GTU Department of Computer Engineering

CSE 222/505 - Spring 2022

HOMEWORK 3

DEADLİNE: 20/03/2022 23:59

1) In this homework, you are supposed to modify the program you have written for the first homework. In the first homework, you are allowed to use only the basic array data structure. This time you have to use the List interface in Java Collections Framework. You should generate three separate versions of your program by using following three different implementations of the List interface;

    a) Array List structure, **ArrayList** in Java Collections Framework,

    b) Linked List structure, **LinkedList** in Java Collections Framework,

    c) Your own Linked list structure named **LDLinkedList**. LDLinkedList should implement the List interface and extend the AbstractList in Java Collections Framework. You should use lazy deletion strategy in your Linked List implementation. In lazy deletion strategy, the nodes containing removed elements are moved to a separate Linked List for future use. When a new element is added, a node is obtained from this second list if one available. Of course, a new node should be created, otherwise.

You should analyze time complexity of four versions (including the one in the first homework). Analyze the theoretical running time. Measure experimental running time of your code for different size scenarios and compare it with the theoretical running time.

REPORT RULES:

- Add all javadoc documentations for classes, methods, variables …etc. All explanations must be meaningful and understandable.

- You should submit your homework code, Javadoc, and report to MS Teams in a "studentid_hw3.tar.gz" file.

- Use the given homework format including selected parts from the table below:

Detailed system requirements	✓
Class diagrams	✓
Problem solutions approach	✓
Test cases	✓
Running command and results	✓

GRADING :

- No OOP design: -100
- No method overriding: -95
 -No error handling: -50
- No inheritance: -95
- No polymorphism: -95
- No javadoc documentation: -50
- No report: -90
- Disobey restrictions: -100
- Cheating: -200

 - Your solution is evaluated over 100 as your performance.

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- Using the Homework Discussion Forum in MSTeams is advised for your questions about the homework.