Computer Science Department

COMP3321

Computer Graphics

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Final Project-Game

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❖ Aim of the game:

Learn computer science students' three types of data structures (LinkedList, Stack, Queue) and their operations on them.

❖ Background story:

The student starts to select one of the data structures like LinkedList and then starts with one of the operations that can make on it, such as insert a first, insert at last, and push, dequeue. Then the simulation will start for the selected function after the simulation is finished the student will be taking many questions depending on how the operation or function will do. If he/she passes the exam, the next operation will be opened.

❖ The player's action in the game: Answering exam questions.

❖ Fun Items: Passes all exams for a data structure

❖ The following actions is available:

Linked list:

1- Insert at first.
2- Remove first
3- Insert at middle
4- Insert at last
5- Remove last

Queue:

1- Enqueue
2- Dequeue

Stack

1- Push
2- Pop

Each action has 3 questions, each question has 3 options.

❖ **Scenario:** A student was passing exam of "Insert at first" and "Remove first", then he/she select the new opened action which is "Insert at middle", then start watching the simulation, after finishing the simulation, he/she apply for the exam, and failed it. He/she returned for the exam, and pass it. Now, "Insert at last" is open as new action to learn about.

➢ **Technologies used in the game:**
1- Swing
2- OpenGL
3- Java SKD 19

➢ **Algorithms**:
1- Bresenham's Line algorithm.
2- Midpoint algorithm.
3- OpenGL TextRendring.