NANYANG TECHNOLOGICAL UNIVERSITY SINGAPORE

School of Computer Science and Engineering
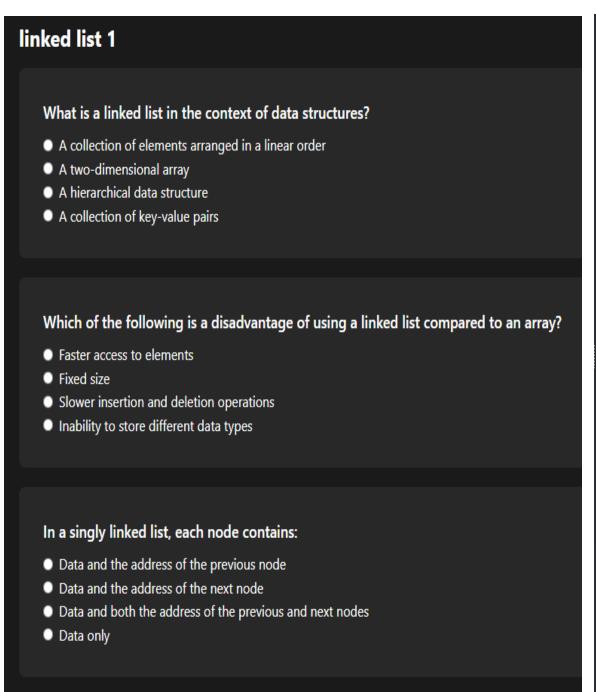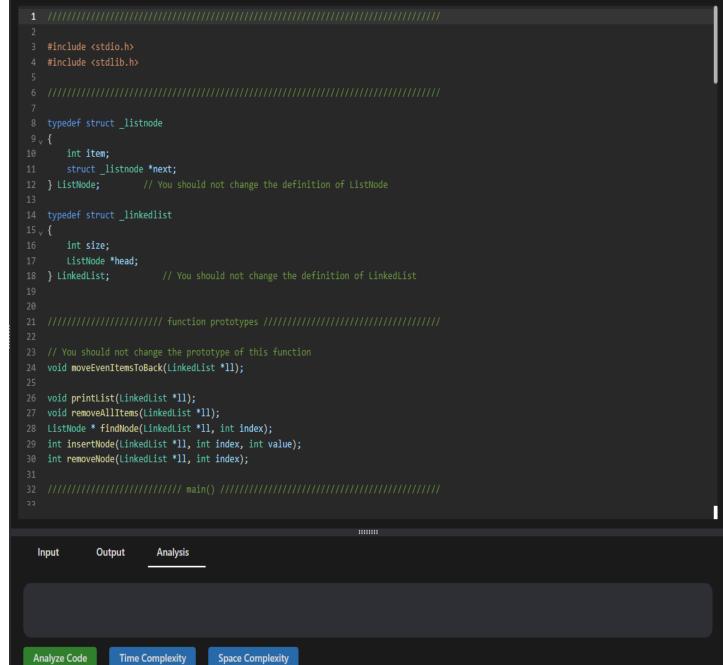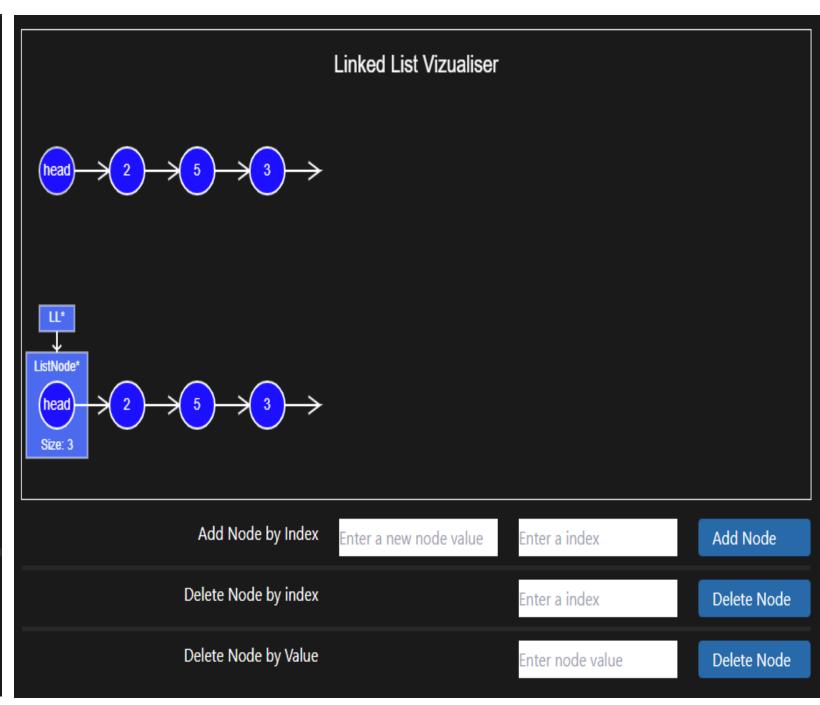College of Engineering

AlgoTutor Web Application
Integrated Learning Platform for Data Structures & Algorithms

Student: Tan Zong Wei   Supervisor: Professor Owen Newton Fernando

Project Objectives:

The objective of this project is to develop an integrated web application with an in-built AI support using ChatGPT, to assist students in the learning process for Data structures and Algorithms. The webpage will be an integrated platform where students will be able to learn theoretical concepts, practice coding-based problems, as well as view interactive visualizations. The application is developed with the FReMP Stack, consisting of Python Flask, MongoDB, and ReactJS, and custom visualizations are developed using CanvasJS.

Features:

- **Interactive** and **original data structures visualizations**
- **Online C code compilation** and problem-based learning
- **MCQ Quizzes** for learning of theory
- **Tailored Code Analysis** and **personalized guidance**
- **Retrieval Augmented Prompt Engineering**