Exercise 1: Basic Array Declaration and Initialization

Objective:

Understand how to declare, initialize, and access elements in an array.

Instructions:

1. Declare an integer array named numbers with a size of 5.
2. Initialize the array with the first five positive integers (1 to 5).
3. Write a loop to print each element of the array.

Exercise 2: Array Sum and Average

Objective:

Calculate the sum and average of elements in an array.

Instructions:

1. Create an array of 10 integers.
2. Populate the array with random values between 1 and 100.
3. Calculate and print the sum and average of the array elements.

Exercise 3: Find the Maximum and Minimum Values

Objective:

Identify the maximum and minimum values in an array.

Instructions:

1. Create an array of integers with at least 10 elements.
2. Write a method to find the maximum and minimum values in the array.
3. Print the results.

Exercise 4: Reverse an Array

Objective:

Reverse the order of elements in an array.

Instructions:

1. Create an array of strings containing the names of five fruits.
2. Write a method to reverse the array.
3. Print the original and reversed arrays.

Exercise 5: Array Sorting

Objective:

Sort an array using a simple sorting algorithm.

Instructions:

1. Create an array of integers with random values.
2. Implement a bubble sort algorithm to sort the array in ascending order.
3. Print the sorted array.

Exercise 6: Multi-Dimensional Arrays

Objective: Introduce multi-dimensional arrays and basic operations on them.

1. **Task 1:** Declare and initialize a 2x3 integer matrix with the values { {1, 2, 3}, {4, 5, 6} }. Write a program to print the matrix.
2. **Task 2:** Create a 3x3 integer matrix. Write a program to calculate and print the sum of the diagonal elements.