Data Structure and Algorithm

Laboratory Activity No. 6

Singly Linked Lists

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| *Submitted by:* | *Instructor:* |
| Nerio, Hannah Grace A. | Engr. Maria Rizette H. Sayo |

August, 23, 2025

# 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 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

FOR CHECKING THE PROGRAM REFER TO THIS LINK:

[LAB 6 - Colab](https://colab.research.google.com/drive/1_anQcSB-S077zQ37ENzGBY1j53z1SgYD)

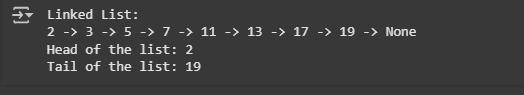


Figure 1 Output of the program

This output displays the result of the program, which presents the contents of a linked list. The linked list stores data in a sequence of nodes, starting with the head node (the first node) and ending with the tail node (the last node). The output also includes visual highlights that clearly indicate which nodes are the head and tail, making it easier to understand the structure of the list.

# Conclusion

The program successfully created a singly linked list containing prime numbers less than 20. Each prime number was stored in a separate node and linked sequentially. The output displayed all the prime numbers in the list, with clear identification of the head and tail nodes. This exercise showed how linked lists can be used to organize data efficiently. It also reinforced the concept of prime numbers and how to check for them using basic logic. By combining number theory with data structures, the task helped build a deeper understanding of how algorithms and memory management work together. Overall, the activity was a good example of how simple programming techniques can solve real problems. It also highlighted the importance of structuring data clearly, especially when working with dynamic sets of values.

**References**

[1] Co Arthur O.. “University of Caloocan City Computer Engineering Department Honor Code,” UCC-CpE Departmental Policies, 2020.

[2] Google Colab, “Google Colab,” *google.com*. [Online]. Available: <https://colab.research.google.com/drive/1_anQcSB-S077zQ37ENzGBY1j53z1SgYD>. [Accessed: 23-Aug-2025].