**JOBSHEET 12**

**Double Linked List**



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**NIM**

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**Class**

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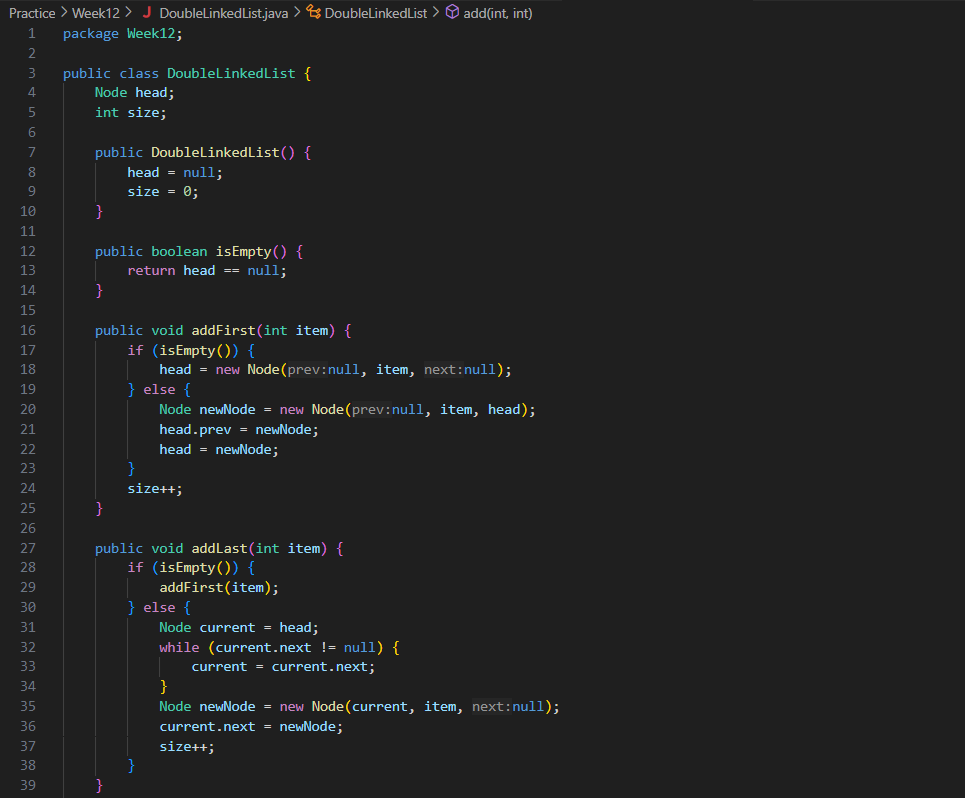
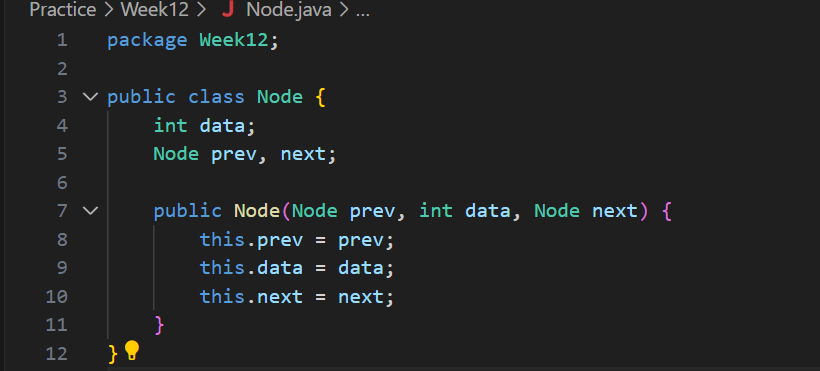
**Major**

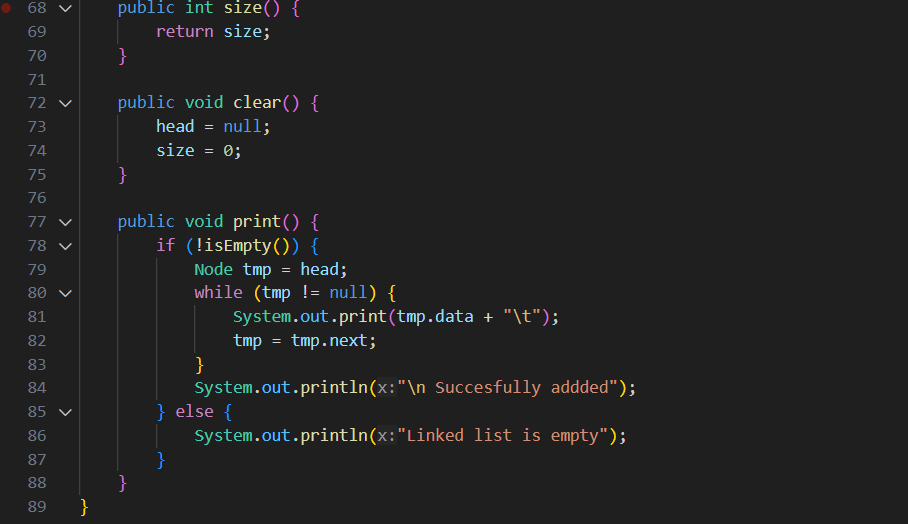
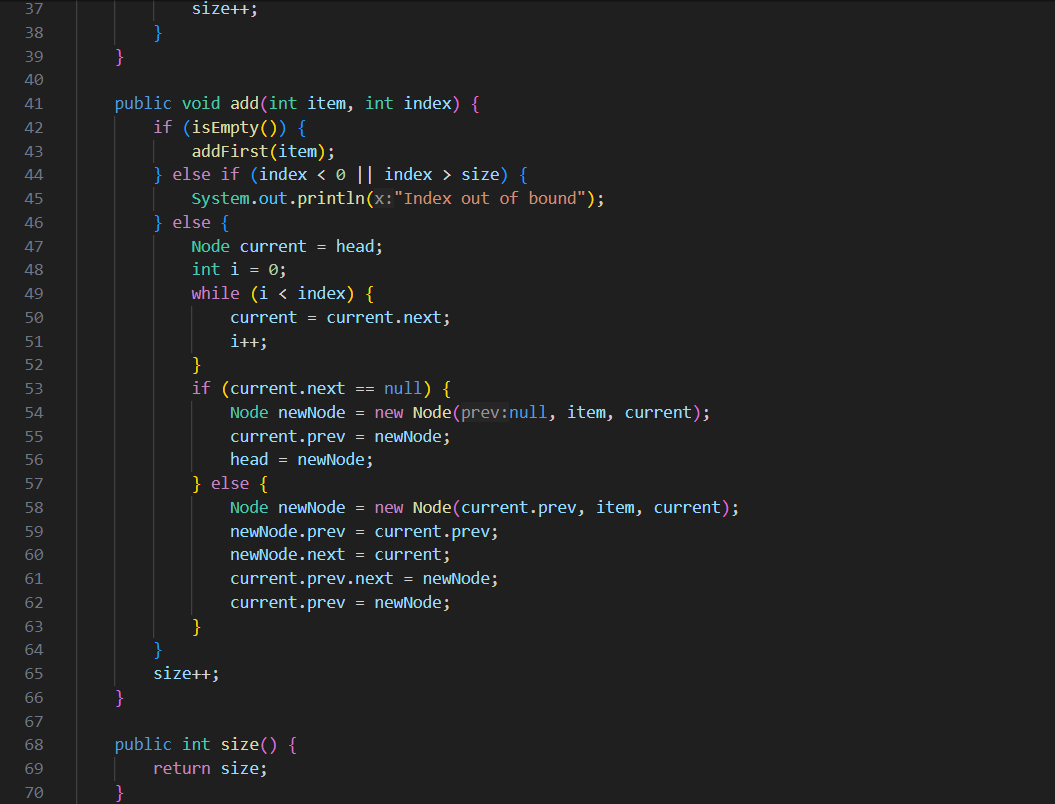
Information Technology

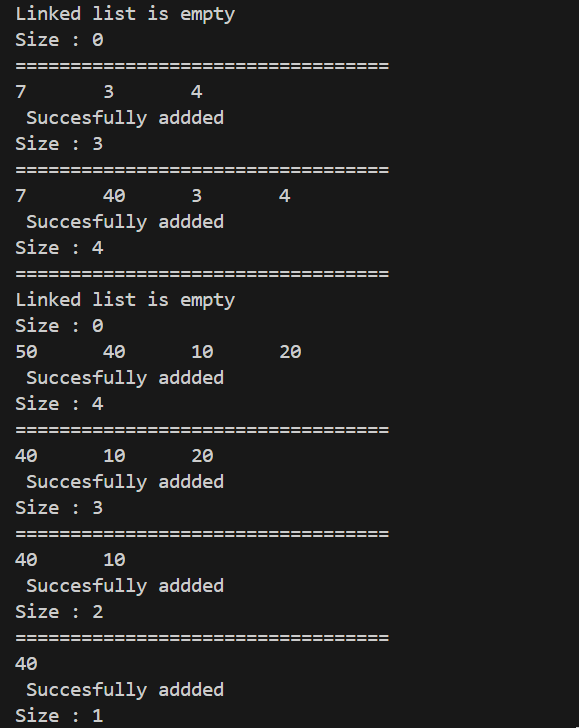
**Study Program**

D4 Informatics Engineering

**Lab Activity 1**

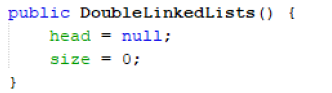
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**Question**

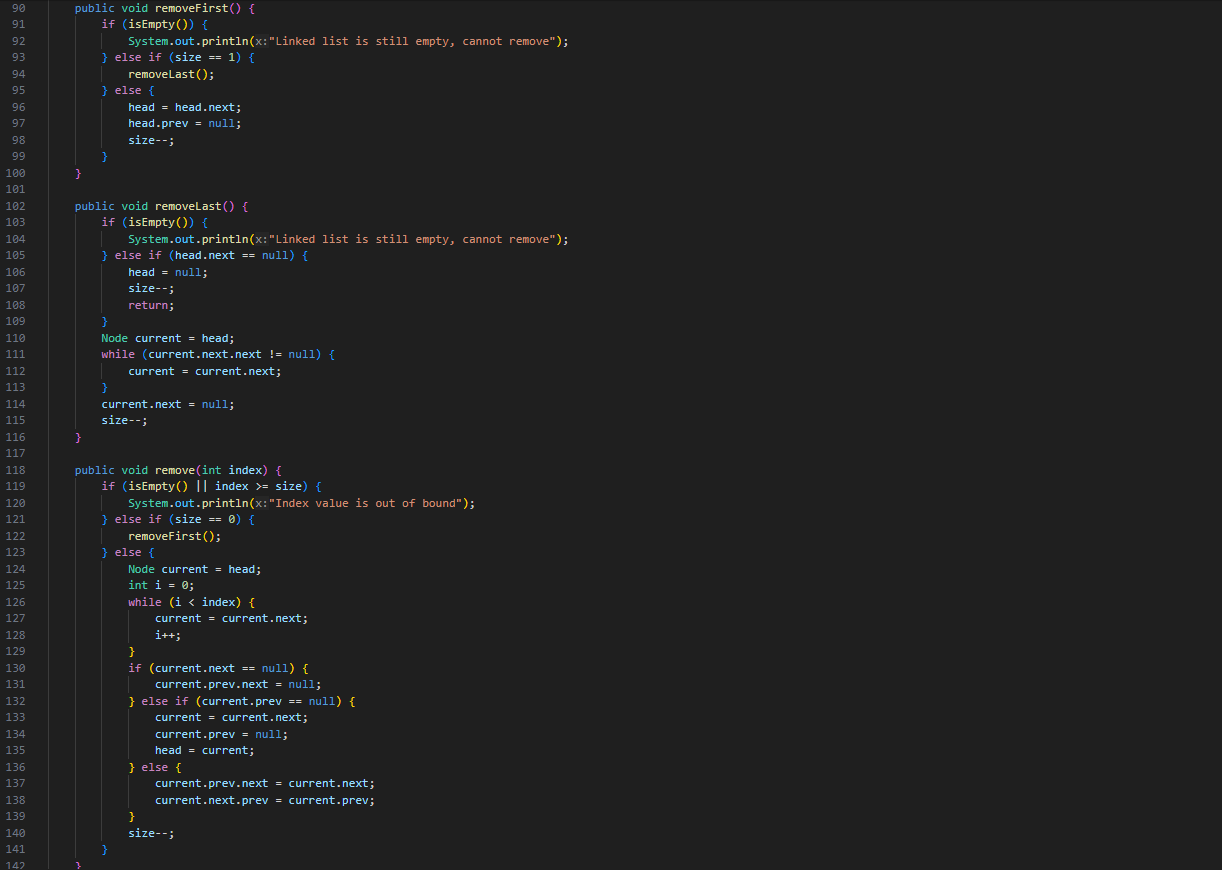
1. What’s the difference between single linked list and double linked list?
2. In **Node class**, what is the usage of attribute next and prev ?
3. In constructor of **DoubleLinkedList class.** What’s the purpose of head and size attribute in this following code?

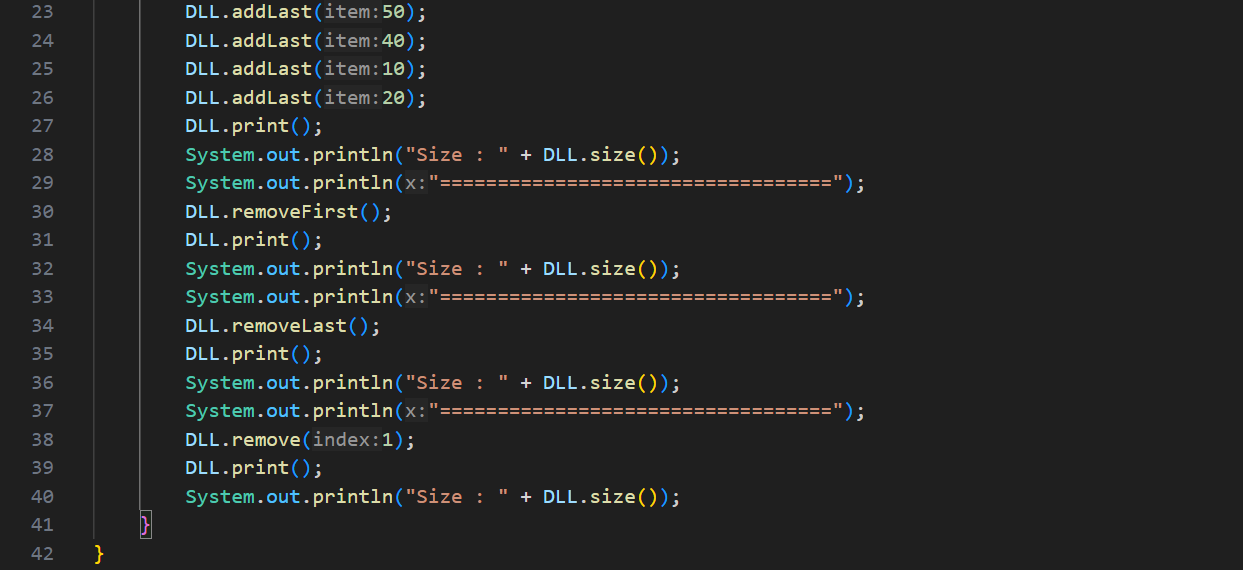


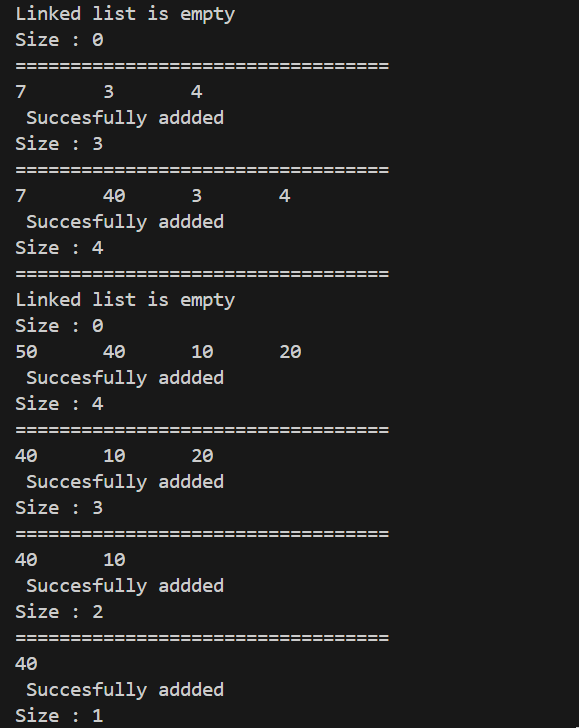
1. In method **addFirst(),** why do we initialize the value of Node object to be null at first? Node newNode = new Node(**null,** item, head);
2. In method **addLast(),** what’s the purpose of creating a node object by passing the **prev** parameter with **current** and **next** with **null** ?

Node newNode = new Node(**current**, item, **null**);

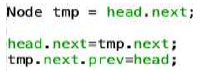
**Lab Activity 2**

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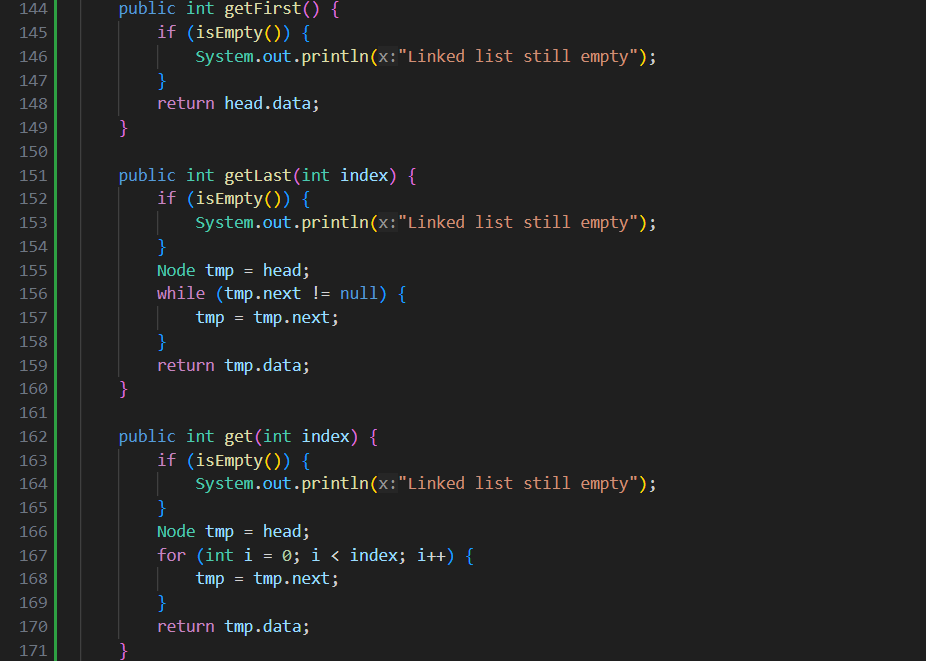
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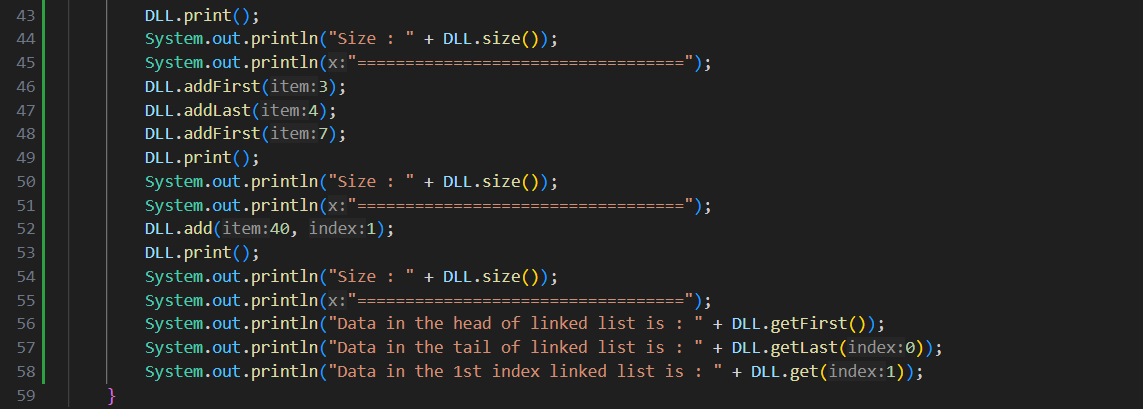
**Question**

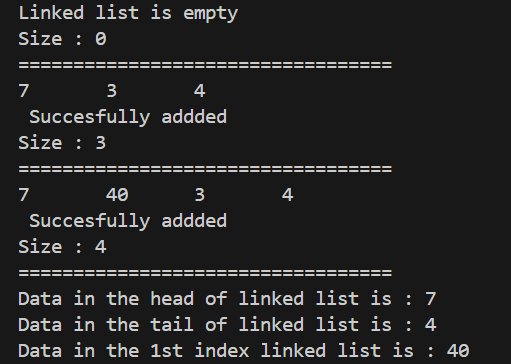
1. What’s the meaning of these statements in removeFirst() method?
2. How do we detect the position of the data that are in the last index in method **removeLast()**?
3. Explain why this program code is not suitable if we include it in **remove** command! 
4. Explain what’s the function of this program code in method **remove**!



**Lab Activity 3**

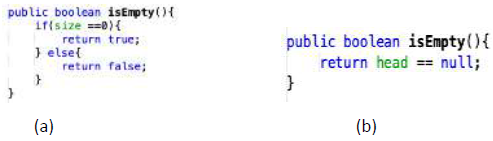
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**Question**

1. What is the function of method **size()** in **DoubleLinkedList** class ?
2. How do we set the index in double linked list so that it starts from 1st index instead of 0th index?
3. Please explain the difference between method **Add()** in double linked list and single linked list !
4. What’s the logic difference of these 2 following codes?



**Assignment**

1. Create a program with double linked list implementation that allows user to choose a menu as following image! The searching uses sequential search approach and the program should be able to sort the data in descending order. You may any choose sorting approach you prefer (bubble sort, selection sort, insertion sort, or merge sort)

**Adding a data**

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**Add data in specified index and display the result**

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**Search Data**

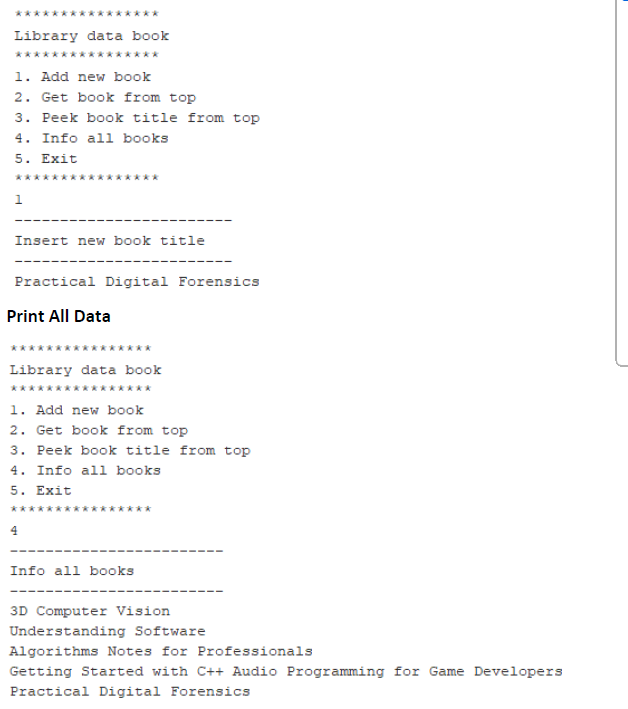
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**Sorting Data**

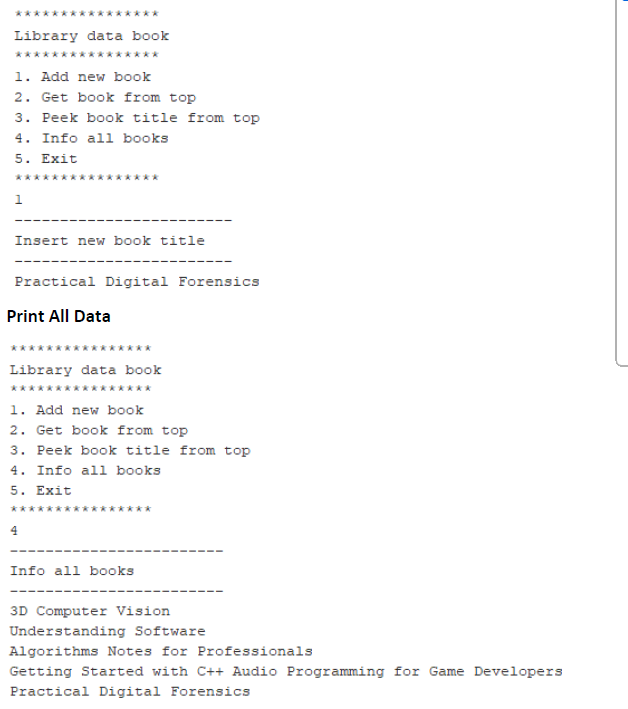
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1. We are required to create a program which Implement Stack using double linked list. The features are described in following illustrations:

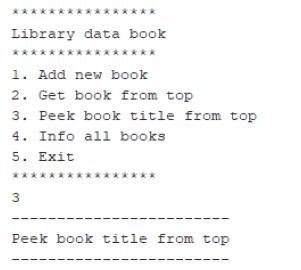
**Initial menu and add Data (push)**

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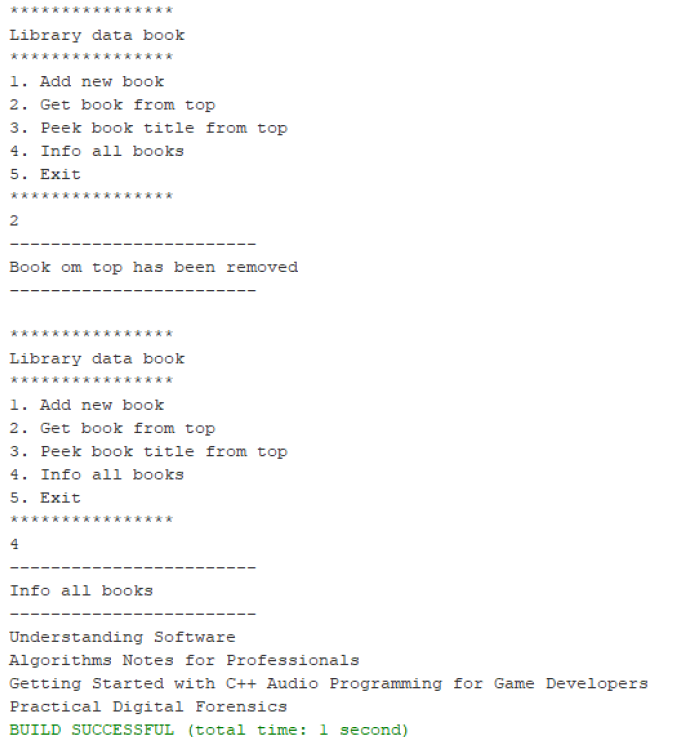
**Print All Data**

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**See the data on top of the stack**

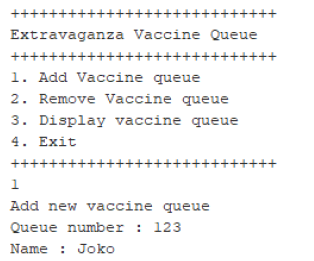
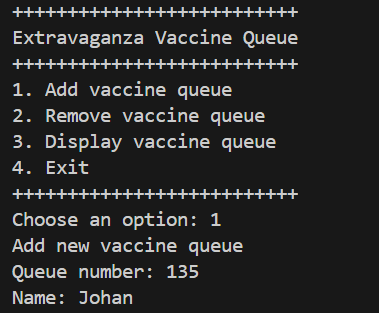
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**Pop the data from the top of the stack**

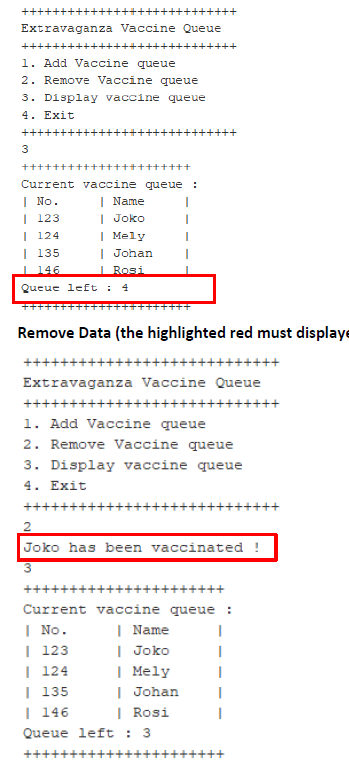
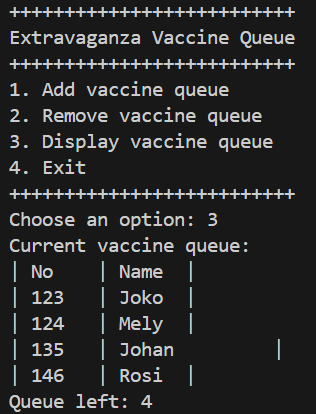
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1. Create a program that helps vaccination process by having a queue algorithm alongside with double linked list as follows **(the amount left of queue length in menu print(3) and recent vaccinated person in menu Remove data (2) should be displayed)**

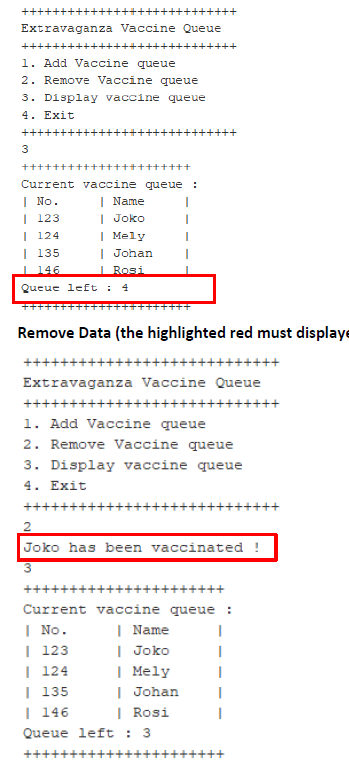
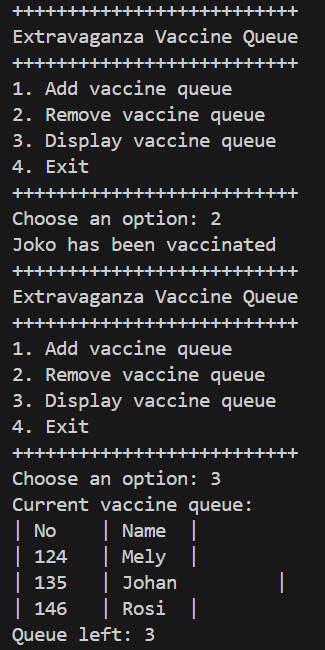
**Initial menu and adding a data**

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**Print data (notice the highlighted red in the result)**

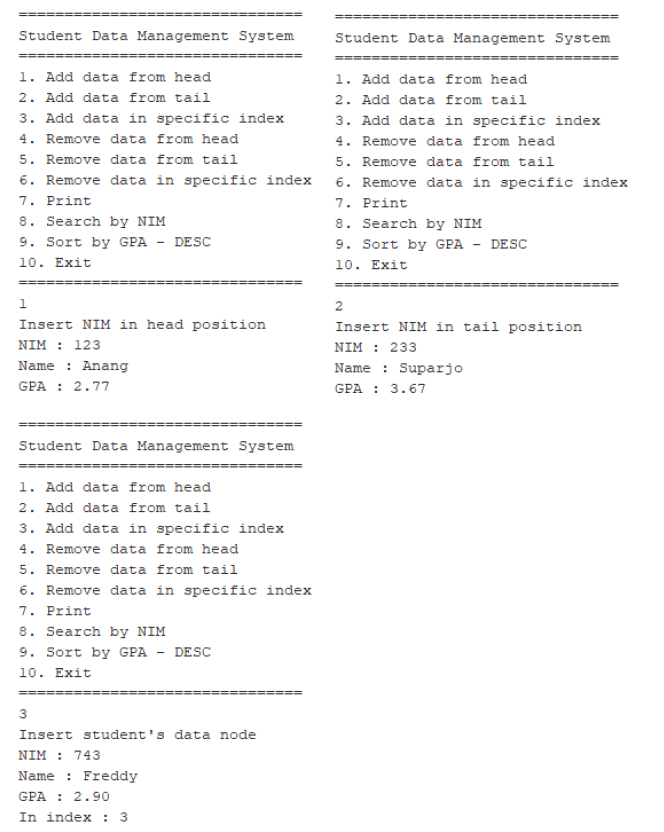
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**Remove Data (the highlighted red must displayed in the console too)**

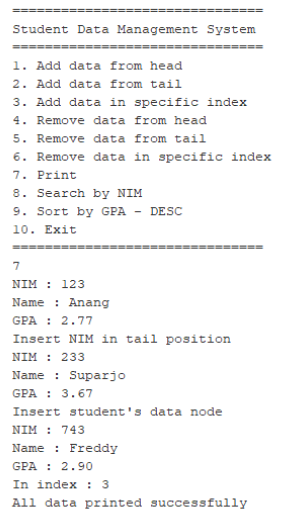
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1. Create a program implementation that list students score. Each student’s data consist of their nim, name, and gpa. The program should implement double linked list and should be able to search based on NIM and sort the GPA in descending order. **Students class must be implemented in this program**

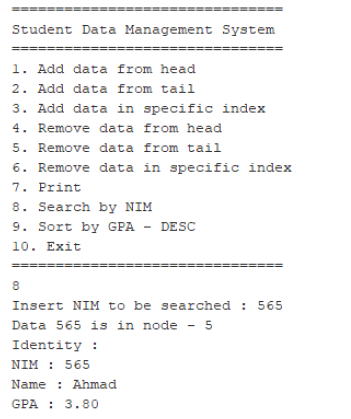
**Initial menu and adding data**

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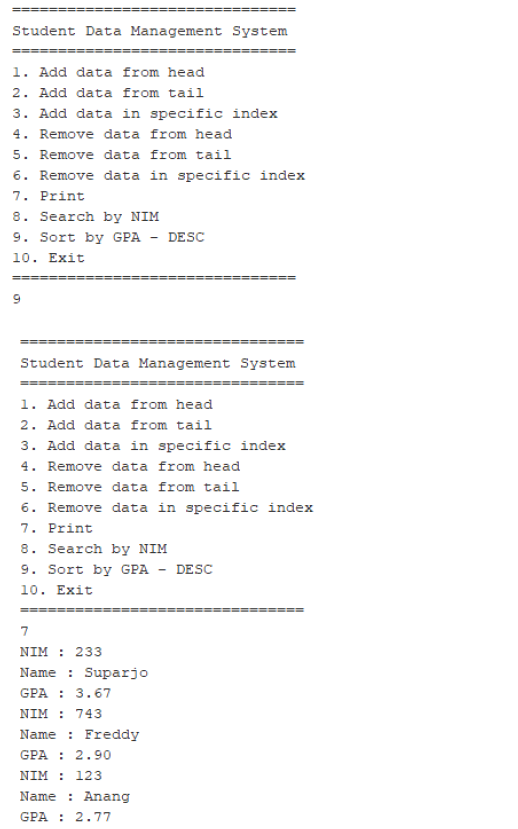
**Printing data**

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**Searching data**

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**Sorting data**

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