Data Structure and Algorithm

Laboratory Activity No. 6

Singly Linked Lists

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# Objectives

Introduction

A linked list is an organization of a list where each item in the list is in a separate node. Linked lists look like the links in a chain. Each link is attached to the next link by a reference that points to the next link in the chain. When working with a linked list, each link in the chain is called a Node. Each node consists of two pieces of information, an item, which is the data associated with the node, and a link to the next node in the linked list, often called next.

This laboratory activity aims to implement the principles and techniques in:

* Writing algorithms using Linked list
* Writing a python program that will perform the common operations in a singly linked list

# Methods

* Write a Python program to create a singly linked list of prime numbers less than 20. By iterating through the list, display all the prime numbers, the head, and the tail of the list. (using Google Colab)
* Save your source codes to GitHub

# Results

A screen shot of a computer program

AI-generated content may be incorrect.

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Figure 1. Screenshot of program

This program shows how to create and use a simple singly linked list in Python. A linked list is made up of nodes, where each node stores some data and a link to the next node. In the program, the Node class is used to build each node, and the LinkedList class is used to connect and manage them. The program builds a linked list with prime numbers less than 20 (2, 3, 5, 7, 11, 13, 17, and 19). Each number is stored in a node, and then all the nodes are connected one after another. The display\_data() function goes through the list from the head to the tail and prints all the numbers. The display\_head\_tail() function shows the first number which is the head and the last number which is the tail in the list. The output shows the prime numbers below 20 with a head of 2 and tail of 19.

# Conclusion

In this laboratory, I were able to understand how a singly linked list works by creating and connecting node. The program showed how data can be stored in separate nodes, with each node linked to the next one, just like links in a chain. I practiced writing algorithms using a linked list and performed basic operations such as displaying all data, identifying the head, and finding the tail of the list. By doing this, I gained a clearer idea of how linked lists organize data and how they can be used in programming to manage items step by step.

**References**

[1] “W3Schools.com.” <https://www.w3schools.com/python/python_dsa_linkedlists.asp>

[2] GeeksforGeeks, “Singly linked list in Python,” *GeeksforGeeks*, Jul. 23, 2025. <https://www.geeksforgeeks.org/python/singly-linked-list-in-python/>  
[3] “Learn Data Structures and Algorithms with Python: Nodes Cheatsheet | Codecademy,” *Codecademy*. <https://www.codecademy.com/learn/learn-data-structures-and-algorithms-with-python/modules/nodes/cheatsheet>