

North South University

CSE 225L: Data Structure Lab

Fall 2020, Lab Assignment -1

Part1:

HackerRank

There are 15 problems in this link. You have to solve all of these problems. To confirm you have successfully solve one problem, you have to successfully submit that problem in the hacker rank portal. **You must have to solve all of these problems to get any number in this part.** You have to write a correct function for each problem. After successfully submitting the correct functions, you have to copy paste those functions in a text file. Also you have to share your hacker rank profile at the end of the text file so that I can see your successfully submission. **Then you will submit that text file. I've added one text file sample.**

Part2:

You have to design 3 data structure using linked list. You can complete these tasks without using class & object if you want. Also you can use class & object if you want as well.

a. Stack

<pre>void Push(int); void Pop(); int Top(); bool IsEmpty(); bool IsFull(); void PrintStack(); //You have to complete these functions to implement Stack data structure using linked list. //I have implement this IsFull function. The linked list will be full if and only if the memory exceeds its limit. IsFull function is same for every structure.</pre>	<pre>bool IsFull() { node* location; try { location = new node(); delete location; return false; } catch(bad_alloc& exception) { return true; } }</pre>
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b. Queue

```
void MakeEmpty();
void Enqueue(ItemType);
void Dequeue(ItemType&);
bool IsEmpty();
bool IsFull();
void PrintQueue();
//You have to complete these
functions to implement Queue data
structure using linked list.
```

c. Unsorted List

```
bool IsFull();
int LengthIs();
void MakeEmpty();
bool RetrieveItem(int);
void InsertItem(int);
void DeleteItem(int);
void PrintList();
//You have to complete these
functions to implement Unsorted List
data structure using linked list.
```

For each data structure, you have to use every function in the main function to show that every function is working properly. **Then submit all the files.**