

**National University of Computer and Emerging Sciences**



## **Assignment No. 2**

### **Design and Analysis of Algorithms**

#### **Sorting Algorithm**

CS2009

Fall 2024

**Deadline: September 12, 2024**

### Submission Instructions:

- All problems must be solved and submitted on Google Classroom.
- Submit 3 files including Code File, Excel Sheet, and Report.
- This is an individual assignment.
- **Plagiarism is strictly prohibited.**
- **Please do not use any AI tool and do not copy from others.**
- **Just analyze the problem and then brainstorm the solution.**

## Comparisons of different sorting algorithms

(100 Marks)

The goal is to analyze and compare the performance of three sorting algorithms

- Bubble Sort
- Insertion Sort
- Selection Sort

After implementing the sorting algorithms, they will gather the performance metrics for random datasets of varying sizes

- 100
- 250
- 500
- 1000
- 10000

Store these random numbers in a file then read from these files. Compare the algorithm in terms of the

- Number of Swaps
- Number of Comparisons
- Time Complexity (Big O notation)
- Execution Time

and plot these metrics using Excel. Make a report of your comparison of these sorting algorithm by justifying your result.