Strathmore
UNIVERSITY

STRATHMORE INSTITUTE OF MANAGEMENT & TECHNOLOGY

DIPLOMA IN BUSINESS INFORMATION TECHNOLOGY EC

ASSIGNMENT SET A

DBT 1301: DATA STRUCTURES & ALGORITHMS

DUE DATE: Monday, 8th July 2024

Instructions:
1. Answer all questions in this paper in the answer sheet/booklet provided.
2. Questions 1 to 4 must be handwritten and submitted on the due date.
3. **Question 4 must be published on GitHub** and the repository link uploaded to eLearning as directed by the lecturer.

QUESTIONS (40 Marks)

1) List and briefly describe the different types of sorting algorithms you know (5 marks)

2) Evaluate four advantages and four disadvantages of using a linked list over an array in different scenarios (4 marks)

3) As a developer in a team hired to write a movie ticketing system, you are in charge of simulating the patrons lining up to buy tickets. Describe the data structures that you would use with an illustration (8 marks).

4) Explain the characteristics of linked lists in DSA with respect to the big O complexity (8 marks)

5) Using Java source code, create an application that simulates a real-world scenario using all the data structures you have learnt so far. Every student must have their own unique application. (15 marks)

SU-EXM-F-028