.out.println("Last Number: "+numbers[4]);**

**if(numbers[0]!=numbers[4])**

**{**

**if(numbers[0]>numbers[4])**

**{**

**System.out.println("The First Element is greater than the Last Element");**

**}**

**else**

**{**

**System.out.println("The First Element is lesser than the Last Element");**

**}**

**}**

**else**

**{**

**System.out.println("The First Element is equal to the Last Element");**

**}**

**input.close();**

**}**

**}**

**OUTPUT-**

**Number 1:1**

**Number 2:2**

**Number 3:28**

**Number 4:-28**

**Number 5:93**

**1 is POSITIVE.**

**2 is POSITIVE.**

**28 is POSITIVE.**

**-28 is NEGATIVE.**

**93 is POSITIVE.**

**First Number: 1**

**Last Number: 93**

**The First Element is lesser than the Last Element**

1. Create a program to print a multiplication table of a number.

**Hint =>**

1. Get an integer input and store it in the number variable. Also, define a integer array to store the results of multiplication from 1 to 10
2. Run a loop from 1 to 10 and store the results in the multiplication table array
3. Finally, display the result from the array in the format number \* i = \_\_\_

**PROGRAM-**

**import java.util.Scanner;**

**class MultiplicationTable**

**{**

**public static void main(String[] args)**

**{**

**Scanner input=new Scanner(System.in);**

**System.out.print("Enter a NUMBER:");**

**int number=input.nextInt();**

**int[] mularray=new int[10];**

**//Storing Values in Array:**

**for(int i=0;i<10;i++)**

**{**

**mularray[i]=number\*(i+1);**

**}**

**//Printing Multiplication Table till 10**

**for(int i=0;i<10;i++)**

**{**

**System.out.println(number+" \* "+(i+1)+" ="+mularray[i]);**

**}**

**input.close();**

**}**

**}**

**OUTPUT-**

**Enter a NUMBER:93**

**93 \* 1 =93**

**93 \* 2 =186**

**93 \* 3 =279**

**93 \* 4 =372**

**93 \* 5 =465**

**93 \* 6 =558**

**93 \* 7 =651**

**93 \* 8 =744**

**93 \* 9 =837**

**93 \* 10 =930**

1. Write a program to store multiple values in an array up to a maximum of 10 or until the user enters a 0 or a negative number. Show all the numbers as well as the sum of all numbers

**Hint =>**

1. Create a variable to store an array of 10 elements of type double as well as a variable to store the total of type double initializes to 0.0. Also, the index variable is initialized to 0 for the array
2. Use infinite while loop as in ***while (true)***
3. Take the user entry and check if the user entered 0 or a negative number to break the loop
4. Also, ***break*** from the loop if the index has a value of 10 as the array size is limited to 10.
5. If the user entered a number other than 0 or a negative number inside the while loop then assign the number to the array element and increment the index value
6. Take another ***for*** loop to get the values of each element and add it to the total
7. Finally display the total value

**PROGRAM-**

**import java.util.Scanner;**

**public class**

**{**

**public static void main(String[] args)**

**{**

**double[] numbers = new double[10]; // Array to store up to 10 numbers**

**double total = 0.0; // Variable to store the sum**

**int index = 0; // Index variable for array**

**Scanner input = new Scanner(System.in);**

**while (true)**

**{**

**System.out.print("Enter a number (0 or negative to stop): ");**

**double num = input.nextDouble();**

**if (num <= 0 || index == 10)**

**{**

**break; // Stop if the number is 0 or negative, or if the array is full**

**}**

**numbers[index] = num; // Store the number in the array**

**index++; // Move to the next index**

**}**

**System.out.println("\nNumbers entered:");**

**for (int i = 0; i < index; i++)**

**{**

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

**total += numbers[i]; // Add each number to total**

**}**

**System.out.println("\nSum of numbers: " + total);**

**input.close();**

**}**

**}**

**OUTPUT-**

**Enter a number (0 or negative to stop): 73**

**Enter a number (0 or negative to stop): 094**

**Enter a number (0 or negative to stop): 723**

**Enter a number (0 or negative to stop): 291**

**Enter a number (0 or negative to stop): 2438**

**Enter a number (0 or negative to stop): 291**

**Enter a number (0 or negative to stop): 0000000000000003**

**Enter a number (0 or negative to stop): -7429**

**Numbers entered:**

**73.0 94.0 723.0 291.0 2438.0 291.0 3.0**

**Sum of numbers: 3913.0**

1. Create a program to find the multiplication table of a number entered by the user from 6 to 9 and display the result

**Hint =>**

1. Take integer input and store it in the variable number as well as define an integer array to store the multiplication result in the variable multiplicationResult
2. Using a for loop, find the multiplication table of numbers from 6 to 9 and save the result in the array
3. Finally, display the result from the array in the format number \* i = \_\_\_

**PROGRAM-**

**import java.util.Scanner;**

**public class MultiplicationTableSixToNine**

**{**

**public static void main(String[] args)**

**{**

**Scanner input = new Scanner(System.in);**

**// Take user input**

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

**int number = input.nextInt();**

**// Array to store multiplication results**

**int[] multiplicationResult = new int[4];**

**// Calculate multiplication table from 6 to 9**

**for (int i = 0; i < 4; i++) {**

**multiplicationResult[i] = number \* (i+6);**

**}**

**// Display the results**

**System.out.println("\nMultiplication Table of " + number + " from 6 to 9:");**

**for (int i = 0; i < 4; i++)**

**{**

**System.out.println(number + " \* " + (i + 6) + " = " + multiplicationResult[i]);**

**}**

**input.close();**

**}**

**}**

**OUTPUT-**

**Enter a number: 17**

**Multiplication Table of 17 from 6 to 9:**

**17 \* 6 = 102**

**17 \* 7 = 119**

**17 \* 8 = 136**

**17 \* 9 = 153**

1. Create a program to find the mean height of players present in a football team.

**Hint =>**

1. The formula to calculate the mean is: mean = sum of all elements / number of elements
2. Create a double array named heights of size 11 and get input values from the user.
3. Find the sum of all the elements present in the array.
4. Divide the sum by 11 to find the mean height and print the mean height of the football team

**PROGRAM-**

**import java.util.Scanner;**

**class MeanHeight**

**{**

**public static void main(String[] args)**

**{**

**Scanner input=new Scanner(System.in);**

**double[] heights=new double[11];**

**//Entering Elements of array**

**for(int i=0;i<11;i++)**

**{**

**System.out.print("Player "+(i+1)+": ");**

**heights[i]=input.nextDouble();**

**}**

**//Finding Sum of all Heights**

**double sum=0.0;**

**for(int i=0;i<11;i++)**

**{**

**sum+=heights[i];**

**}**

**double MeanHeight=sum/11;**

**System.out.println("Mean Height of the Players on the Team is: "+MeanHeight);**

**input.close();**

**}**

**}**

**OUTPUT-**

**Player 1: 192.3**

**Player 2: 182.03**

**Player 3: 17.02**

**Player 4: 72.02**

**Player 5: 724.384**

**Player 6: 935.247**

**Player 7: 934.3794**

**Player 8: 8934.7247**

**Player 9: 4398.834**

**Player 10: 0934.834**

**Player 11: 0384.8934**

**Mean Height of the Players on the Team is: 1610.060590909091**

1. Create a program to save odd and even numbers into odd and even arrays between 1 to the number entered by the user. Finally, print the odd and even numbers array

**Hint =>**

1. Get an integer input from the user, assign it to a variable ***number,*** and check for Natural Number. If not a natural number then print an error and exit the program
2. Create an integer array for even and odd numbers with size = number / 2 + 1
3. Create index variables for odd and even numbers and initialize them to zero
4. Using a for loop, iterate from 1 to the number, and in each iteration of the loop, save the odd or even number into the corresponding array
5. Finally, print the odd and even numbers array using the odd and even index]

**PROGRAM-**

**import java.util.Scanner;**

**class OddEven**

**{**

**public static void main(String[] args)**

**{**

**Scanner input=new Scanner(System.in);**

**System.out.print("Enter Number:");**

**int number=input.nextInt();**

**if(number<=0)**

**{**

**System.out.println("Not a Natural Number.");**

**input.close();**

**}**

**else**

**{**

**//Intialising size variable**

**int size=number/2+1;**

**//Creating Even and Odd Arrays**

**int[] EvenArray=new int[size];**

**int[] OddArray=new int[size];**

**//Creating Index Variables for both the arrays:**

**int e=0;**

**int o=0;**

**//Storing Numbers in respective arrays:**

**for(int i=1;i<=number;i++)**

**{**

**if(i%2==0)**

**{**

**EvenArray[e]=i;**

**e++;**

**}**

**else**

**{**

**OddArray[o]=i;**

**o++;**

**}**

**}**

**//Printing OddArray**

**System.out.println("ODD ARRAY:");**

**for(o=0;o<size;o++)**

**{**

**System.out.println("Number "+(o+1)+":"+OddArray[o]);**

**}**

**//Printing EvenArray**

**System.out.println("EVEN ARRAY:");**

**for(e=0;e<size;e++)**

**{**

**System.out.println("Number "+(e+1)+":"+EvenArray[e]);**

**}**

**input.close();**

**}**

**}**

**}**

**OUTPUT-**

**Enter Number:11**

**ODD ARRAY:**

**Number 1:1**

**Number 2:3**

**Number 3:5**

**Number 4:7**

**Number 5:9**

**Number 6:11**

**EVEN ARRAY:**

**Number 1:2**

**Number 2:4**

**Number 3:6**

**Number 4:8**

**Number 5:10**

**Number 6:0**

1. Create a program to find the factors of a number taken as user input, store the factors in an array, and display the factors

**Hint =>**

1. Take the input for a number
2. Find the factors of the number and save them in an array. For this create integer variable maxFactor and initialize to 10, factors array of size maxFactor and index variable to reflect the index of the array.
3. To find factors loop through the numbers from 1 to the number, find the factors, and add them to the array element by incrementing the index. If the index is equal to maxIndex, then need factors array to store more elements
4. To store more elements, reset the maxIndex to twice its size, use the temp array to store the elements from the factors array, and eventually assign the factors array to the temp array
5. Finally, Display the factors of the number

**PROGRAM-**

**import java.util.Scanner;**

**public class FactorFinder**

**{**

**public static void main(String[] args)**

**{**

**Scanner input = new Scanner(System.in);**

**// Taking user input**

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

**int number = input.nextInt();**

**// Initialize factor storage**

**int maxFactor = 10; // Initial array size**

**int[] factors = new int[maxFactor];**

**int index = 0; // Tracks the number of factors stored**

**// Find factors of the number**

**for (int i = 1; i <= number; i++)**

**{**

**if (number % i == 0)**

**{ // Check if 'i' is a factor**

**if (index == maxFactor)**

**{ // If array is full, expand it manually**

**maxFactor \*= 2; // Double the array size**

**int[] temp = new int[maxFactor]; // Create a new larger array**

**// Manually copy elements from old to new array**

**for (int j = 0; j < factors.length; j++)**

**{**

**temp[j] = factors[j];**

**}**

**factors = temp; // Assign the expanded array**

**}**

**factors[index++] = i; // Store factor and increment index**

**}**

**}**

**// Display factors**

**System.out.println("\nFactors of " + number + ":");**

**for (int i = 0; i < index; i++)**

**{**

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

**}**

**input.close();**

**}**

**}**

**OUTPUT-**

**Enter a number: 200**

**Factors of 200:**

**1 2 4 5 8 10 20 25 40 50 100 200**

1. Working with Multi-Dimensional Arrays. Write a Java program to create a 2D Array and Copy the 2D Array into a single dimension array

**Hint =>**

1. Take user input for rows and columns, create a 2D array (Matrix), and take the user input
2. Copy the elements of the matrix to a 1D array. For this create a 1D array of size rows\*columns as in int[] array = new int[rows \* columns];
3. Define the index variable and Loop through the 2D array. Copy every element of the 2D array into the 1D array and increment the index
4. Note: For looping through the 2D array, you will need Nested for loop, Outer for loop for rows, and the inner for loops to access each element

**PROGRAM-**

**import java.util.Scanner;**

**class CopyArray**

**{**

**public static void main(String[] args)**

**{**

**Scanner input=new Scanner(System.in);**

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

**int rows=input.nextInt();**

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

**int columns=input.nextInt();**

**//Creating 2D Array**

**int[][] Matrix=new int[rows][columns];**

**//Store values in the 2D ARRAY:**

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

**{**

**for(int j=0;j<columns;j++)**

**{**

**System.out.print("Matrix ["+i+"]["+j+"] :");**

**Matrix[i][j]=input.nextInt();**

**}**

**}**

**//Size of 1D Array:**

**int size=rows\*columns;**

**//Creating 1D ARRAY:**

**int[] Array=new int[size];**

**//INDEX VARIABLE FOR 1D ARRAY:**

**int index=0;**

**//Copying 2D Array into 1D Array:**

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

**{**

**for(int j=0;j<columns;j++)**

**{**

**Array[index]=Matrix[i][j];**

**index++;**

**}**

**}**

**//Displaying Arrays:**

**System.out.println("");**

**System.out.println("2D ARRAY:");**

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

**{**

**for(int j=0;j<columns;j++)**

**{**

**System.out.println("Matrix ["+i+"]["+j+"] :"+Matrix[i][j]);**

**}**

**}**

**System.out.println("");**

**System.out.println("1D ARRAY:");**

**for(int i=0;i<size;i++)**

**{**

**System.out.println("Array ["+i+"] :"+Array[i]);**

**}**

**input.close();**

**}**

**}**

**OUTPUT-**

**Enter Rows: 3**

**Enter Columns: 4**

**Matrix [0][0] :290**

**Matrix [0][1] :28**

**Matrix [0][2] :4398**

**Matrix [0][3] :2308**

**Matrix [1][0] :4308**

**Matrix [1][1] :2398**

**Matrix [1][2] :0934**

**Matrix [1][3] :2389**

**Matrix [2][0] :0439**

**Matrix [2][1] :3298**

**Matrix [2][2] :09853**

**Matrix [2][3] :28**

**2D ARRAY:**

**Matrix [0][0] :290**

**Matrix [0][1] :28**

**Matrix [0][2] :4398**

**Matrix [0][3] :2308**

**Matrix [1][0] :4308**

**Matrix [1][1] :2398**

**Matrix [1][2] :934**

**Matrix [1][3] :2389**

**Matrix [2][0] :439**

**Matrix [2][1] :3298**

**Matrix [2][2] :9853**

**Matrix [2][3] :28**

**1D ARRAY:**

**Array [0] :290**

**Array [1] :28**

**Array [2] :4398**

**Array [3] :2308**

**Array [4] :4308**

**Array [5] :2398**

**Array [6] :934**

**Array [7] :2389**

**Array [8] :439**

**Array [9] :3298**

**Array [10] :9853**

**Array [11] :28**

1. Write a program FizzBuzz, take a number as user input and if it is a positive integer loop from 0 to the number and save the number, but for multiples of 3 save "Fizz" instead of the number, for multiples of 5 save "Buzz", and for multiples of both save "FizzBuzz". Finally, print the array results for each index position in the format Position 1 = 1, …, Position 3 = Fizz,...

**Hint =>**

1. Create a String Array to save the results and
2. Finally, loop again to show the results of the array based on the index position

**PROGRAM-**

**import java.util.Scanner;**

**class FizzBuzz**

**{**

**public static void main(String[] args)**

**{**

**Scanner input=new Scanner(System.in);**

**System.out.print("Enter Number:");**

**int number=input.nextInt();**

**//Creating a String Variable**

**String[] text=new String[number+1];**

**if(number>0)**

**{**

**for(int i=0;i<=number;i++)**

**{**

**if(i%15==0)**

**{**

**text[i]="FizzBuzz";**

**}**

**else if(i%5==0)**

**{**

**text[i]="Buzz";**

**}**

**else if(i%3==0)**

**{**

**text[i]="Fizz";**

**}**

**else**

**{**

**text[i]=i+" ";//TypeCasting**

**}**

**}**

**//Displaying**

**for(int i=0;i<=number;i++)**

**{**

**System.out.println(i+" : "+text[i]);**

**}**

**}**

**else**

**{**

**System.out.println("Please Enter A Positive Number.");**

**}**

**input.close();**

**}**

**}**

**OUTPUT-**

**Enter Number:50**

**0 : FizzBuzz**

**1 : 1**

**2 : 2**

**3 : Fizz**

**4 : 4**

**5 : Buzz**

**6 : Fizz**

**7 : 7**

**8 : 8**

**9 : Fizz**

**10 : Buzz**

**11 : 11**

**12 : Fizz**

**13 : 13**

**14 : 14**

**15 : FizzBuzz**

**16 : 16**

**17 : 17**

**18 : Fizz**

**19 : 19**

**20 : Buzz**

**21 : Fizz**

**22 : 22**

**23 : 23**

**24 : Fizz**

**25 : Buzz**

**26 : 26**

**27 : Fizz**

**28 : 28**

**29 : 29**

**30 : FizzBuzz**

**31 : 31**

**32 : 32**

**33 : Fizz**

**34 : 34**

**35 : Buzz**

**36 : Fizz**

**37 : 37**

**38 : 38**

**39 : Fizz**

**40 : Buzz**

**41 : 41**

**42 : Fizz**

**43 : 43**

**44 : 44**

**45 : FizzBuzz**

**46 : 46**

**47 : 47**

**48 : Fizz**

**49 : 49**

**50 : Buzz**