

# NORTH WESTERN UNIVERSITY



## Report

**Course Code :** CSE-2104

**Course Title :** Data Structures Sessional

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## 1.Introduction

Array is a special variable, which can hold more than one value at a time. It is a collection of elements of a similar data type. Arrays in data structures help solve some high-level problems like the "longest consecutive subsequence" program or some easy tasks like arranging the same things in ascending order. Linked List is an ordered collection of elements of the same type in which each element is connected to the next using pointers. A linked list is a collection of nodes. The first node is called the head , and it's used as the starting point for any iteration through the list. The last node must have its next reference pointing to None to determine the end of the list.

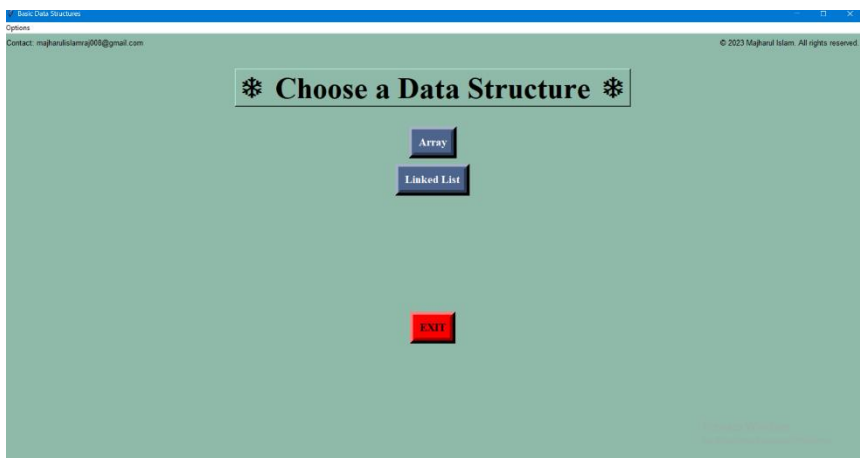
## 2.Objective

The purpose of this lab project was to create a GUI for array and link list. 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 the GUI applications. In this lab project we used the tkinter method.

## 3.Description

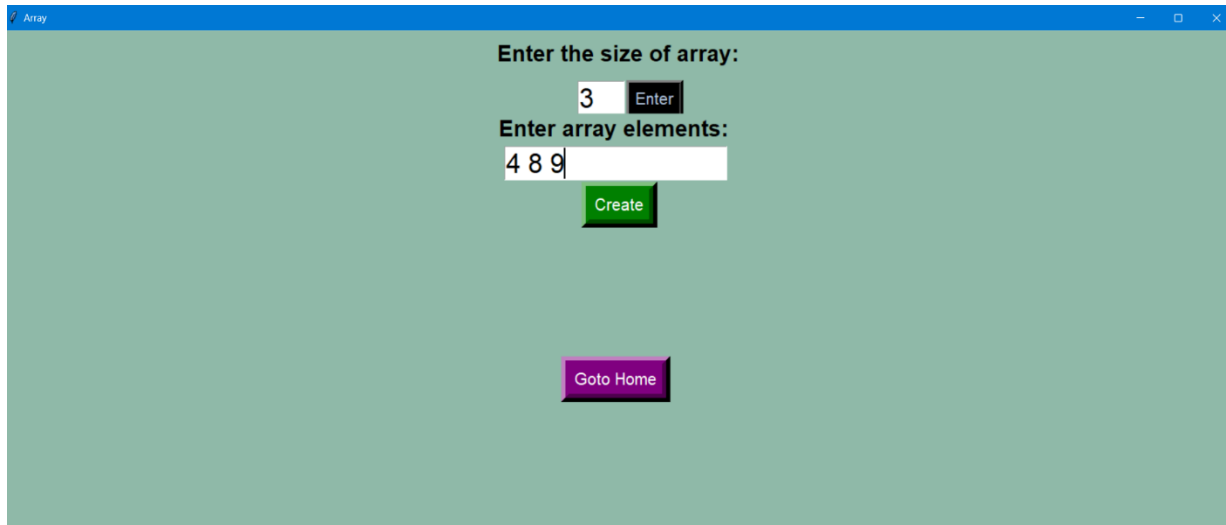
This is the user interface of python tkinter. It represent the array and link list.

GUI :



## Array :

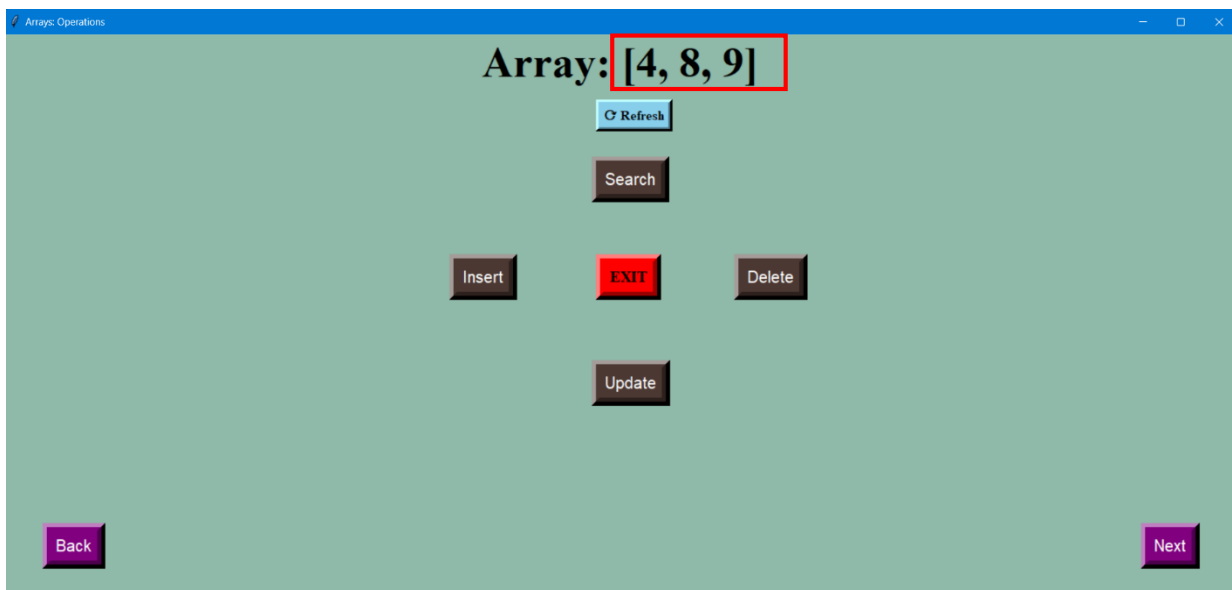
➡ By pressing the Button “ARRAY” user are able to go the next page.



The screenshot shows a window titled "Array" with a light green background. It contains the following elements:

- Text: "Enter the size of array:"
- Input field: A text box containing the number "3".
- Button: A small black button labeled "Enter" next to the input field.
- Text: "Enter array elements:"
- Input field: A text box containing the numbers "4 8 9".
- Button: A green button labeled "Create" below the input field.
- Button: A purple button labeled "Goto Home" at the bottom center.

User Input : User can input array elements here .

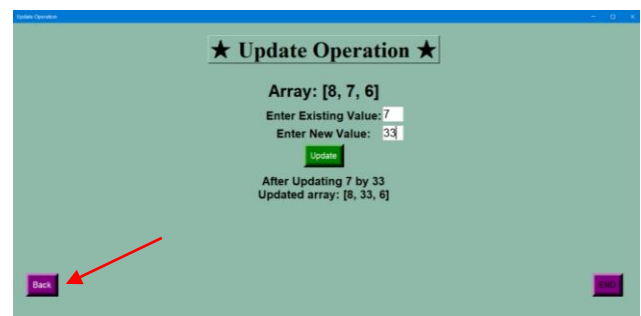
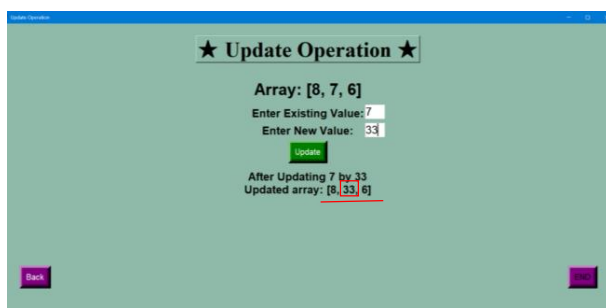
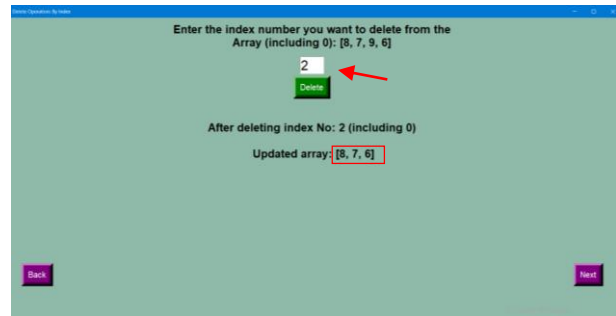
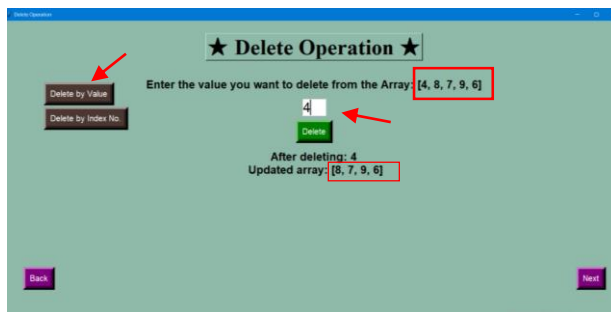
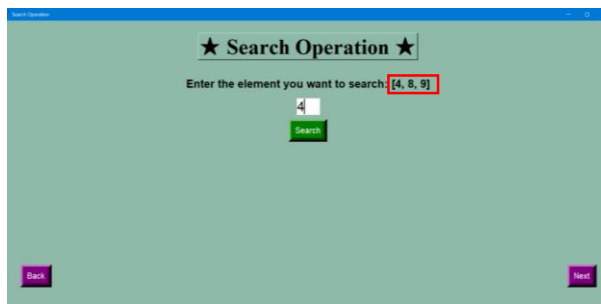
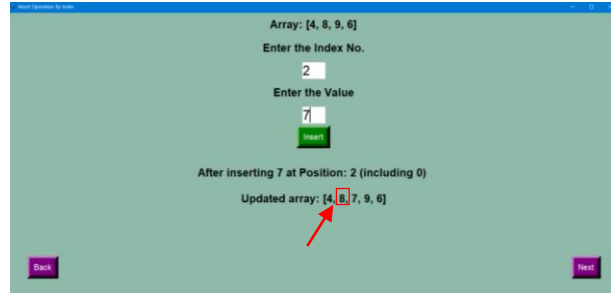


The screenshot shows a window titled "Arrays: Operations" with a light green background. It contains the following elements:

- Text: "Array: [4, 8, 9]" where the array elements are highlighted with a red box.
- Button: A light blue button labeled "Refresh" below the array text.
- Button: A dark grey button labeled "Search" below the "Refresh" button.
- Buttons: Three dark grey buttons labeled "Insert", "EXIT" (in red), and "Delete" arranged horizontally.
- Button: A dark grey button labeled "Update" below the "Insert", "EXIT", and "Delete" buttons.
- Buttons: A purple button labeled "Back" at the bottom left and a purple button labeled "Next" at the bottom right.

➡ Press the CREATE Button for create the Array.

➡By Pressing INSERT ,SEARCH ,DELETE and UPDATE button user can Insert, search ,delete and update the array elements respectively .

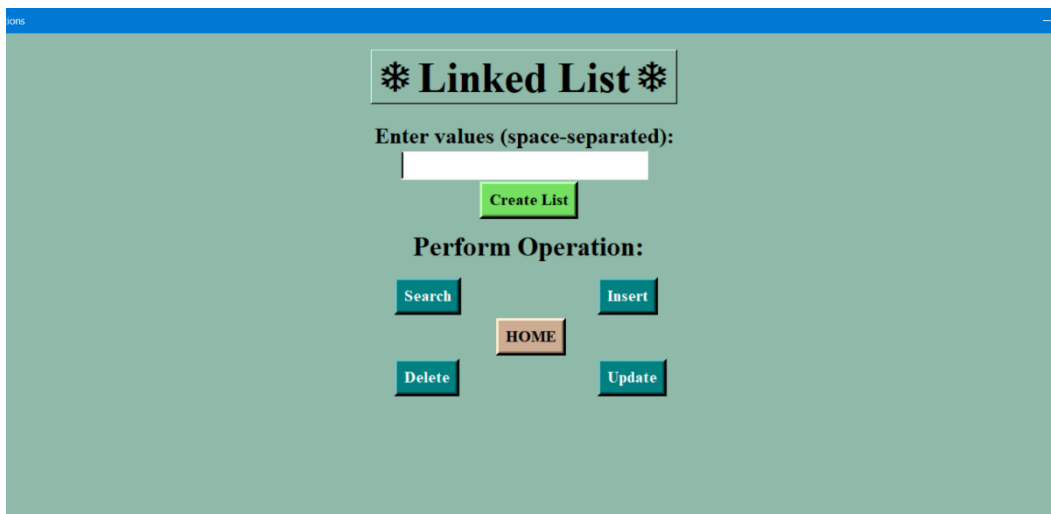
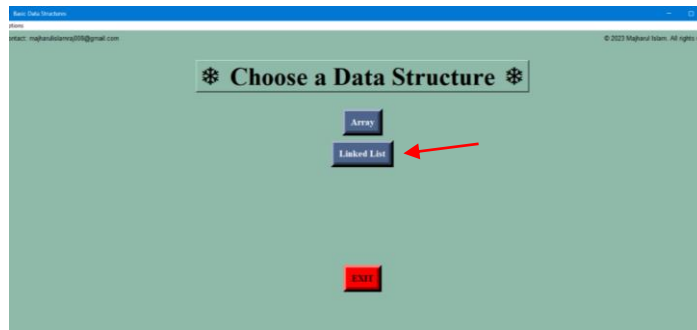


➡ Press the back button for backwards .

## Linked List :



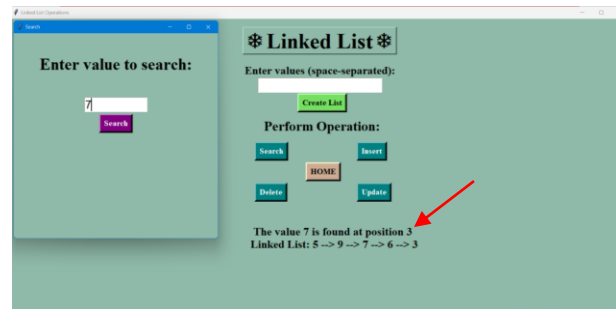
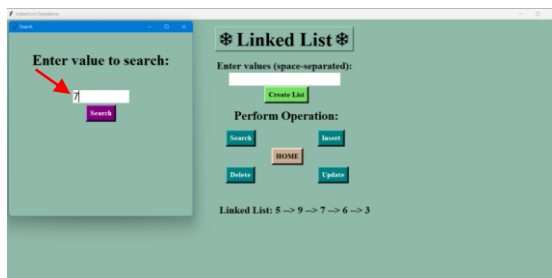
By pressing the button “LINKED LIST “ user are able to go the next page .



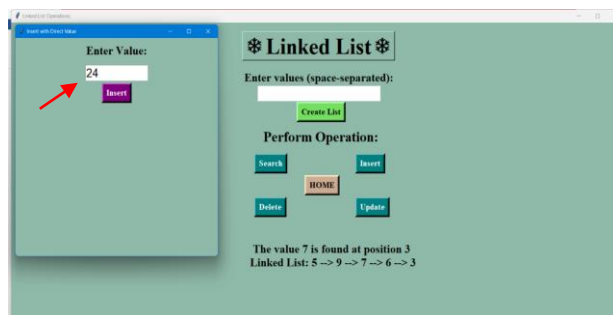
User can Enter values and create list first.



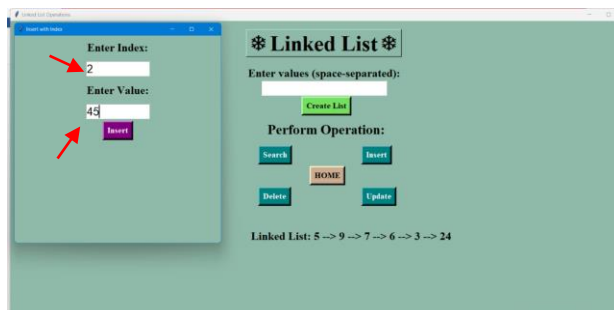
➡ User can search a number to find its position .



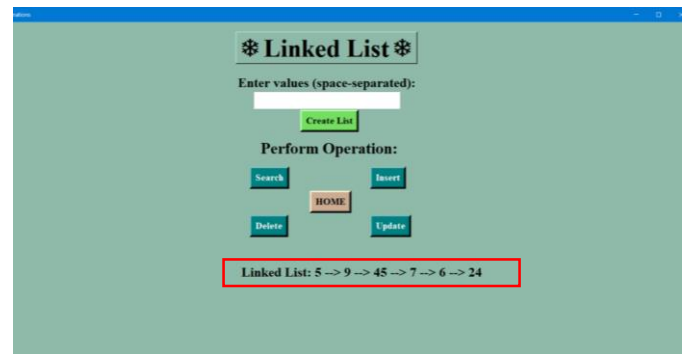
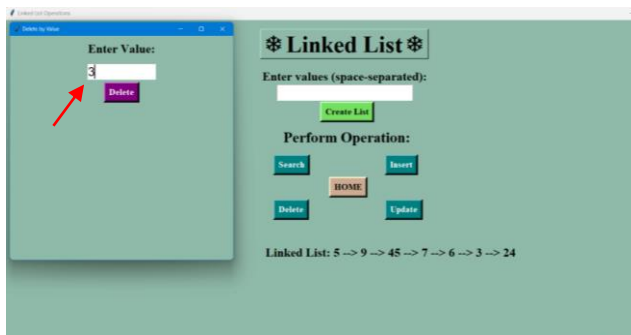
➡ For inserting a number user can insert any number and click the insert button . It will work.



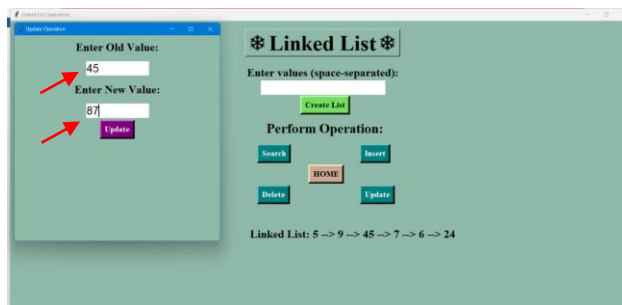
➡ For inserting a value in the 3<sup>rd</sup> position user can insert index number and enter the value .



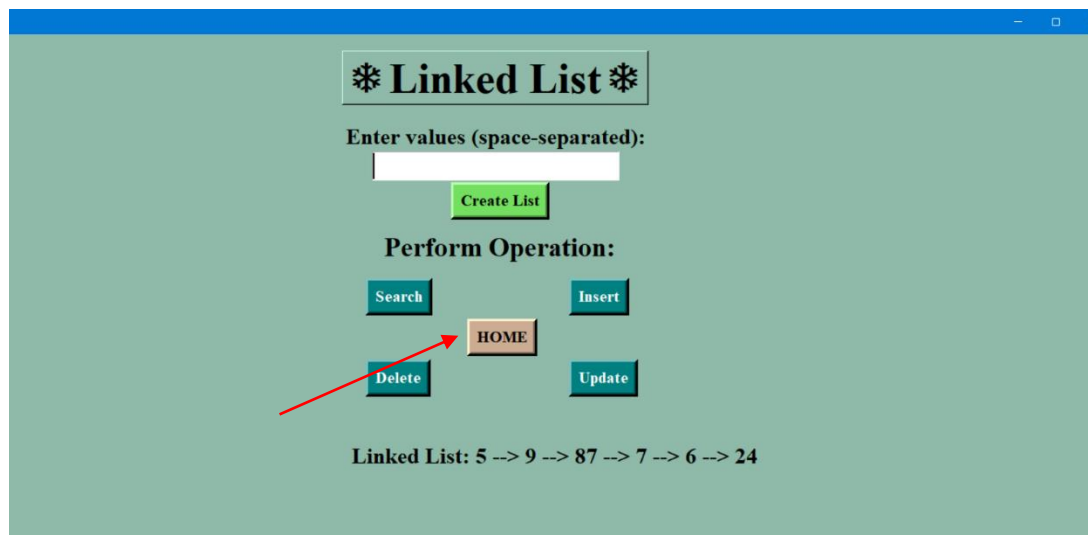
➡ For deleting the value user can take a value for delete .



➡ For updating the new value user can work like that .



➡ By Clicking the Home button it back to the home page .





#### **4.Dependencies**

**Pycharm Community Edition** : PyCharm is an integrated development environment (IDE) specifically designed for Python development. After using python language in pycharm the project run successfully .

22 June ,2023

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