MIDTERM: SKILL TEST

Course Code: CPE 201L	**Program: BSCPE**
Course Title: Data Structure & Algorithms	**Date Performed: September 6, 2025**
Section: 2A	**Date Submitted: September 6, 2025**
Name: Sumel, Hendrix Nathan Laurella	**Instructor: Engr. Maria Rizette H. Sayo**

1.Objectives

Implement on singly-linked list of odd integers from 1 to 30 and do the following operations

a. Display all data
b. Append a node
c. Delete a node

2. Discussion

In this skill-test, we implemented singly-linked data structure program with the list of odd integers from 1 to 30. We display the data, append node, and we also deleted a node in order to fulfill the objectives of the test.

3. Materials and Equipment

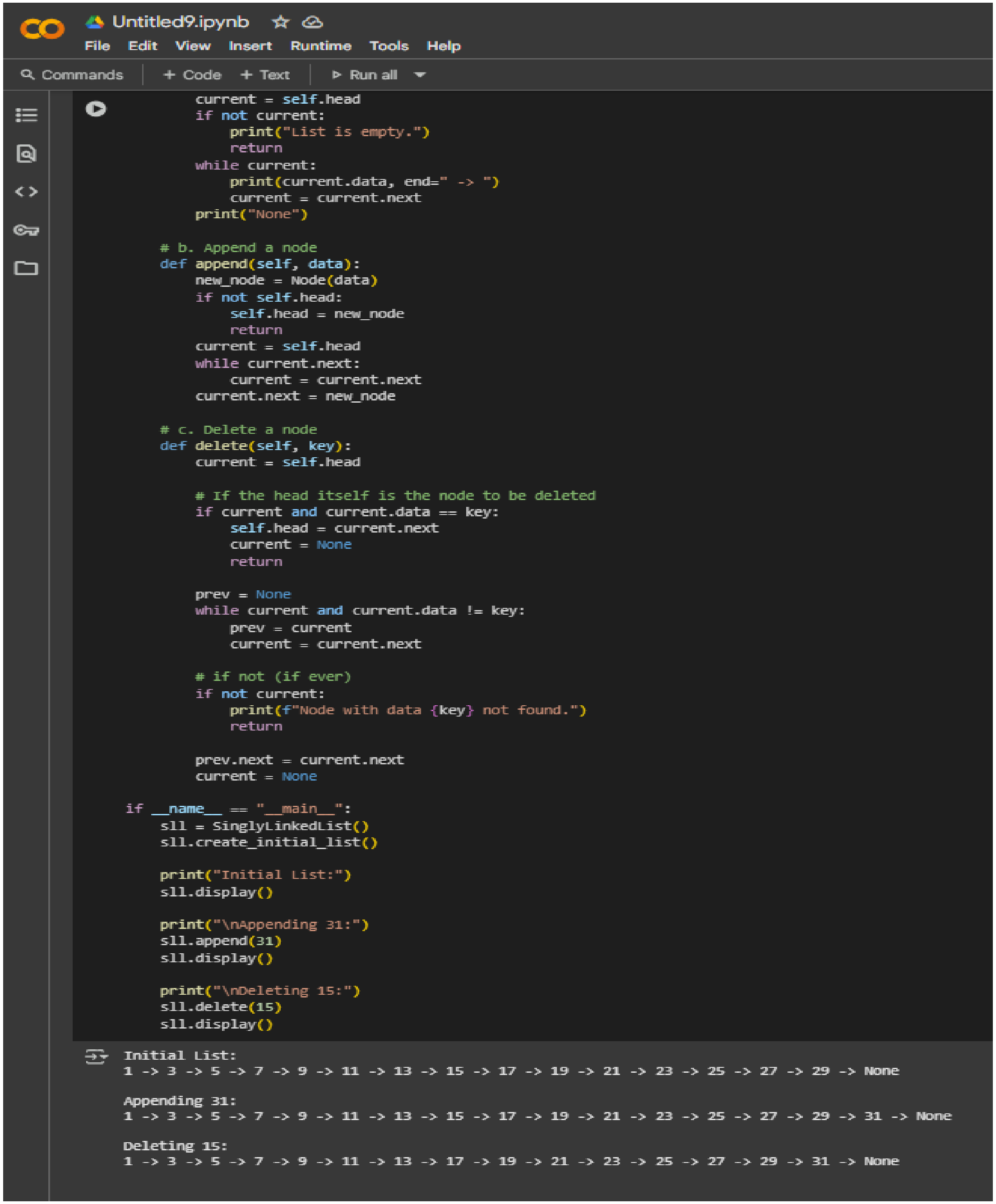
- **Desktop/laptop**
- **Web connection**
- **Github and Google Colab**

4. Procedure

This program demonstrated hot to implement singly-linked list in a program. So singly linked list is a linear data structure where each element (node) contains data and next pointer. So unlike arrays, this data structure does not use continues memory locations but instead the nodes are connected through pointers, of which makes it easy to insert or delete nodes without shifting elements

So we built linked list that stores odd integers from 1 to 29 then we performed the 3 main objectives given for this skill test.

5. Output



```
        current = self.head
        if not current:
            print("List is empty.")
            return
        while current:
            print(current.data, end=" -> ")
            current = current.next
        print("None")

    # b. Append a node
    def append(self, data):
        new_node = Node(data)
        if not self.head:
            self.head = new_node
            return
        current = self.head
        while current.next:
            current = current.next
        current.next = new_node

    # c. Delete a node
    def delete(self, key):
        current = self.head

        # If the head itself is the node to be deleted
        if current and current.data == key:
            self.head = current.next
            current = None
            return

        prev = None
        while current and current.data != key:
            prev = current
            current = current.next

        # if not (if ever)
        if not current:
            print(f"Node with data {key} not found.")
            return

        prev.next = current.next
        current = None

if __name__ == "__main__":
    sll = SinglyLinkedList()
    sll.create_initial_list()

    print("Initial List:")
    sll.display()

    print("\nAppending 31:")
    sll.append(31)
    sll.display()

    print("\nDeleting 15:")
    sll.delete(15)
    sll.display()
```

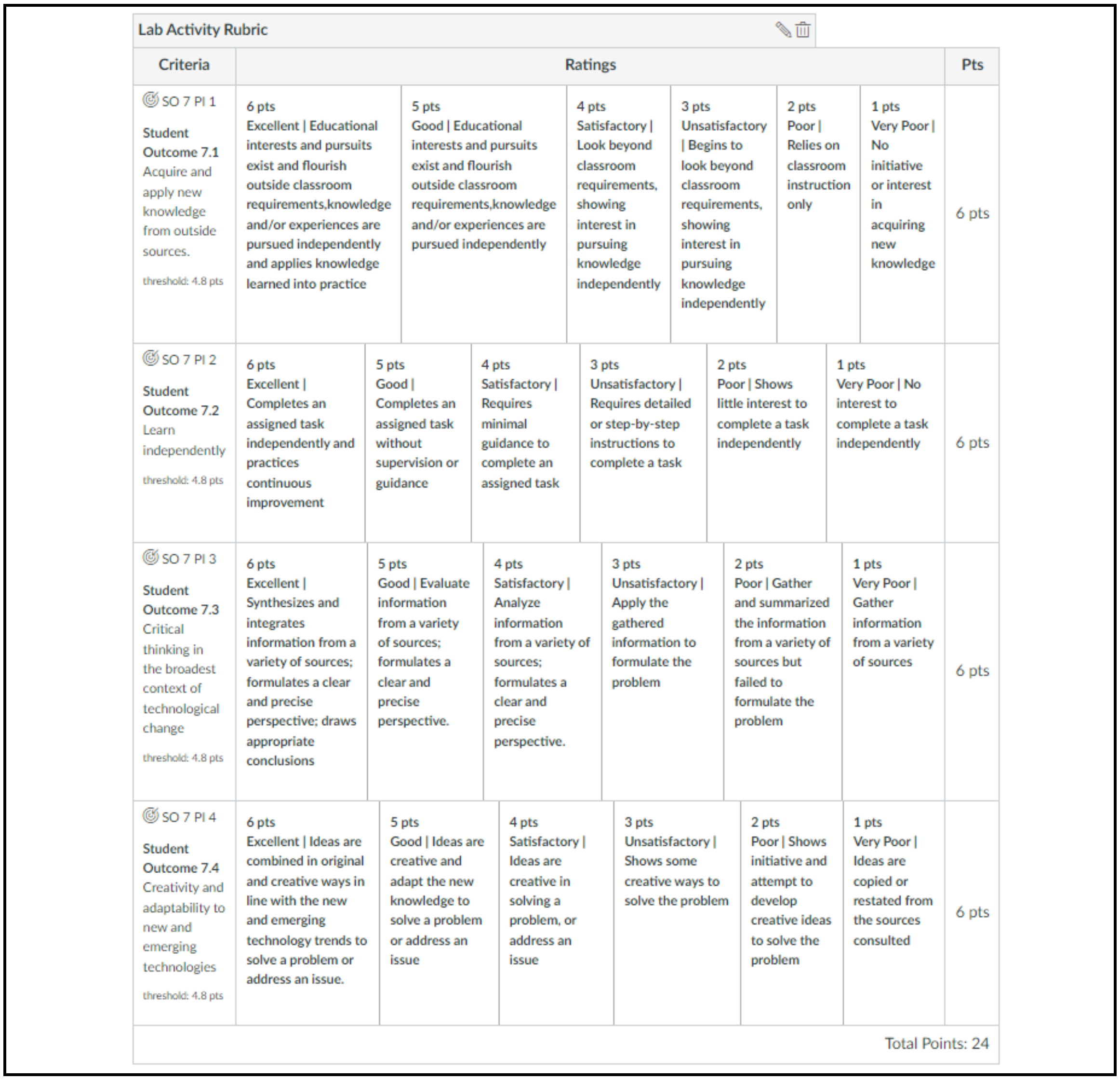
```
Initial List:
1 -> 3 -> 5 -> 7 -> 9 -> 11 -> 13 -> 15 -> 17 -> 19 -> 21 -> 23 -> 25 -> 27 -> 29 -> None

Appending 31:
1 -> 3 -> 5 -> 7 -> 9 -> 11 -> 13 -> 15 -> 17 -> 19 -> 21 -> 23 -> 25 -> 27 -> 29 -> 31 -> None

Deleting 15:
1 -> 3 -> 5 -> 7 -> 9 -> 11 -> 13 -> 17 -> 19 -> 21 -> 23 -> 25 -> 27 -> 29 -> 31 -> None
```

6. Conclusion

To conclude, we specifically built linked list that stores odd integer from 1 – 29 (30). We then performed three main operations on the list

1. display all data
2. Append a node
3. Delete a node

Again, it was not easy, especially the part where you need to provide all the given data in the program. I may not get a high grade but I'm just glad its over. Thank ma'am, thank you lord.



Lab Activity Rubric

Criteria	Ratings						Pts
SO 7 PI 1 Student Outcome 7.1 Acquire and apply new knowledge from outside sources. threshold: 4.8 pts	6 pts Excellent | Educational interests and pursuits exist and flourish outside classroom requirements,knowledge and/or experiences are pursued independently and applies knowledge learned into practice	5 pts Good | Educational interests and pursuits exist and flourish outside classroom requirements,knowledge and/or experiences are pursued independently	4 pts Satisfactory | Look beyond classroom requirements, showing interest in pursuing knowledge independently	3 pts Unsatisfactory | Begins to look beyond classroom requirements, showing interest in pursuing knowledge independently	2 pts Poor | Relies on classroom instruction only	1 pts Very Poor | No initiative or interest in acquiring new knowledge	6 pts
SO 7 PI 2 Student Outcome 7.2 Learn independently threshold: 4.8 pts	6 pts Excellent | Completes an assigned task independently and practices continuous improvement	5 pts Good | Completes an assigned task without supervision or guidance	4 pts Satisfactory | Requires minimal guidance to complete an assigned task	3 pts Unsatisfactory | Requires detailed or step-by-step instructions to complete a task	2 pts Poor | Shows little interest to complete a task independently	1 pts Very Poor | No interest to complete a task independently	6 pts
SO 7 PI 3 Student Outcome 7.3 Critical thinking in the broadest context of technological change threshold: 4.8 pts	6 pts Excellent | Synthesizes and integrates information from a variety of sources; formulates a clear and precise perspective; draws appropriate conclusions	5 pts Good | Evaluate information from a variety of sources; formulates a clear and precise perspective.	4 pts Satisfactory | Analyze information from a variety of sources; formulates a clear and precise perspective.	3 pts Unsatisfactory | Apply the gathered information to formulate the problem	2 pts Poor | Gather and summarized the information from a variety of sources but failed to formulate the problem	1 pts Very Poor | Gather information from a variety of sources	6 pts
SO 7 PI 4 Student Outcome 7.4 Creativity and adaptability to new and emerging technologies threshold: 4.8 pts	6 pts Excellent | Ideas are combined in original and creative ways in line with the new and emerging technology trends to solve a problem or address an issue.	5 pts Good | Ideas are creative and adapt the new knowledge to solve a problem or address an issue	4 pts Satisfactory | Ideas are creative in solving a problem, or address an issue	3 pts Unsatisfactory | Shows some creative ways to solve the problem	2 pts Poor | Shows initiative and attempt to develop creative ideas to solve the problem	1 pts Very Poor | Ideas are copied or restated from the sources consulted	6 pts

Total Points: 24