ISTANBUL TECHNICAL UNIVERSITY

COMPUTER ENGINEERING DEPARTMENT

BLG 223E
DATA STRUCTURES

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1 INTRODUCTION

In this homework, a game which can be played from console is given to us. And wanted the computer to finish it by itself using Stack structure and DFS method.

2 STACK STRUCTURE

To implement stack structure I used the *DoublyLinkedList.h* source given to us. A stack structure has three main operations:

- Push: Insert an element to top of the stack.
- Pop: Remove the top element of the stack and return the value.
- Top: Return the reference or the value of the top element.

For push() operation, I used addFront() function of DoublyLinkedList. For pop() operation, I used removeFront() function of DoublyLinkedList. And for the top() operation, I used ”head” variable (like smth.head-¿data) of DoublyLinkedList.

3 ALGORITHM

The game consists of ”states”. There are a number of paths to finish game successfully. But, some of the paths (mostly the ones including action: open and object: door) leads game to infinite loops. In order to avoid those loops, I determined the loop causing situations.

1. leaving toilet(room id = 1) before getting ”toilet info”
2. leaving toilet before killing guard (when guard(near toilet))

For these two steps, I coded some ”if statements” to prevent these situations.