Quiz 1

1   Abstract Data Types & Data Structures

For each of the following problems, choose **ONE** ADT and **ONE** data structure to solve the problem and explain why your choice works better than the other options:

(a) Determine whether a string composed of '(', ')', '{', '}', '[', and ']' are valid
For example, "[]()" and "[{}]{[()]}" are valid but "[(])" and "{]" are not valid.

Abstract Data Type: ◯ Stack   ◯ Queue
Data Stucture: ◯ Array   ◯ LinkedList with front   ◯ LinkedList with front and back

One Sentence Explanation:

(b) Cars drive onto a toll bridge from one end and exit from the other end of the bridge. The number of cars is unpredictable. Determine the next car to exit from the bridge anytime if necessary.

Abstract Data Type: ◯ Stack   ◯ Queue
Data Stucture: ◯ Array   ◯ LinkedList with front   ◯ LinkedList with front and back

One Sentence Explanation:

(c) Given runners' names in $1^{st}, 2^{nd}, ..., n^{th}$ places, announce awards in the reversed rank (e.g., 1st place is announced the last). The announcer also needs to be able to learn the name of some specific runners beforehand.

Abstract Data Type: ◯ Stack   ◯ Queue
Data Stucture: ◯ Array   ◯ LinkedList with front   ◯ LinkedList with front and back

One Sentence Explanation:

Will you want to pick up your worksheet later? Circle one: Yes / No