NORTH WESTERN UNIVERSITY

Report

Course Code: CSE-2104

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Table of Contents:

1. Introduction:

Python is an interpreter, object-oriented, high-level programming language with dynamic semantics. Its high-level built in data structures, combined with dynamic typing and dynamic binding, make it very attractive for Rapid Application Development, as well as for use as a scripting or glue language to connect existing components together. Python supports modules and packages, which encourages program modularity and code reuse. Python offers multiple options for developing GUI (Graphical User Interface). Out of all the GUI methods, Tkinter is the most commonly used method. It is a standard Python interface to the Tk GUI toolkit shipped with Python. Python with Tkinter is the fastest and easiest way to create GUI applications.

Our Project is a simple implementation of data structure that involves Linked List operations using the Tkinter module for creating a graphical user interface (GUI).

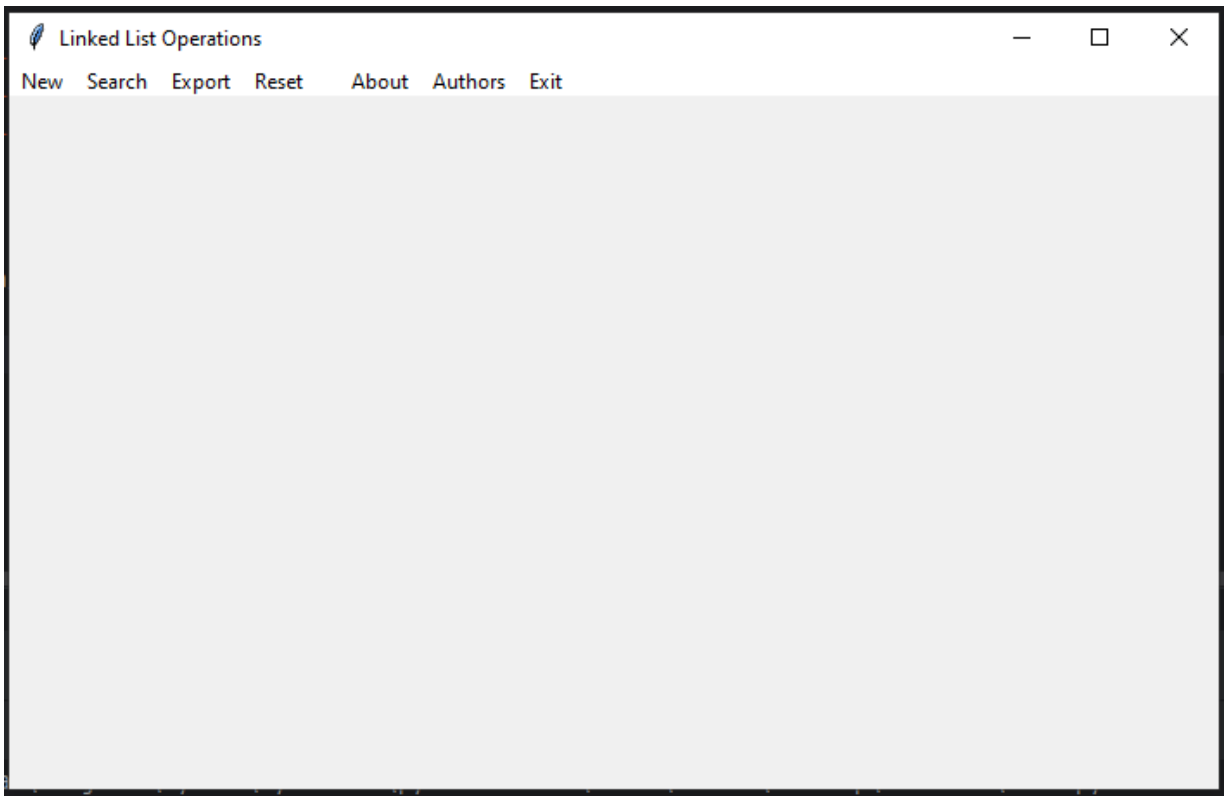
Linked list is a list or collection of data items that can be stored in scattered locations in computer's memory. To store in scattered locations in memory we have to make the link between one data item and another.

2. Objective:

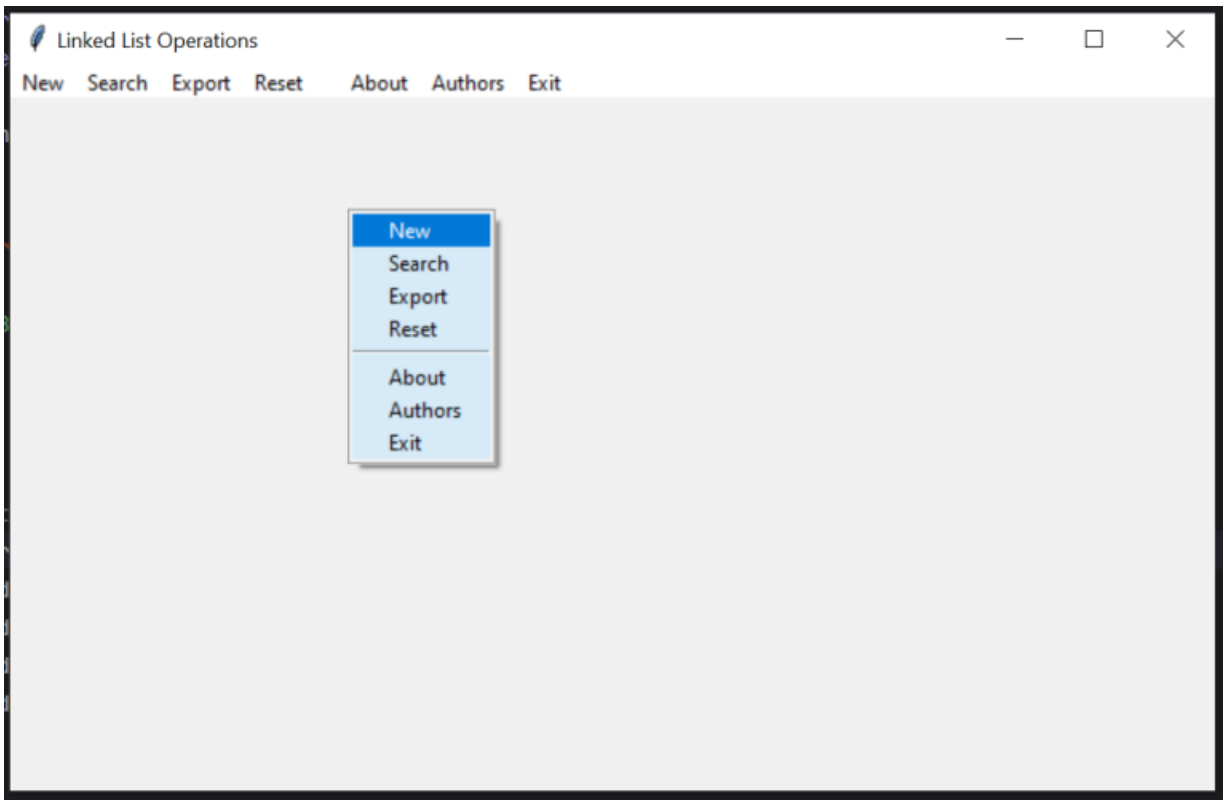
The project aims to demonstrate basic data structure operations like Create, Add, Update, Remove & Export Data elements in Linked List.

3. Description:

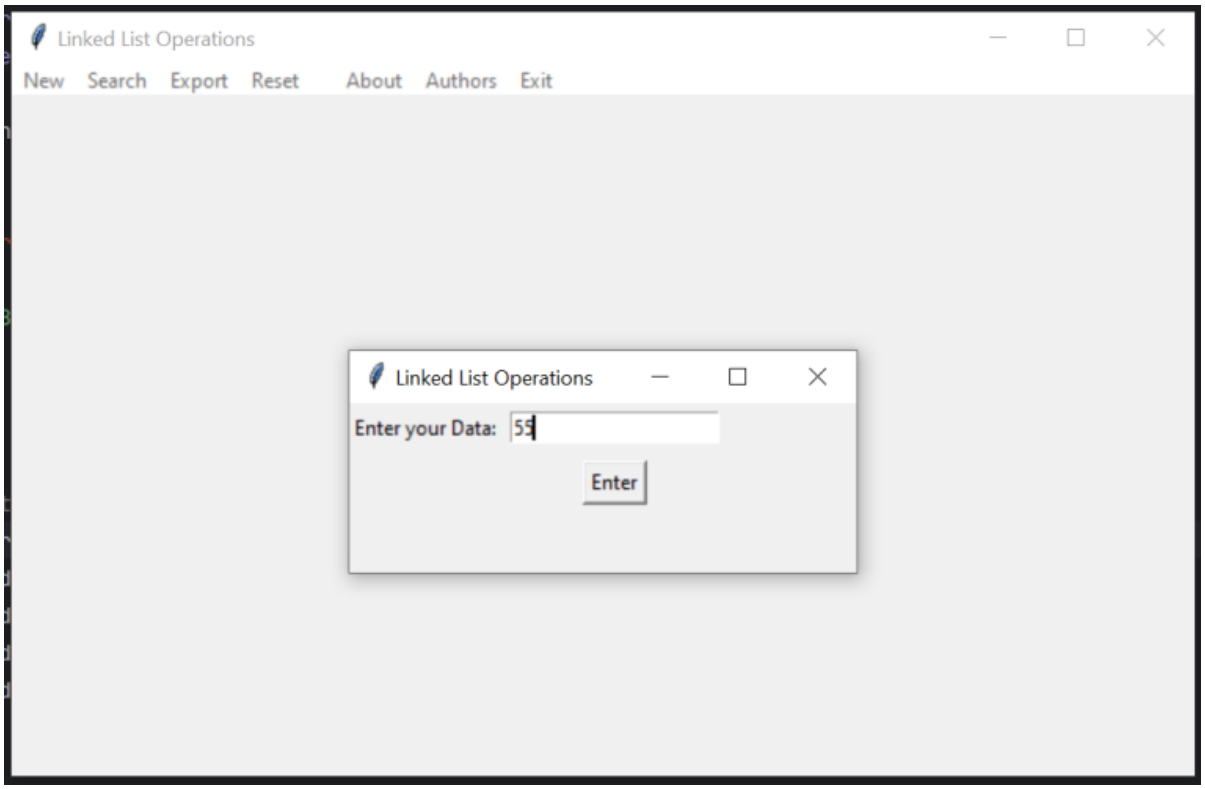
3(a). Homepage- This is the Homepage of data structure project. This page is actually empty like a blank canvas.



3(b). New- To perform operations, right click anywhere on the canvas. Afterwards we get some options. Among them we need to select the option **"New".**

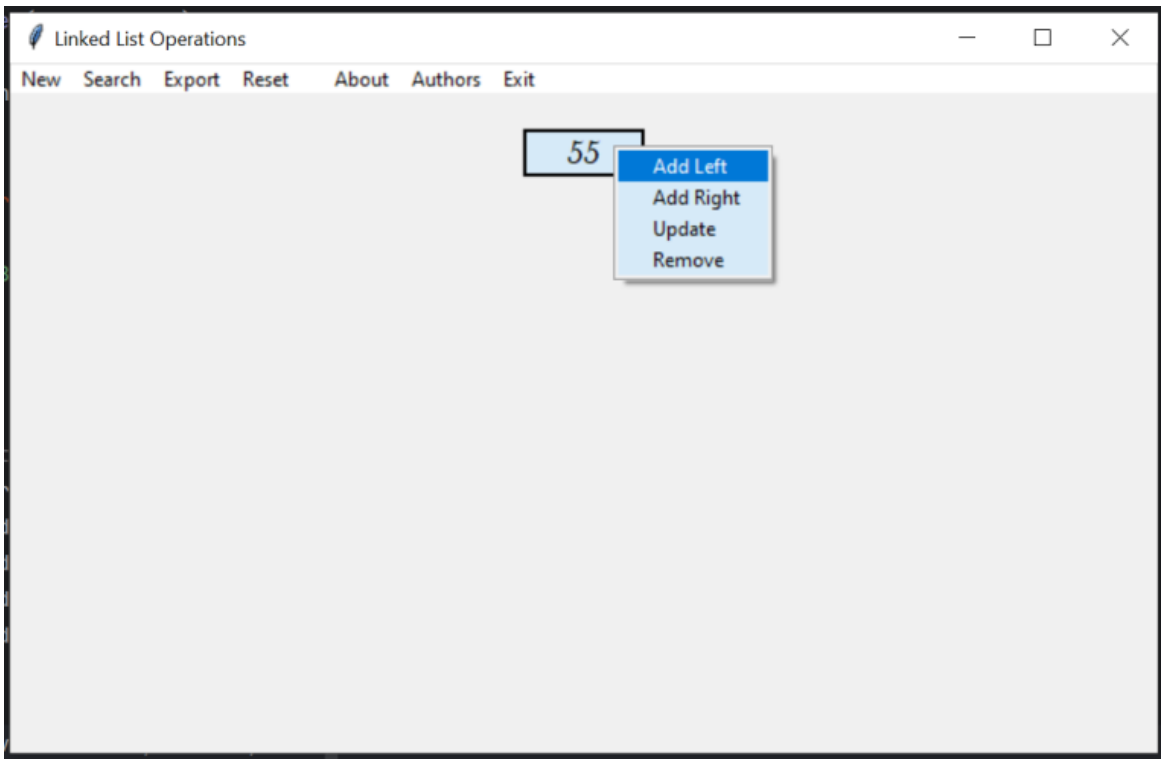


Then we will get a prompt where we can enter any data and press enter.

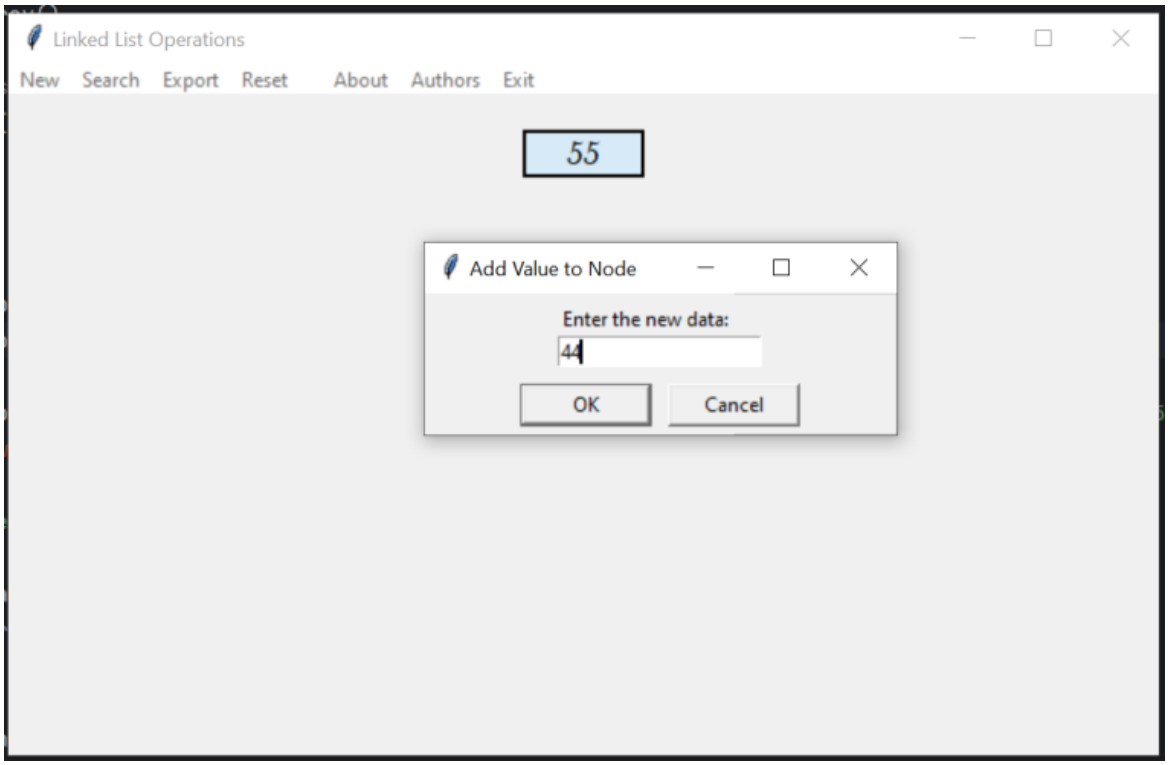


The value will be displayed on the screen.

3(c). Add Left- Now if we click on the data, we will get more options. Among one option is **"Add Left"**.



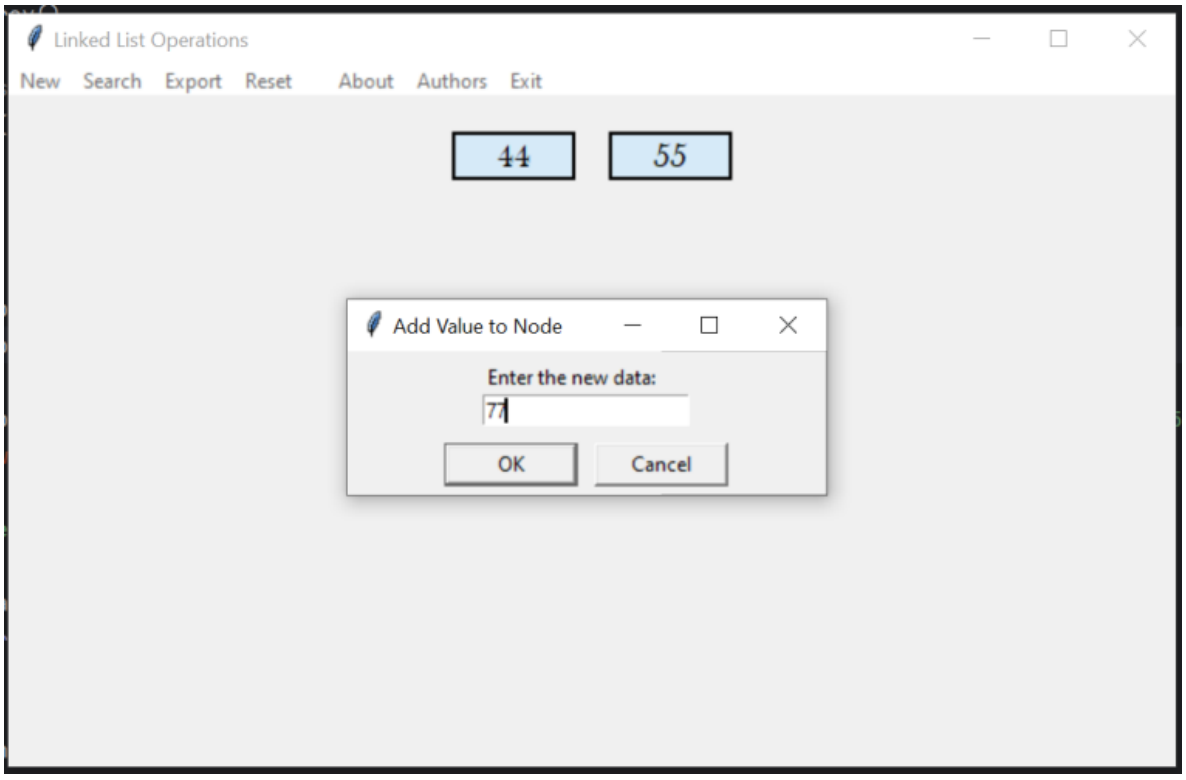
Clicking the **"Add Left"** button will generate another prompt where we can input another data.



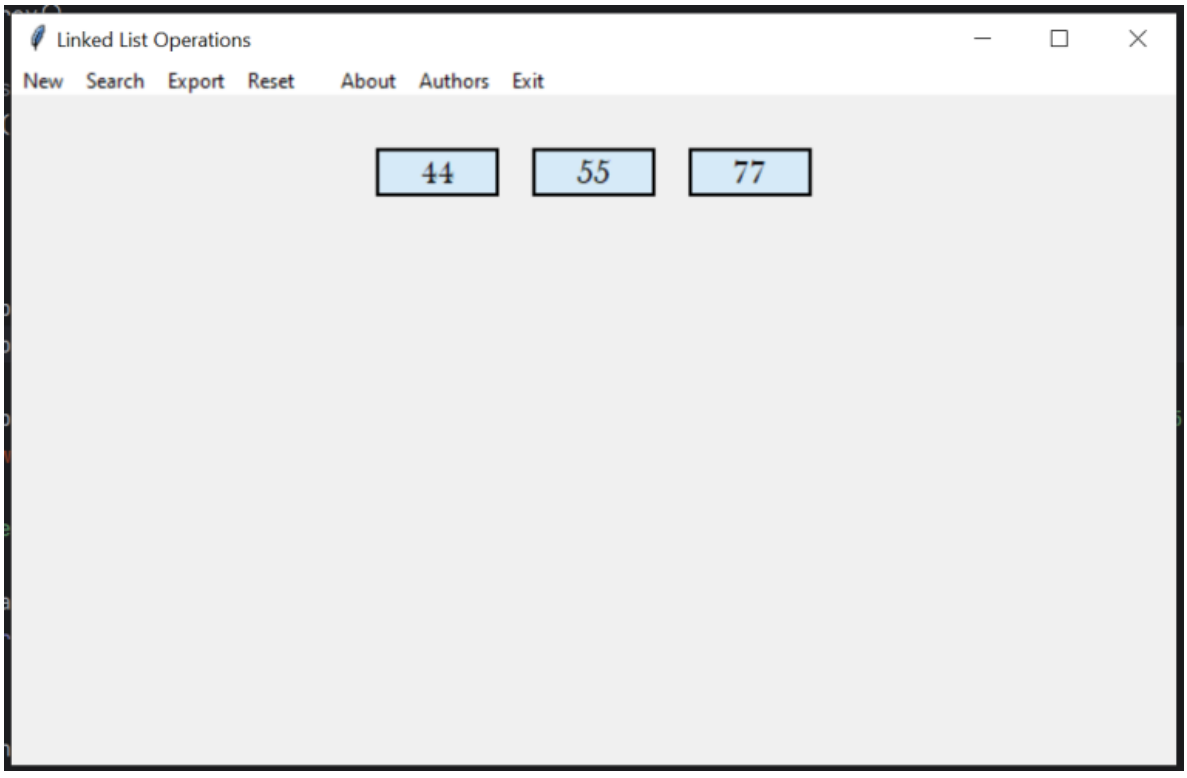
The newly added data will be displayed on the left side of the previous data.

3(d). Add Right- Similarly we can add a data to the right side of a selected data by clicking the **"Add Right"** option.

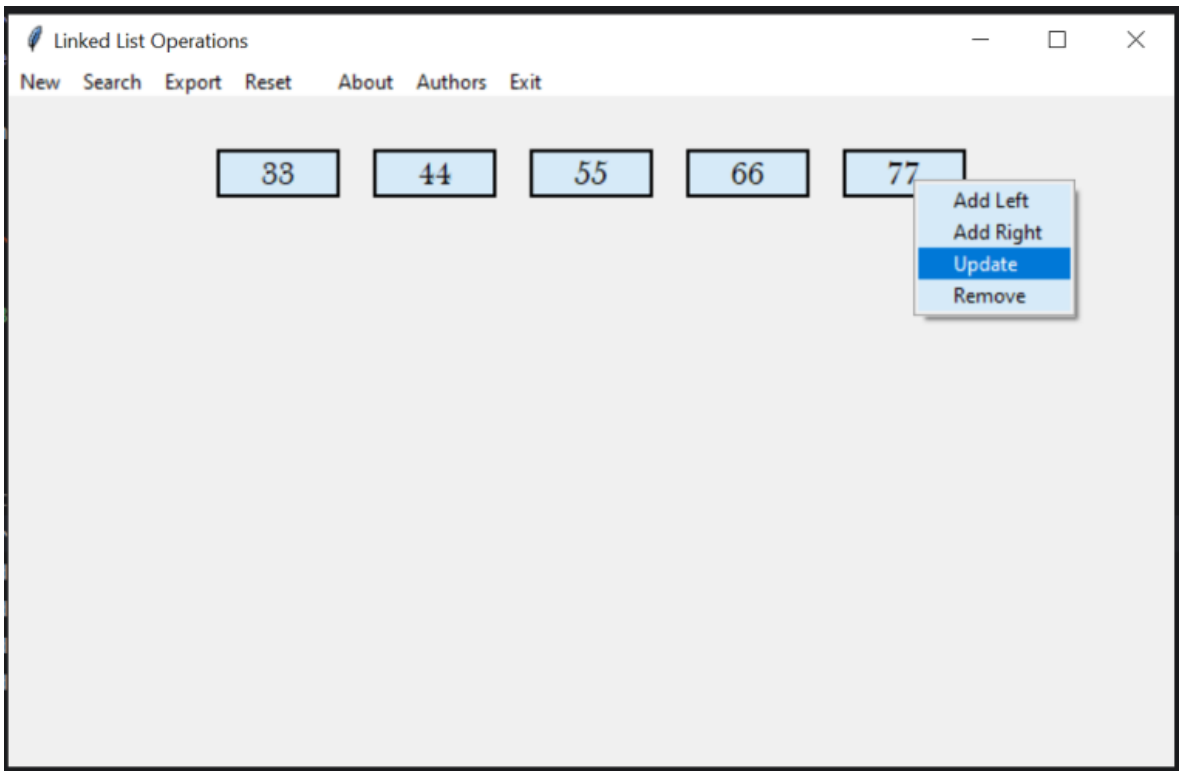
Clicking the **"Add Right"** button will generate another prompt where we can input another data.



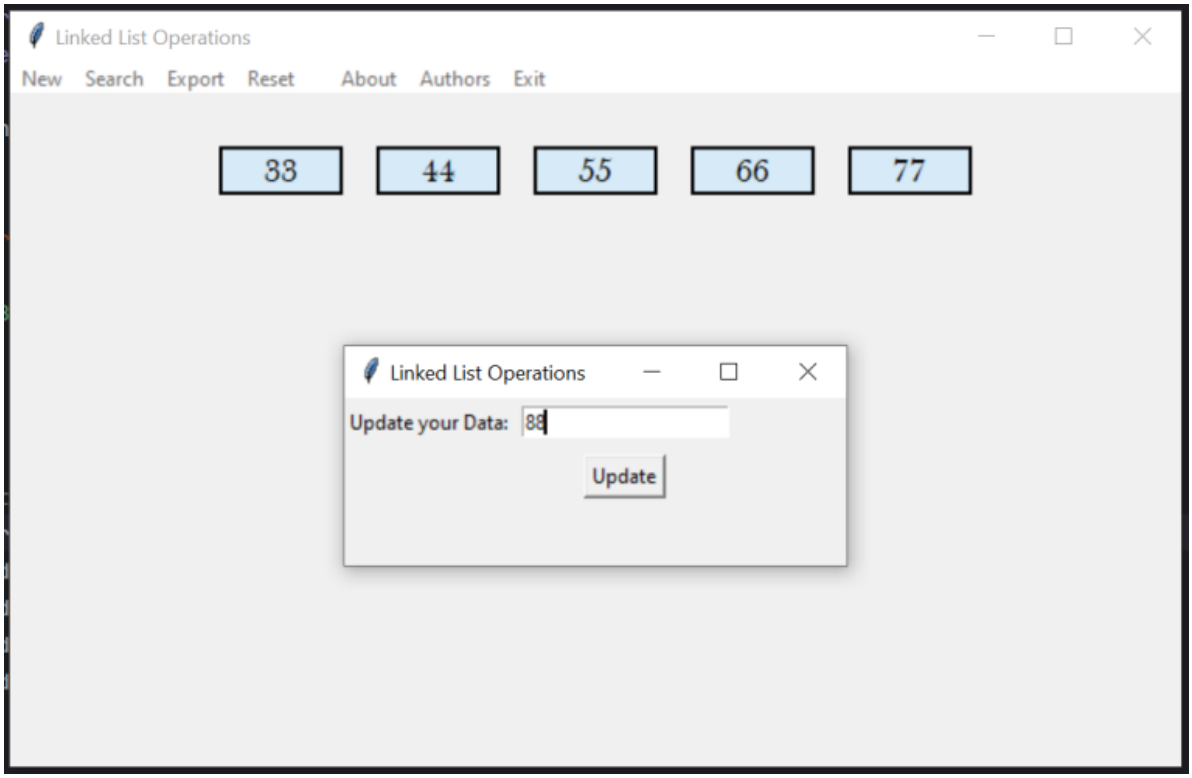
The newly added data will be displayed on the right side of the selected data.



3(e). Update- We can get the update function by clicking on any data. There will be an "**Update**" button in the submenu.

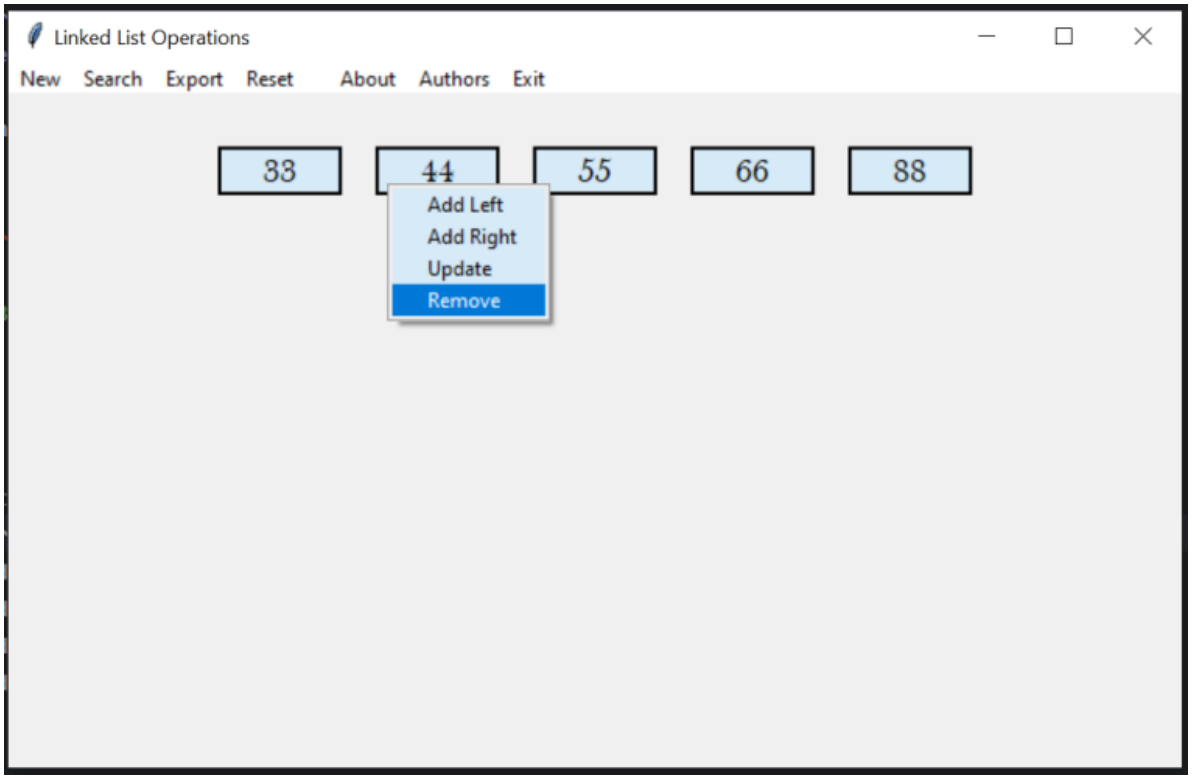


The clicked data can be updated to any other data.

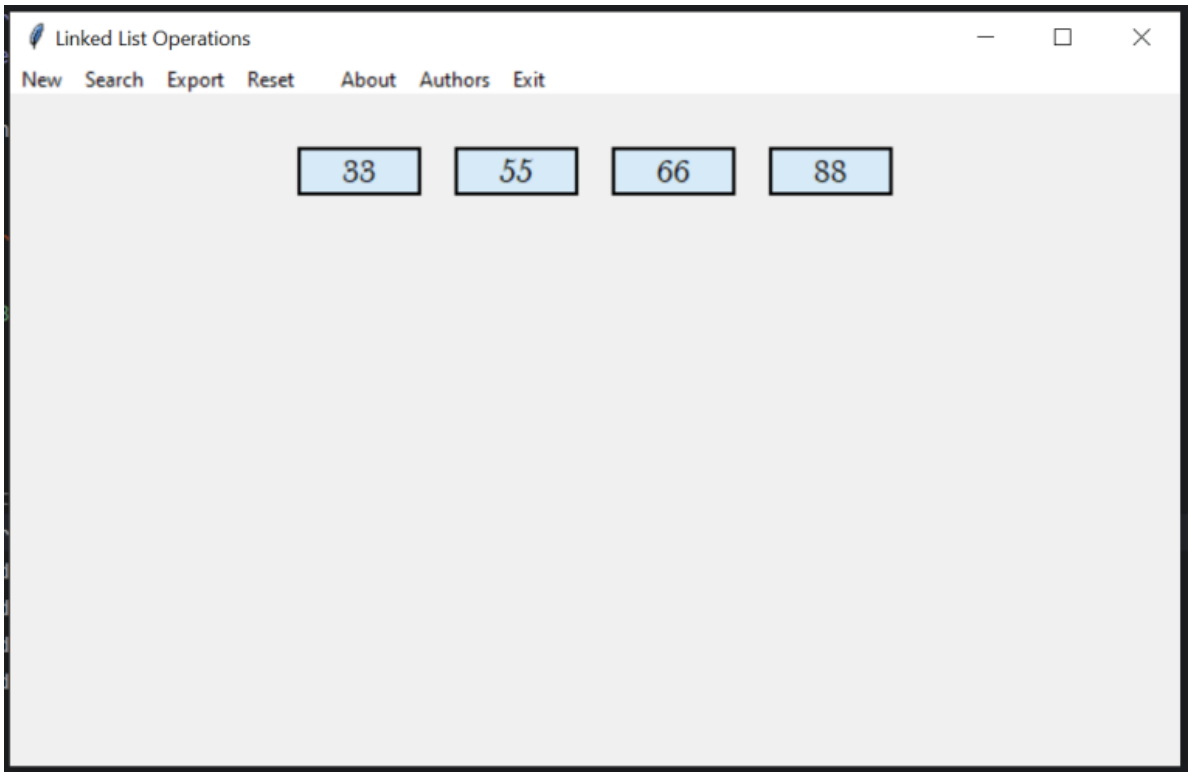


Here the data has been updated.

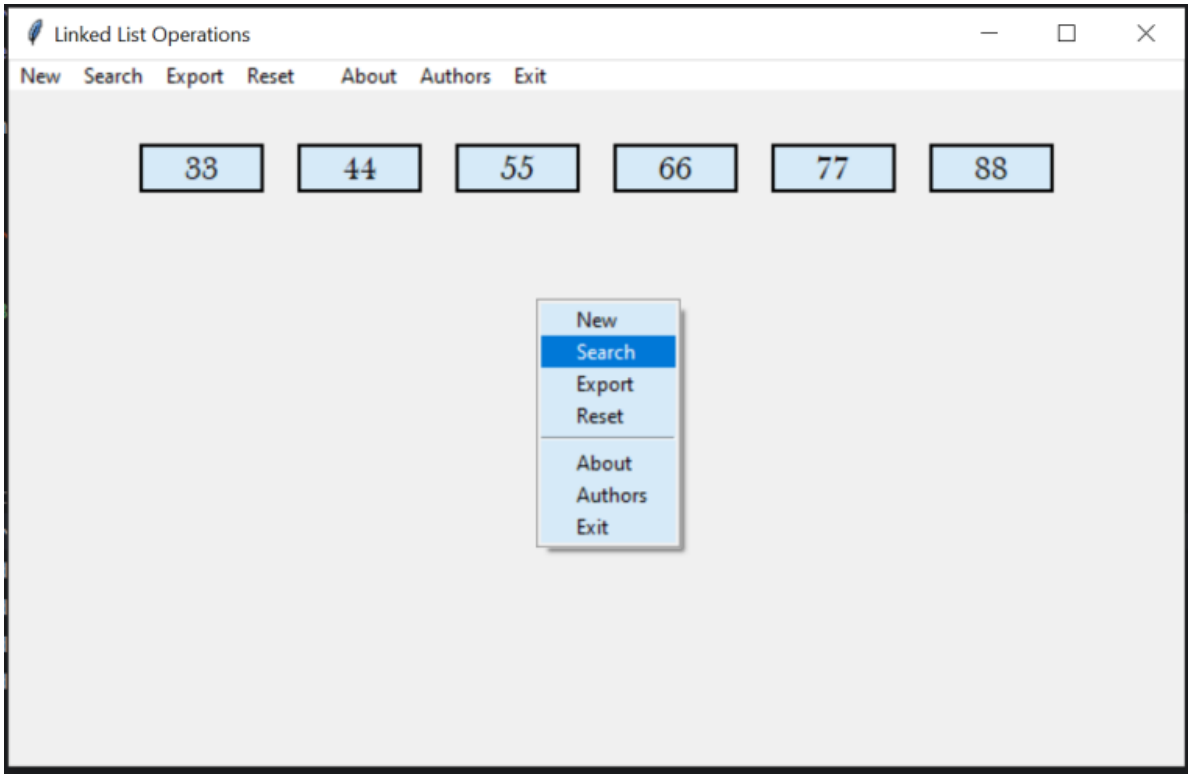
3(f). Remove- If we want to delete a data, we can simply click on that data and click **"Remove"** option from the submenu.



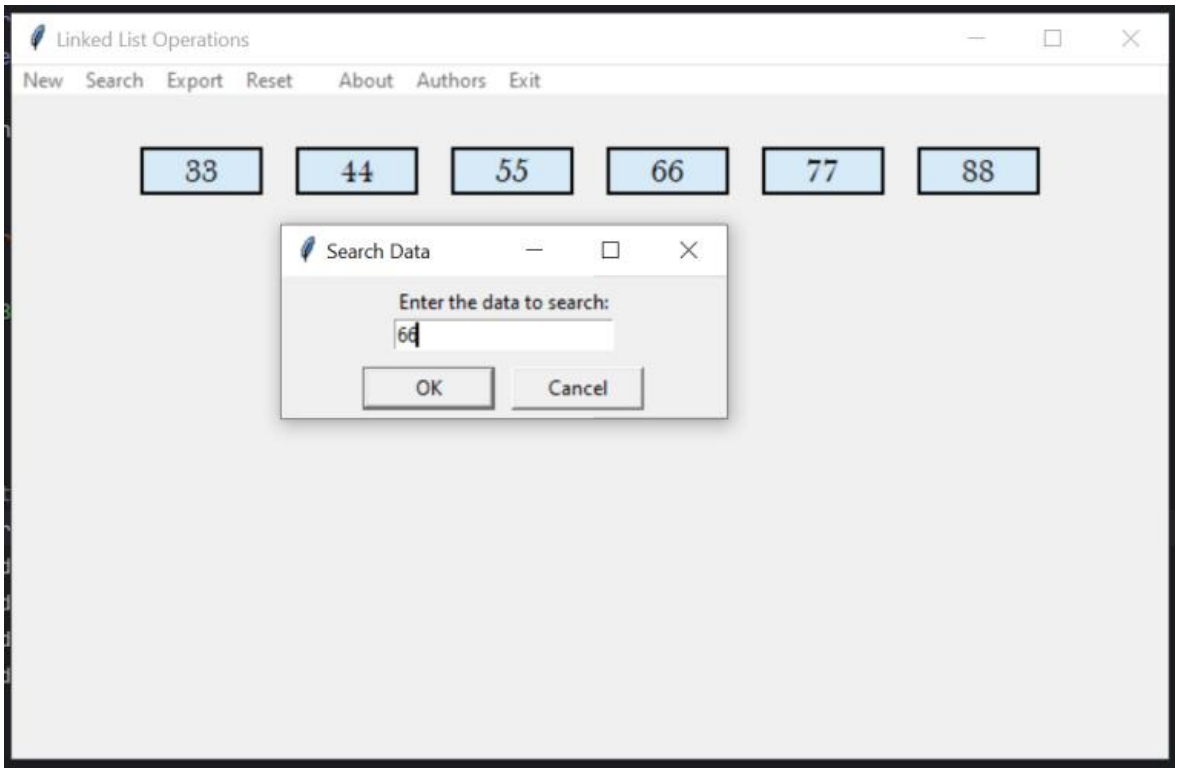
Here the data has been removed.



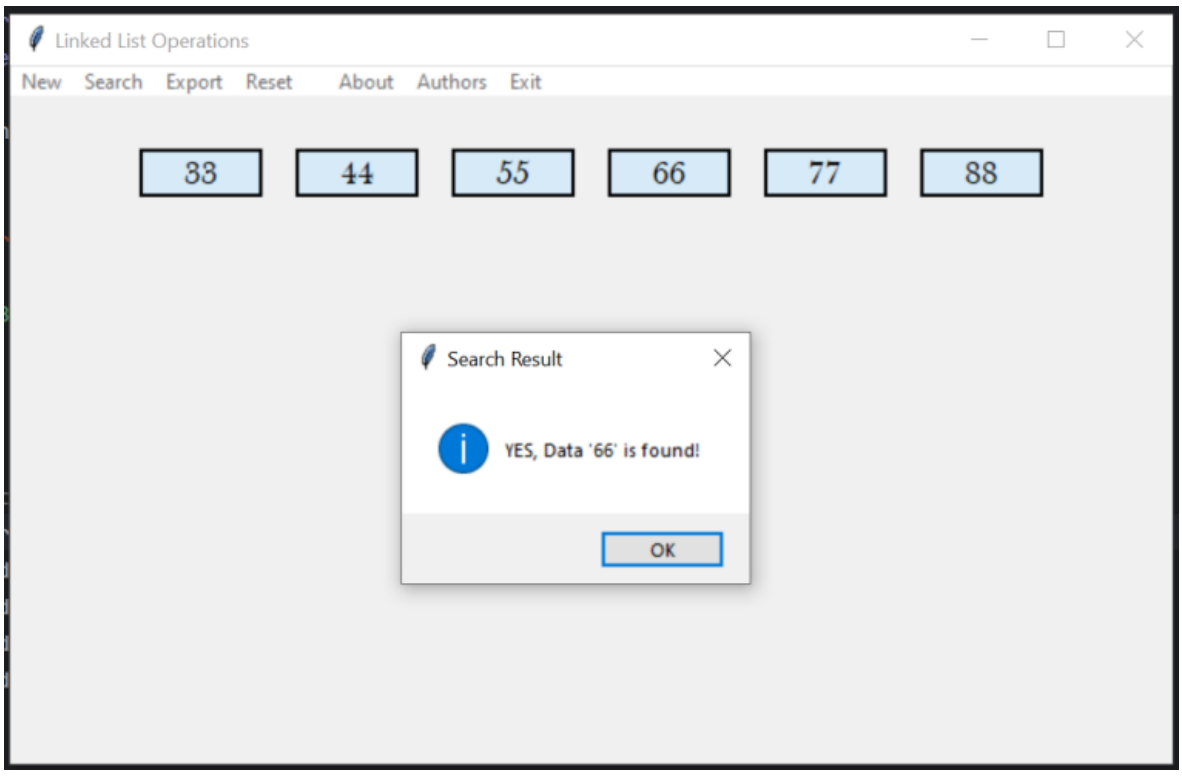
3(g). Search- Here we can see an option named **"Search"** so that we can find out if a data is present on the Linked List or not.



Clicking the **“Search”** button will trigger a prompt, where we can enter the expected data for lookup.

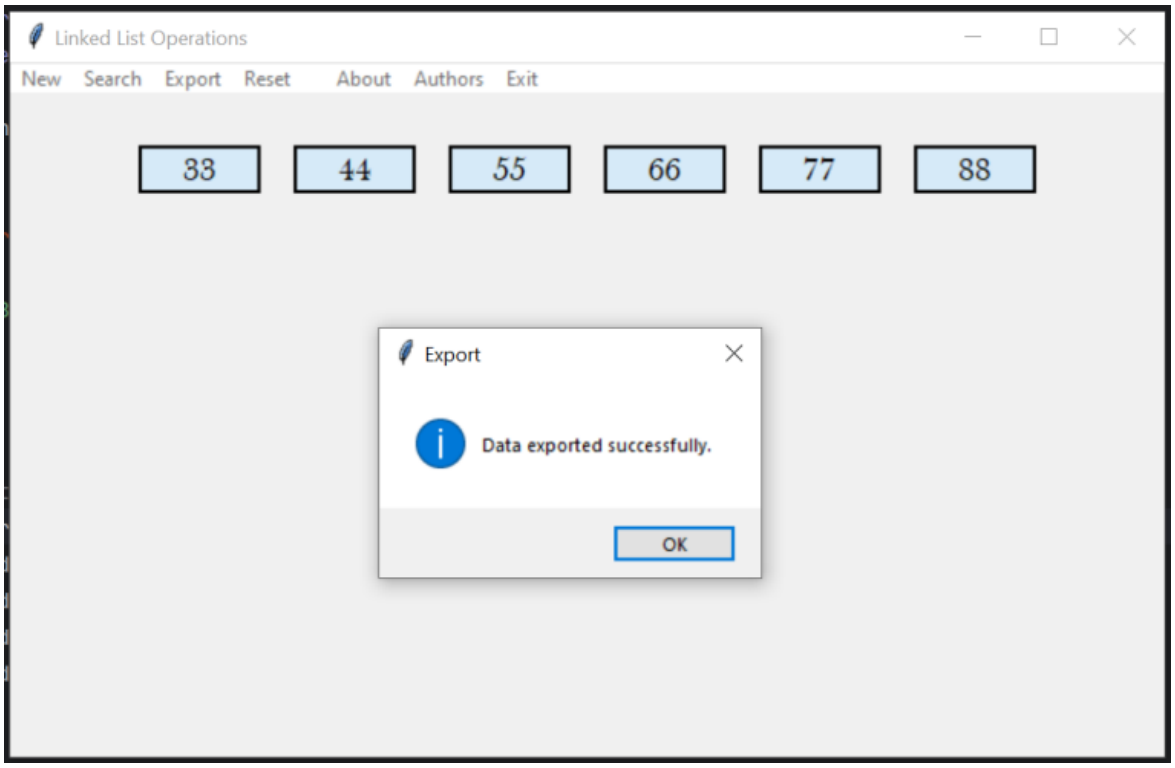


A message prompt will be displayed having information about the data is present or not in the Linked List.



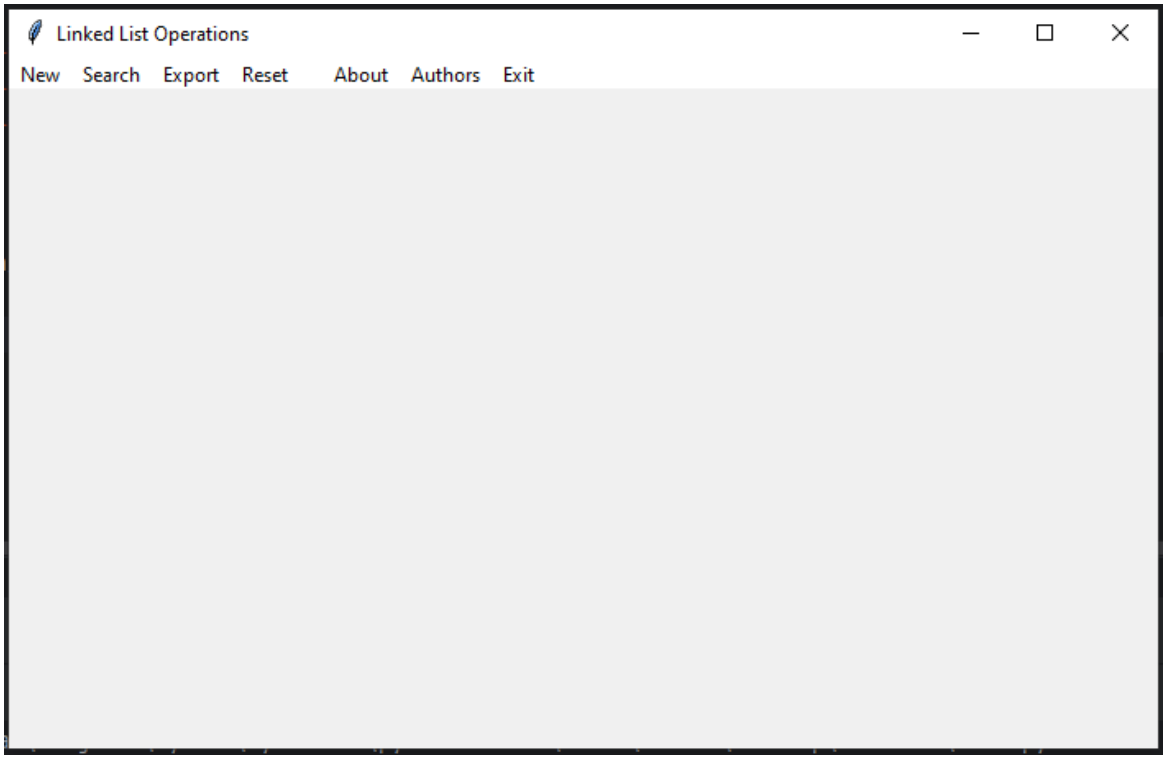
3(h). Export- We have another option named **"Export"** which will export all the data present in the Linked List.

We will get a message prompt after successful export. The file will be saved on the program location named "output_linked_list.txt".

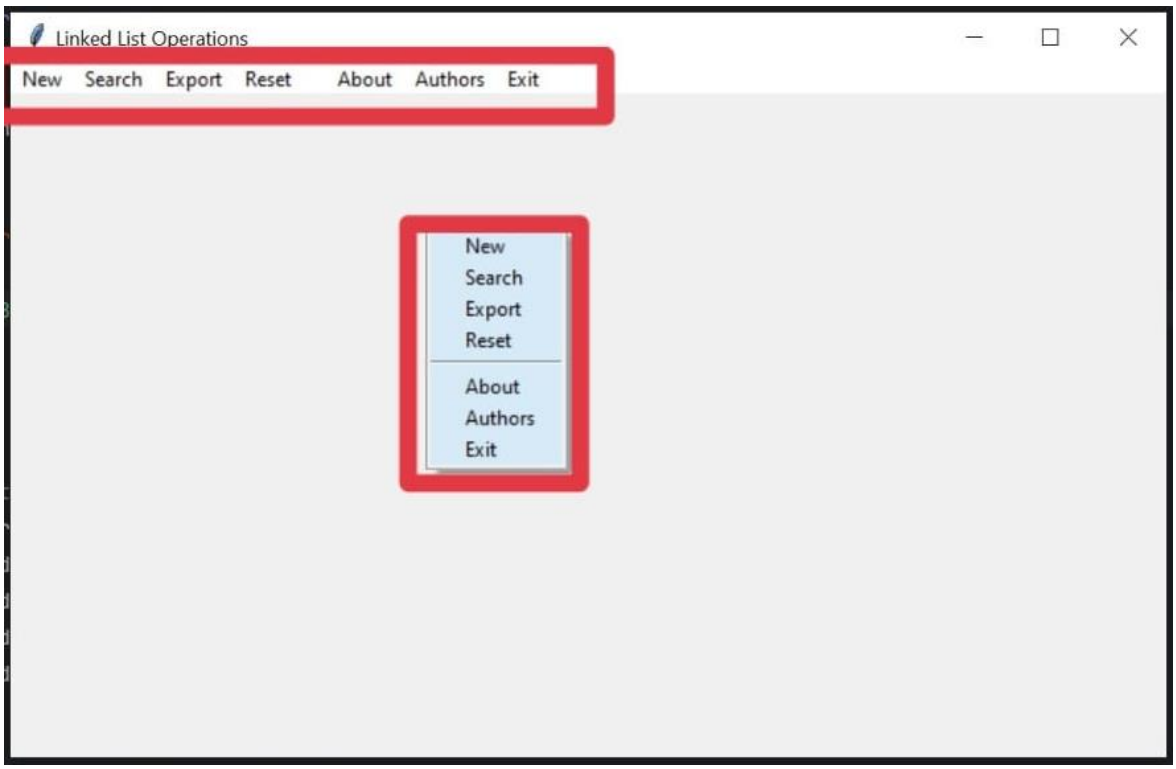


3(i). Reset- We can clear all the data present in the Linked List and go to the beginning through the option **"Reset".**

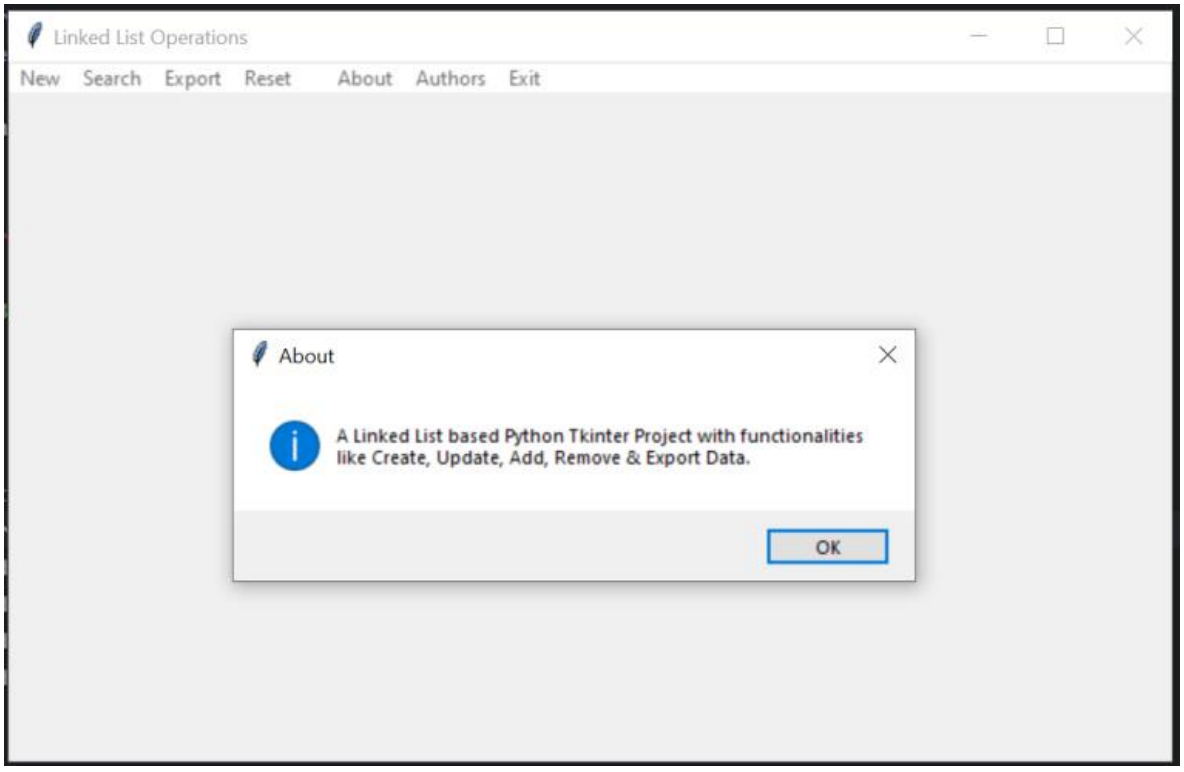
All data is cleared so the canvas is empty.



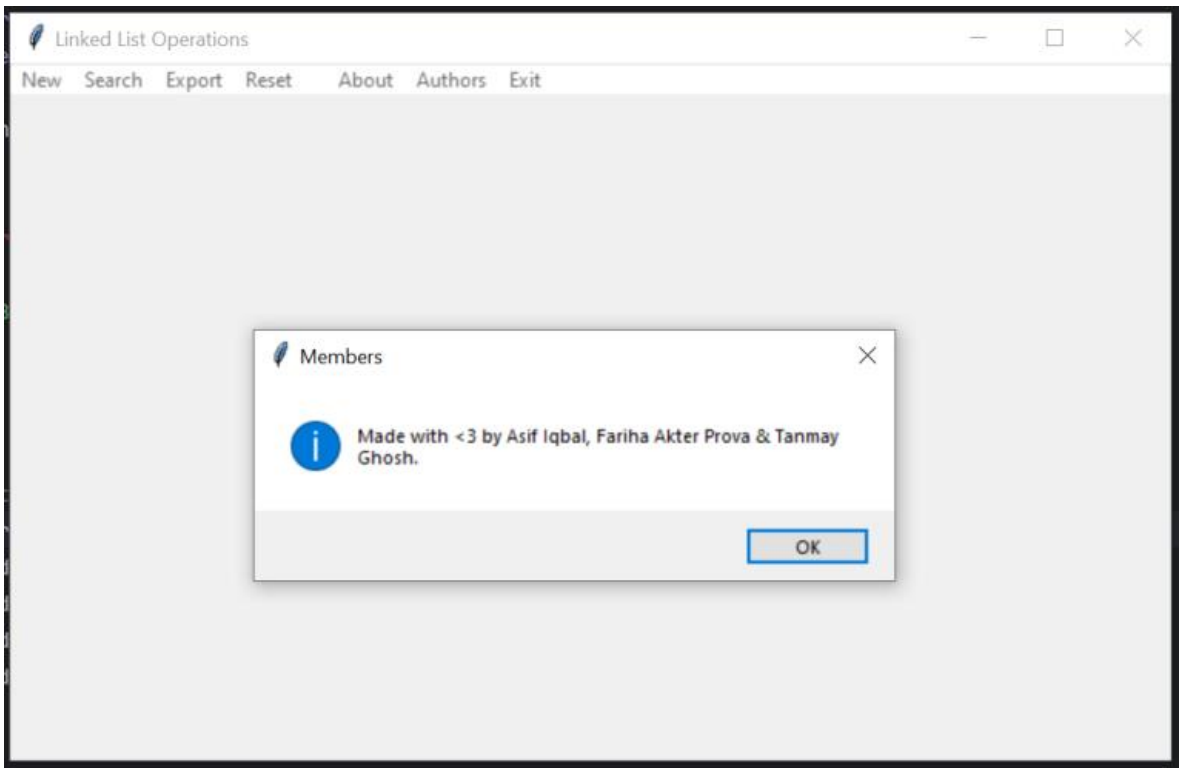
3(j). Menu Bar- The functions we are using by right clicking on canvas can also be found on the menu bar for quicker access.



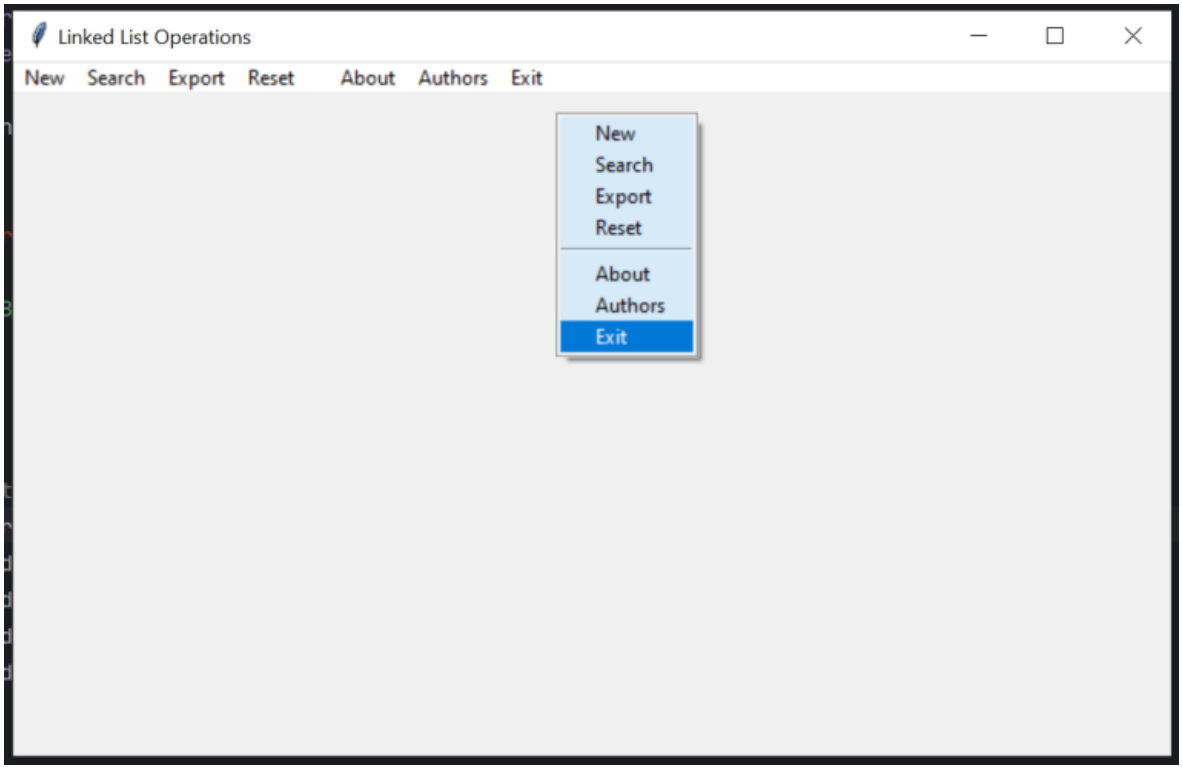
3(k). About- A short summary of the program is given in **"About"** button.



3(l). Authors- The **"Authors"** button gives information about teammates who have completed the project altogether**.**



3(m). Exit- Lastly, we can end the program through the **"Exit"** option**.**



4. Dependencies:

PyCharm Community Edition 2023.1.1 based on Python 3.11.2: PyCharm lets you quickly and easily develop a Python project. For built this project we use Python language and Tkinter (Tk) built in library. After Installing all library, the project runs successfully.

Python Language: We implement this data structure project in Python Language.

26 June, 2023

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