

# Coding Exercise: 1- Introduction to Data Structures and Algorithms<sup>1</sup>

## Chapter 1: Introduction to Data Structures and Algorithms<sup>2</sup>

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<sup>1</sup>A coding exercise for Chapter 1 of the Study Guide on the course Data Structures and Algorithms.

<sup>2</sup>This chapter introduces the basic concepts of data structures and algorithms.

<sup>3</sup><https://github.com/godkingjay>

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## Coding Exercises

*“C makes it easy to shoot yourself in the foot; C++ makes it harder, but when you do, it blows away your whole leg.”*

– Bjarne Stroustrup

Instructions: Write a program that solves the following problems. Submit your code to the Google Drive folder provided by the instructor.

1. Implement a C++ program that demonstrates the primitive data types.
  - (a) Declare and initialize variables of the following different data types.
    - i. Integer
    - ii. Float
    - iii. Double
    - iv. Character
    - v. Boolean
  - (b) Print the values of the variables to the console.
2. Implement a C++ program to find the maximum element in an array using linear time complexity.

- (a) Declare an array of integers.

```
int arr[6];
```

- (b) Initialize the array with random values.

```
arr[6] = {19, 10, 8, 17, 9, 15};
```

- (c) Find the maximum element in the array.
- (d) Print the maximum element to the console.

Output: 19

3. Implement a C++ program to find the sum of all elements in an array using linear time complexity.

- (a) Declare an array of integers.

```
int arr[6];
```

- (b) Initialize the array with random values.

```
arr[6] = {19, 10, 8, 17, 9, 15};
```

- (c) Find the sum of all elements in the array.

- (d) Print the sum to the console.

Output: 78

## Submission of Coding Exercises

Instructions:

1. Go to the Google Drive folder provided by the instructor:

**BSIT 2-4:**

<https://drive.google.com/drive/folders/1uc3ehhK4Mv84KXPe8oV3l3AGI6czVhBx?usp=sharing>

**BSIT 2-5:**

[https://drive.google.com/drive/folders/1eIkUp3t2cAKIpd9KZGbQlZEGU516S\\_sE?usp=sharing](https://drive.google.com/drive/folders/1eIkUp3t2cAKIpd9KZGbQlZEGU516S_sE?usp=sharing)

2. Inside the folder, create another folder for your group with the following format:

**Group Number - LastName1\_FirstName1, LastName2\_FirstName2**

Example: **Group 1 - Doe\_John, Smith\_Jane**

3. Inside the sub-folder, create another folder with the name:

**Chapter 1- Coding Exercise 1- Introduction to Data Structures and Algorithms**

4. Inside the folder, upload the file of your submission.

Fill in the template provided in the following link and upload it inside the folder:

[https://docs.google.com/document/d/1zZf3W0Hj6NfCGU7sKAaz\\_cztSER5e7Vx/edit?usp=sharing&ouid=112709378145681657270&rtpof=true&sd=true](https://docs.google.com/document/d/1zZf3W0Hj6NfCGU7sKAaz_cztSER5e7Vx/edit?usp=sharing&ouid=112709378145681657270&rtpof=true&sd=true)

5. The activity must be submitted **on or before October 11, 2024**.
6. Late submissions will not be accepted.