| LONG QUIZ | |
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| **Course Code: 201L** | **Program: BSCPE** |
| **Course Title: DSA** | **Date Performed: 08/30/25** |
| **Section: BSCPE, 2-B** | **Date Submitted: 08/30/25** |
| **Name: MAMANAO KURT MARWIN C** | **Instructor:** Engr. Maria Rizette H. Sayo |

**1.Objectives**

- To implement a stack data structure in Python
- To use the stack to insert underscores at specific positions within a name

**2. Discussion**

A stack is a linear data structure that follows the Last-In-First-Out (LIFO) principle. Elements are added and removed from the same end (called the top). In this activity, we use a stack to store each character of a name and then insert underscores at specific positions by pushing them onto the stack at the appropriate locations.

**3. Materials and Equipment**

- Python programming language (version 3.x)
- Code editor or IDE (Colab)
- Computer system with Python installed

**4. Procedure**

1. Defined a Stack class with methods: **init**, push, pop, is_empty, and traverse
2. Created an instance of the Stack class
3. Pushed each character of the name "MAMANAO KURT MARWIN C" onto the stack
4. Inserted underscores at the desired positions by pushing them onto the stack
5. Used the traverse method to display the contents of the stack from top to bottom

**5. Output**

```
class Stack:
    def __init__(self):
        self.stack = []
        self.underscore_added = False
```

- I made a new stack that starts empty. I added a switch (underscore_added) to remember if I've already put an underscore in.

```
    def push(self, item):

        if not self.underscore_added:
            self.stack.append('_')
            self.underscore_added = True

        self.stack.append(item)
```

-The *first time* I add anything, it automatically puts an underscore (_) in first. After that, it just adds the letters normally.

```
    def pop(self):
        if not self.is_empty():
            return self.stack.pop()
        return None

def is_empty(self):
    return len(self.stack) == 0
```

-pop removes the last item added. is_empty checks if the stack is empty, But they don't have a use or task in this code I just added them in.

```
    def traverse(self):
        if len(self.stack) == 0:
            print("Stack is empty")
        else:
          for item in reversed(self.stack):
                print(item, end="")
          print()
```

-This prints the stack from top to bottom (last-in, first-out). It shows all characters in reverse order on one line.

```
Fn = Stack()


Fn.push('K')
Fn.push('U')
Fn.push('R')
Fn.push('T')
Fn.push(' ')
Fn.push('M')
Fn.push('A')
Fn.push('R')
Fn.push('W')
Fn.push('I')
Fn.push('N')
Fn.push(' ')
Fn.push('M')
Fn.push('A')
Fn.push('M')
Fn.push('A')
Fn.push('N')
Fn.push('A')
Fn.push('O')

Fn.traverse()
```

-I created a stack named Fn. I pushed each letter of my name one by one. My special rule added an underscore before the first letter. Finally, I printed the stack.

```
OANAMAM NIWRAM TRUK_
```

-The stack printed backwards (last letter in, first letter out).

## 6. Conclusion

This activity demonstrated how stacks can be used to manipulate strings by inserting characters at specific positions. The LIFO property of stacks means that when we traverse from top to bottom, the output appears in reverse order compared to the insertion sequence.

## Lab Activity Rubric

| Criteria | Ratings | | | | | | Pts |
|---|---|---|---|---|---|---|---|
| SO 7 PI 1<br>**Student Outcome 7.1** Acquire and apply new knowledge from outside sources.<br>threshold: 4.8 pts | 6 pts<br>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<br>Good \| Educational interests and pursuits exist and flourish outside classroom requirements,knowledge and/or experiences are pursued independently | 4 pts<br>Satisfactory \| Look beyond classroom requirements, showing interest in pursuing knowledge independently | 3 pts<br>Unsatisfactory \| Begins to look beyond classroom requirements, showing interest in pursuing knowledge independently | 2 pts<br>Poor \| Relies on classroom instruction only | 1 pts<br>Very Poor \| No initiative or interest in acquiring new knowledge | 6 pts |
| SO 7 PI 2<br>**Student Outcome 7.2** Learn independently<br>threshold: 4.8 pts | 6 pts<br>Excellent \| Completes an assigned task independently and practices continuous improvement | 5 pts<br>Good \| Completes an assigned task without supervision or guidance | 4 pts<br>Satisfactory \| Requires minimal guidance to complete an assigned task | 3 pts<br>Unsatisfactory \| Requires detailed or step-by-step instructions to complete a task | 2 pts<br>Poor \| Shows little interest to complete a task independently | 1 pts<br>Very Poor \| No interest to complete a task independently | 6 pts |
| SO 7 PI 3<br>**Student Outcome 7.3** Critical thinking in the broadest context of technological change<br>threshold: 4.8 pts | 6 pts<br>Excellent \| Synthesizes and integrates information from a variety of sources; formulates a clear and precise perspective; draws appropriate conclusions | 5 pts<br>Good \| Evaluate information from a variety of sources; formulates a clear and precise perspective. | 4 pts<br>Satisfactory \| Analyze information from a variety of sources; formulates a clear and precise perspective. | 3 pts<br>Unsatisfactory \| Apply the gathered information to formulate the problem | 2 pts<br>Poor \| Gather and summarized the information from a variety of sources but failed to formulate the problem | 1 pts<br>Very Poor \| Gather information from a variety of sources | 6 pts |
| SO 7 PI 4<br>**Student Outcome 7.4** Creativity and adaptability to new and emerging technologies<br>threshold: 4.8 pts | 6 pts<br>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<br>Good \| Ideas are creative and adapt the new knowledge to solve a problem or address an issue | 4 pts<br>Satisfactory \| Ideas are creative in solving a problem, or address an issue | 3 pts<br>Unsatisfactory \| Shows some creative ways to solve the problem | 2 pts<br>Poor \| Shows initiative and attempt to develop creative ideas to solve the problem | 1 pts<br>Very Poor \| Ideas are copied or restated from the sources consulted | 6 pts |
| | | | | | | Total Points: 24 | |