Department of
Computer Science & Engineering
University of Liberal Arts Bangladesh

Open-ended Experiment - 1

Course Title: Data Structure Lab **Course Code:** CSE1302	**Section:** 03 **Semester:** Fall 2023
Total Marks: 24	**Submission Deadline:** November 22, 2023

General Instructions:

- This is an open-ended experiment. Students are expected to develop their own experiments;
- Show each step of your experimental procedure, data, and calculations;
- Discuss your results with relevant theories;
- The originality of the work is a must;
- Please refer to the assessment rubrics while preparing the report;
- Symbols, notations, and abbreviations carry their usual meanings.

	Descriptions	Domain/ level of learning taxonomy
CO1	Demonstrate various basic data structures and their operations	Psychomotor/L2, Affective / L2
CO2	Apply appropriate data structure for solving real-world problems	Psychomotor/L2, Affective / L2
CO3	Develop applications using various data structures	Psychomotor/L2, Affective / L2

Problem

Imagine you are developing a task management application, and you decide to use a linked list to implement the list of tasks. Each task has **a title, a description, a due date, and a status** (e.g., incomplete, complete). The linked list nodes store the task information, and the linked list is used to organize and manage the tasks.

Given this scenario, consider the following operations you need to perform on the linked list:

1. Add a New Task
2. Search for a Task
3. Remove Expired Tasks
4. Update Task Status
5. Display All Tasks
6. Handling Priority Tasks **[Bonus]**

Open-ended features:

- Use any of the suitable data structures to store the data.
- Use your preferred programming language (Python, Java, C++, etc.)
- The output can be a text-based interface or a graphical interface

Tasks	**CO**	**Marks**
1. Justify How would you design the functions to complete the mentioned operations.	CO1	6
2. Implement the most suitable data structure for the task management application.	CO2	6
3. Develop the complete task management application including all it's operation. You have to design individual functions for each operation	CO3	6
4. Compile a report on the stated problem including the justifications, codes, simulations, inputs/outputs.		6