NED University of Engineering and Technology
Department of Computer Science and Information Technology
Fall 2025 – Second Year Computer Science

CT159 – Data Structures Algorithms & Application

Assignment # 1
Due Date: Thursday, Sep 25, 2025 by 16:00 Hours

Instructions (Read carefully)

- Handwritten solution on a A4 size paper to be submitted before due date
- Answer questions in the SAME sequence as the questions are given, no need to copy questions
- In case of more than one sheet of paper, each to be numbered and all should be stapled before submission
- First sheet should have your name, roll number, and assignment number clearly mentioned on top
- Late submission would be penalized

Question 1: You are given an array of integers, and your task is to find the next greater frequency element for each unique element in the array. The next greater frequency element is defined as the smallest frequency that is greater than the current frequency. If there is no greater frequency, return -1 for that element.

Question 2: You are given a string path representing an absolute path to a directory in a Unix-like file system. Your task is to simplify the path. The simplified path should be a valid absolute path without any redundant components.

Question 3: You are given an array of integers and an integer k that represents the size of the subarrays. Your task is to find the maximum value for each contiguous subarray of size k in the given array.

Question 4: Implement a function to reverse a singly linked list. Your solution should update the pointers of the nodes and not just print the elements in reverse.

Question 5: Write a function to insert a new node at a specific position (e.g., at the beginning, at the end, or after a given node) in a circular singly linked list.