Quiz 1 - Skill Test	
Course Code: CPE 201L	**Program: BS Computer Engineering**
Course Title: Data Structures and Algorithms	**Date Performed:8/30/2025**
Section: 2A	**Date Submitted:8/30/2025**
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1.Objectives

1. Choose only one (1) Data Structure (Array, Linked-List(Singly, Double), Stack, Queue)
2. Create a python program that appends each character of your full name and traverse each character.
3. Save your Python program as skill test in your colab and github.

2. Discussion

Data structures are fundamentals of any programming language. This is where we define the data type, data elements, and operations of a program. In data structures, there are different levels of organizing data such as arrays, linked-list, stacks, and queues. These structures have their own varying ways of accessing and storing data that each have their own right uses for a specific problem/situation. For instance, Linked-List is a type of data structure where each data element (node) contains an address/pointer to the next node. This makes it possible for insertion and deletion at all places of the linear list.

In this skill test, I used Linked-List data structure in creating a python program that appends and traverse each character in my name.

3. Materials and Equipment

- Github – Location where the file is uploaded
- Google Colab – Used to transfer file in github
- Python – Programming language
- Pycharm – Compiler used for coding

4. Procedure

1. I designed a node class to store data and the reference to the next code.
2. I constructed a LinkedLIst class with a head pointer initialized to None.
3. I implemented methods: append() to add nodes at the end and traverse() to display all nodes.
4. I developed a menu-driven program with options to traverse, append a whole string, append characters individually, or exit.
5. I incorporated input validationn to handle invalid choices.
6. I executed and tested the program to verify correct functionality of insertion and traversal.

5. Output

SLL.py

```python
class Node():  1 usage
    def __init__ (self, data):
        self.data = data
        self.next = None

class LinkedList():  1 usage
    def __init__(self):
        self.head = None

    def append(self, data):  3 usages (1 dynamic)
        new_node = Node(data)
        if self.head is None:
            self.head = new_node
            return
        current = self.head
        while current.next:
            current = current.next
        current.next = new_node

    def traverse(self):  2 usages (1 dynamic)
        current = self.head
        while current:
            print(current.data, end=" -> ")
            current = current.next
        print("None")
```

```python
if __name__ == "__main__":
    ll = LinkedList()
    while True:
        print("Singly linked list: ")
        print("1. Traverse")
        print("2. Append as whole")
        print("3. Append per letters of your input")
        print("4. Exit")
        choice = int(input("Enter your choice: "))
        if choice == 1:
            ll.traverse()
        elif choice == 2:
            data = str(input("Enter a letter of your name: "))
            ll.append(data)
        elif choice == 3:
            data = str(input("Enter your name: "))
            for i in data:
                ll.append(i)
        elif choice == 4:
            break
        else:
            print("Enter a valid number")
```

```
Singly linked list:
1. Traverse
2. Append as whole
3. Append per letters of your input
4. Exit
Enter your choice: 3
Enter your name: JOSHUA AGUILOS CATAHAN
Singly linked list:
1. Traverse
2. Append as whole
3. Append per letters of your input
4. Exit
Enter your choice: 1
J -> O -> S -> H -> U -> A ->   -> A -> G -> U -> I -> L -> O -> S ->   -> C -> A -> T -> A -> H -> A -> N -> None
Singly linked list:
1. Traverse
2. Append as whole
3. Append per letters of your input
4. Exit
Enter your choice: 4

Process finished with exit code 0
```

Figure 1: Screenshot of the program

In figure 1, it shows the code and the output of the program. As seen above, this tests the program by choosing the numbers 1-4 in the choices. When I entered number 3 as my choice, it gives me the prompt to enter my name. After entering my name, I then chose number 1 in the option in order to display the nodes for each letter of my name. Lastly, I entered number 4 to end the program.

6. Conclusion

In conclusion, this skill test was a good refresher for all the knowledge I gained in this course. It gave me a little idea about what level of skill I currently have. This quiz will help me better myself since I now know my weaknesses after creating this program.

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