Activity No. <n> <title>

Course Code: CPE 201L	**Program:** BSCpE
Course Title: Data Structure and Algorithms	**Date Performed:** August 30, 2025
Section: 2-A	**Date Submitted:** August 30, 2025
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1.Objectives

1. Choose only one (1) Data Structure (Array, Linked-List (Singly, Doubly), Stack, Queue)
2. Create a Python program that appends each character of your fullname and traverse each character.
3. Save your Python program as Skill-Test in your Colab and Github
4. The objective of this activity is to understand the concept of Queue as a data structure in Python.
5. It also aims to demonstrate how to use basic queue operations such as enqueue, dequeue, and display.

2. Discussion

A Queue abstract data type (ADT) is defined as a linear data structure that organizes elements in a sequential manner. In this structure, the removal and retrieval of elements are permitted only at the front of the queue, while the insertion of new elements is restricted to the rear. This design enforces the First-In, First-Out (FIFO) principle, where the element that enters first is the one to be removed first. The queue ADT typically supports the following fundamental operations for a queue Q:

Q.enqueue(e): Adds element e to the rear of queue Q.
Q.dequeue(): Removes and returns the element positioned at the front of queue Q.

Queues are widely used in computer science applications such as scheduling, buffering, and resource management, making them an essential abstract data type in both theory and practice.

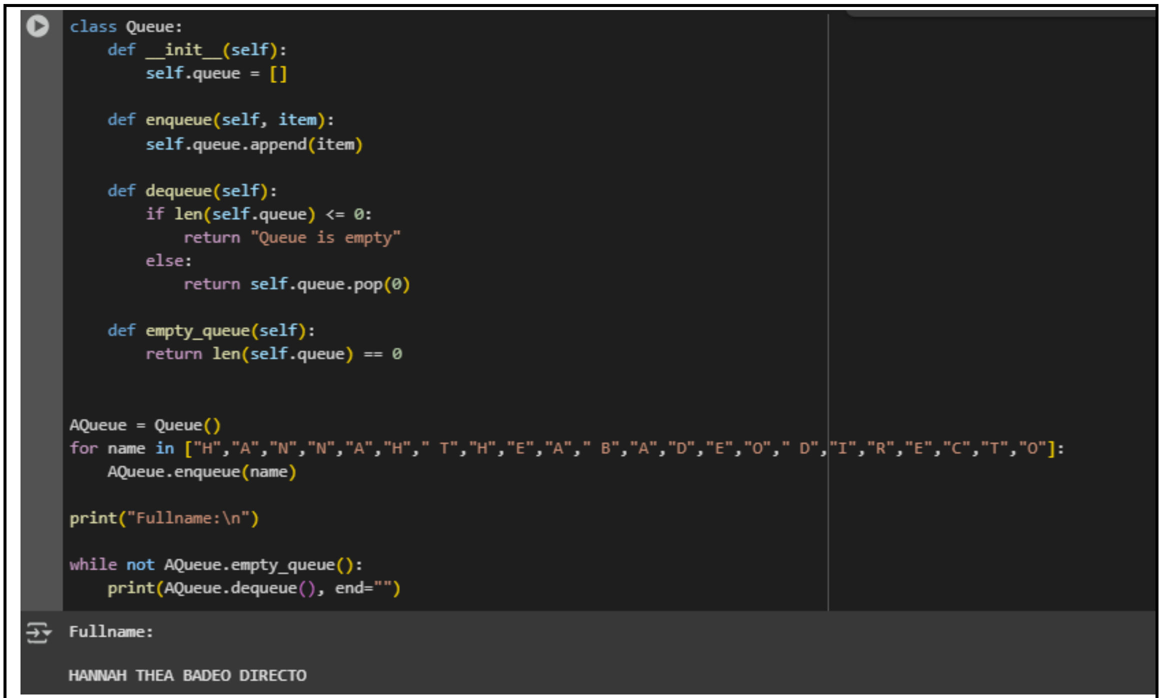
3. Materials and Equipment

Window Operating System
Google Colab
MS Word
Github

4. Procedure

- Opened Google Colab as the programming environment for coding in Python.
- Created a class named Queue with an empty list to represent the queue.
- Defined the method enqueue() to add elements to the end of the queue.
- Defined the method dequeue() to remove and return elements from the front of the queue, with a condition to check if the queue is empty.
- Defined the method empty_queue() to check whether the queue has no elements.
- Instantiated the class Queue as AQueue.
- Used a for loop with the enqueue() method to insert the letters of the full name “HANNAH THEA BADEO DIRECTO” into the queue.
- Printed the label “Fullname:” before displaying the output.
- Applied a while loop with the condition not AQueue.empty_queue() to repeatedly call dequeue() until all letters were removed and printed in order.

5. Output

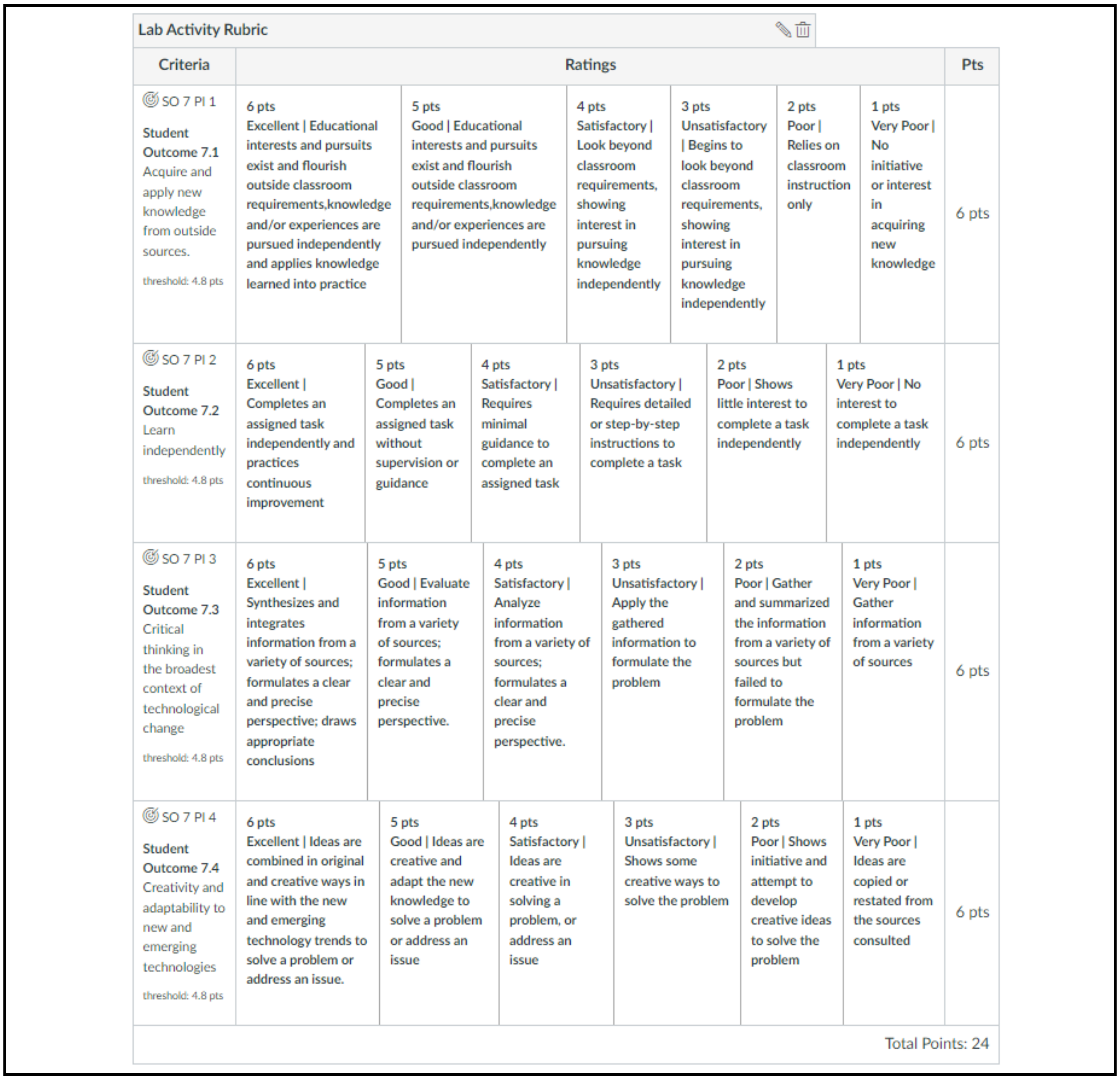


```
class Queue:
    def __init__(self):
        self.queue = []

    def enqueue(self, item):
        self.queue.append(item)

    def dequeue(self):
        if len(self.queue) <= 0:
            return "Queue is empty"
        else:
            return self.queue.pop(0)

    def empty_queue(self):
        return len(self.queue) == 0


AQueue = Queue()
for name in ["H","A","N","N","A","H"," T","H","E","A"," B","A","D","E","O"," D","I","R","E","C","T","O"]:
    AQueue.enqueue(name)

print("Fullname:\n")

while not AQueue.empty_queue():
    print(AQueue.dequeue(), end="")
```

```
Fullname:

HANNAH THEA BADEO DIRECTO
```

7. Conclusion

In conclusion, the activity helped me understand how Queue data structure works and how it can be implemented in Python. BY applying the basic operations such as enqueue, dequeue, and checking if the list is empty, I was able to implement a simple Queue program in Python and successfully displayed my name using the FIFO principle. This activity improved my understanding of how Queue works and how it can be applied in solving real-world problems in programming.



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