Instructions:

1) READ ALL THE INSTRUCTIONS CAREFULLY!
2) Kindly read all the questions carefully & submit the answer files properly
3) The assessment has 2 parts, a written assessment for 30 minutes (which is submitted to the faculty) and s report submission to be done before 28-July-2025, 08:45AM .
4) LATE SUBMISSIONS WILL NOT BE ACCEPTED FOR ANY REASON!
5) Written Assessment: [CO2, BTL2, DL2]
    a) Write your COMPLETE Roll number & date in the TOP RIGHT corner of the paper (Roll No format. CB.SC.U4CSE24XXX, where XXX is the last 3 digits unique to the student)
    b) Students are not allowed to use any additional resources for this part
    c) For each of the questions given, the student will write the following on one face/side of a single sheet of A4 paper. No additional sheets are to be used.
        i) Explain your logic towards the design of your solution.
        ii) Mention the most appropriate data structure that can be used to represent this scenario as part of your explanation.
        iii) Mention the asymptotic time complexity of your solution with a ONE – TWO LINE justification.

6) Report [CO4, BTL4, DL2]:
    a) Deadline for report submission: 28-July-08:45AM
    b) A clear but not lengthy report comprising the following
        i) Initial solution pseudocode (the written part as a picture)
        ii) AI Usage Declaration: Mention one of the following that best describes your use of any AI agents/tools.
            (1) Did not use AI at any point of the assessment
            (2) Used AI as a search engine for general brainstorming
            (3) Used AI to check if my solution is correct
            (4) Used AI to generate solution which I validated
            (5) AI developed everything and I trust the solution`
        iii) What is the time complexity of the solution
        iv) Justification of time complexity.
        v) Final Solution pseudocode.
        vi) How did it evolve from initial to final solution. Describe your usage of AI/Web/other tools that empower you to reach the solution.
        vii) Appropriate (at least 3) test cases for your proposed solution to showcase the complexity of implemented data structure and associated algorithms
            (1) Resubmitting the sample test case will result in negative score.
            (2) Submitting minor modifications of the same sample test case will also result in negative scores.
        viii) Final code
            (1) Code should be in C++, JAVA or Python
            (2) Should accept inputs and display outputs as shared in driver code.

(3) Must have a preamble as code comments that describe the working and logic of the code
(4) Class/Method/Variable names should be meaningful and should not be random characters.

c) The report should be submitted only as a PDF.
d) Upload the report on Turnitin. The link will be shared later.

7) Implementation [CO1, BTL3, DL1]:
   a) Submit your final code (same as submitted in report) on github – link will be shared soon.
   b) Your implementation should be optimal in terms of both time & space usage
   c) Note that a driver code is available (in JAVA & Python)
8) **FAILURE TO FOLLOW THESE INSTRUCTIONS WILL RESULT IN LOSS OF MARKS.**
9) **Submissions showing Turnitin plagiarism levels up to 20% will be considered for the assessment; any values over 20 will re**