American International University-Bangladesh (AIUB)

Data Structure Lab (Linked List Related Lab Task)

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****************************** Task 1 ******************************

A library uses a **Singly Linked List** to track borrowed books. Each book contains a Book ID, Book name and a time for borrow like how many days for borrowing. Add the book details in a way that there are multiple books of the same name in the list. Your task is to first display the linked list and then display only the book names present in the list. After that you will find a specific book by the book name given by the user and show how many times the book appears in the list and at which positions the book is stored. After that the user will ask you to delete a book by its name and you will delete the book from the list and print the updated **reversed list** of the books.

Sample Output

Linked List: (101, Harry Potter, 5) → (107, Hunger Games, 7) → (111, Twilight Saga, 9) → (107, Hunger Games, 11) → Null

Search Book Name: Hunger Games

Found the Book "Hunger Games" 2 times in the list at position 2 and 4

Book Name for Delete: Twilight Saga

Updated Reversed List After Delete: (107, Hunger Games, 11) → (107, Hunger Games, 7) → (101, Harry Potter, 5) → Null

****************************** Task 2 ******************************

A music player uses a **Doubly Linked List** to store recently played songs. Each node contains song name, singer, and duration. Take odd number of song details. Your task is to first display the list and find the song which has the highest duration and also the position of the song. Then you need to print the list in **reverse order** and find the midpoint of the list and show the song details form the mid-point. **(Take odd number of inputs, it will help you to find the midpoint)**

Sample Output

Doubly Linked List: (Anti Hero, Taylor Swift, 3:20) **<-->** (Die for You, The Weekend, 4:20) **<-->** (Dance the Night, Dua Lipa, 2:56) **<-->** (Cruel Summer, Taylor Swift, 2:58) **<-->** (Levitating, Dua Lipa, 3:50) **<-->** Null

Song "Die for You" has the highest duration of 4:20 minutes at the position 2 in the list.

Reversed: (Levitating, Dua Lipa, 3:50) **<-->** (Cruel Summer, Taylor Swift, 2:58) **<-->** (Dance the Night, Dua Lipa, 2:56) **<-->** (Die for You, The Weekend, 4:20) **<-->** (Anti Hero, Taylor Swift, 3:20) **<-->** Null

Mid position of the list: 3

**** Song Details of the Mid Point ****

Song: Dance the Night

Singer: Dua Lipa

Duration: 2:56