MIDTERM PRACTICAL EXAM							
Course Code: CPE 201L	Program: BSCPE						
Course Title: Data Structure and Algorithm	Date Performed: September 6, 2025						
Section: 2A	Date Submitted: September 6, 2025						
Name: Villanueva, Bryan O.	Instructor: Engr. Maria Rizette H. Sayo						

1.Objectives

- To implement a singly linked list of odd integers from 1 to 30.
- To apply operations such as displaying all the data, appending and deleting a node.

2. Discussion

A linked list is a linear data structure where each element called a node contains data and a reference to the next node. I created two classes, Node and LinkedList. The Node class holds the data and the pointer to the next node, while the LinkedList class manages the list itself. To use the three operations such as displaying the data, appending a node, and deleting a node. You will need to define each one of them. The display will make it possible to show all the odd integers in the linkedlist, while the append will make it possible for the user to add a new integer in the list, and delete to make it possible for the user to remove an integer in the list.

3. Materials and Equipment

- Google Colab A compiler for python
- PC Equipment use in programming
- Github For organizing and submitting of source codes and files
- Window Operating System

4. Procedure

- 1. Define a Node class with data and next attributes.
- 2. Created a Linkedlist class with methods to display, append and delete data from the list.
- 3. Make a list of odd integers from 1-30.
- 4. Call the append method to print the updated linked list with added odd integer in the list.
- **5.** Call the delete method to print the updated linked list with deleted integer.

```
Source Code:
class Node:
  def __init__(self, data):
    self.data = data
    self.next = None
class SinglyLinkedList:
  def __init__(self):
    self.head = None
  def display(self):
    current = self.head
    if not current:
       return
    print("Linked List:", end=" ")
    while current:
       print(current.data, end=" -> ")
       current = current.next
    print("Null")
  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
  def delete(self, data):
     current = self.head
     if not current:
        return
     if current.data == data:
        self.head = current.next
        return
     prev = None
     while current and current.data != data:
        prev = current
        current = current.next
     if not current:
        return
     prev.next = current.next
linked_list = SinglyLinkedList()
for i in range(1, 31, 2):
  linked_list.append(i)
linked_list.display()
linked_list.append(33)
print("\nAfter appending 33:")
linked_list.display()
linked_list.delete(7)
print("\nAfter deleting 7:")
linked_list.display()
```

5. Output

```
Linked List: 1 -> 3 -> 5 -> 7 -> 9 -> 11 -> 13 -> 15 -> 17 -> 19 -> 21 -> 23 -> 25 -> 27 -> 29 -> Null

After appending 33:
Linked List: 1 -> 3 -> 5 -> 7 -> 9 -> 11 -> 13 -> 15 -> 17 -> 19 -> 21 -> 23 -> 25 -> 27 -> 29 -> 33 -> Null

After deleting 7:
Linked List: 1 -> 3 -> 5 -> 9 -> 11 -> 13 -> 15 -> 17 -> 19 -> 21 -> 23 -> 25 -> 27 -> 29 -> 33 -> Null
```

6. Conclusion

In this activity, I learned how singly linked list work and the uses of each part like the data, and next pointer. And, if it is in doubly, you will add the previous pointer. But in this case, I use the singly linked list and saw how each node is connected to each other. I also learned different methods that we can apply in linked list like append when you want to add a new data in the list and delete if you want to remove a data from the list, and by using the display method I was able to show all the data from the original linked list and the updated linked list where I was able to deleted and added a new data. At the end, I was able to complete the objectives by applying my knowledge in python programming.

7. Rubrics

Criteria					Ratin	gs						Pts
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 Educe interests and exist and flourish outside class requirement and/or experiences are pursued independently and applies knowledge learned into practice			nd pursuits ourish ssroom nts,knowledge eriences are	Satis Look class requ show inter purs know	4 pts Satisfactory Look beyond classroom requirements, showing interest in pursuing knowledge independently		3 pts Unsatisfactory I Begins to look beyond classroom requirements, showing interest in pursuing knowledge independently		on om tion	1 pts Very Poor No initiative or interest in acquiring new knowledge	6 pt
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	assign witho	letes an ned task ut vision or	4 pts Satisfactory Requires minimal guidance to complete an assigned task	Requires detailed or step-by-step instructions to complete a task		iled ep	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.		Analyze information from a variety o sources; formulates a clear and precise perspective. 4 pts Satisfactory deas are creative in solving a		formulate the problem		and so the in from a source failed	to late the	Ve Ga inf	1 pts Very Poor Gather information from a variety of sources	
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 creative and adapt the new knowledge te solve a proble or address ar issue		od Ideas ar ative and apt the new owledge to we a probler address an					initiative and attempt to		1 pts Very Poor Ideas are copied or restated from the sources consulted		6 pts