

PA 303.7.1 - Practice Assignment - Array

Objective:

In this Assignment, we test your knowledge of using arrays in Java.

In this assignment, you will create a Java program. Requirements are given below:

Introduction

An array is a simple data structure used to store a collection of data in a contiguous block of memory. Each element in the collection is accessed using an index, and the elements are easy to find because they are stored sequentially in memory.

Because the collection of elements in an array is stored as a big block of data, we typically use arrays when we know exactly how many pieces of data we are going to have.

Tasks:

- **Task 1:** Write a program that creates an array of integers with a length of 3. Assign the values 1, 2, and 3 to the indexes. Print out each array element.
- **Task 2:** Write a program that returns the middle element in an array. Give the following values to the integer array: {13, 5, 7, 68, 2} and produce the following output: 7
- **Task 3:** Write a program that creates an array of String type and initializes it with the strings "red," "green," "blue," and "yellow." Print out the array length. Make a copy using the ***clone()*** method. Use the ***Arrays.toString()*** method on the new array to verify that the original array was copied.
- **Task 4:** Write a program that creates an integer array with 5 elements (i.e., numbers). The numbers can be any integers. Print out the value at the first index and the last index using `length - 1` as the index. Now try printing the value at `index = length` (e.g., ***myArray[myArray.length]***). Notice the type of exception which is produced. Now try to assign a value to the array index 5. You should get the same type of exception.

- **Task 5:** Write a program where you create an integer array with a length of 5. Loop through the array and assign the value of the loop control variable (e.g., *i*) to the corresponding index in the array.
- **Task 6:** Write a program where you create an integer array of 5 numbers. Loop through the array and assign the value of the loop control variable multiplied by 2 to the corresponding index in the array.
- **Task 7:** Write a program where you create an array of 5 elements. Loop through the array and print the value of each element, except for the middle (index 2) element.
- **Task 8:** Write a program that creates a String array of 5 elements and swaps the first element with the middle element without creating a new array.
- **Task 9:**
Write a program to sort the following int array in ascending order: {4, 2, 9, 13, 1, 0}. Print the array in ascending order, and print the smallest and the largest element of the array. The output will look like the following:
Array in ascending order: 0, 1, 2, 4, 9, 13
The smallest number is 0
The biggest number is 13
- **Task 10:** Create an array that includes an integer, 3 strings, and 1 double. Print the array.
- **Task 11:** Write some Java code that asks the user how many favorite things they have. Based on their answer, you should create a String array of the correct size. Then ask the user to enter the things and store them in the array you created. Finally, print out the contents of the array.

Example

How many favorite things do you have?

7

Enter your thing: **phone**

Enter your thing: **tv**

Enter your thing: **xbox**

Enter your thing: **wine**

Enter your thing: **beer**

Enter your thing: **sofa**

Enter your thing: **book**

Your favorite things are:

phone tv xbox wine beer sofa book

Submission Instructions:

Include the following deliverables in your submission -

- Submit your source code using the Start Assignment button in the top-right corner of the assignment page in Canvas.

CANVAS STAFF USE ONLY: Canvas Submission Guideline:

Instructions for Canvas Assignment Creation
<p>Assignment Name: PA 303.7.1 - Practice Assignment - Array</p> <p>Points: 100</p> <p>Assignment Group: Module 303: Java SE Review (Not Graded)</p> <p>Display Grade As: Complete/Incomplete</p> <p>Do not count this assignment towards the final grade: Checked</p> <p>Submission Types: File Uploads</p> <p>Everything else is the default.</p>