# CHUKA UNIVERSITY

**ACSC 225: DATA STRUCTURES AND ALGORITHMS**

**Assignment/Exercises**

**Task 1 [5 Marks]**

 Implement a program that stores students' grades in an array.

 Allow the user to add, delete, and search for a student's grade.

 Implement a function to calculate the average grade and find the highest and lowest grades.

**Task 2 [5 Marks]**

 Using functions, implement three sorting algorithms; Bubble Sort, selection sort and insertion sort.

 Sort student records by their names or grades.

 Allow the user to choose the sorting method.

**Task 3 [5 Marks]**

Write a C++ program to implement a singly linked list by performing the following tasks.

(i)Define a class type **node** consisting two variables; **Data** of type integer and a pointer variable **Next** of type **node.**

(ii)Declare one instance/object of type **node** class defined in (i) above and name it **node1**.

(iii)Declare a pointer variable called **head** and assign it the memory address of **node1**

(iv)Assign an integer value to **node1**

**Submission:**

**Capture the source code and sample outputs for each of the exercises into ONE ms-word document and follow this link to upload your word document by 14th April 2025.**

**Link:** <https://forms.gle/G1oEZB4G279pEKTo6>