UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Data Structure and Algorithm

Laboratory Activity

Skill Test

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I. Objectives

- Choose only one (1) Data Structure (Array, Linked – List (Singly – Doubly), Stack, Queue)
- Create a python program that appends each character of your full name and transverse each character.
- Save your python program as Skill-Test in your Colab and Github

II. Discussion

Array is a linear data structure where all the elements are arranged sequentially. It is a collection of similar data elements, and each element can be accessed using an index starting from 0.

III. Materials and Equipment

- Desktop Computer
- Windows Operating System
- Google Colab

IV. Procedure

Array

```
#[A, p, r, i, l,  , A, n, n, e,  , R, u, p, e, r, t, o]
import array


def display(arr):
    print("Name: ", list(arr))

def transverse(arr):
  print("Transversing Array")
  for i, element in enumerate(arr):
    print(f"Index {i}: {element}")

def append(arr):
  append_arr = input("Insert Element: ")
  if len(append_arr) == 1:
    arr.append(append_arr)
    print("Element appended successfully.")
  else:
    print("Invalid input. Please enter a single character.")

def insert(arr):
  insert_arr = str(input("Insert Element: "))
  insert_position = int(input("Insert Position: "))
  arr.insert(insert_position, insert_arr)
  print("Element inserted successfully.")

def lenght(arr):
  print(len(arr))

def delete(arr):
    delete_position = int(input("Enter position to delete: "))
    if 0 <= delete_position < len(arr):
      del arr[delete_position]
      print(f"Element at position {delete_position} deleted successfully.")
    else:
      print("Invalid position.")


def main():
  arr = array.array ('u', [])
  print("Name: ")

  while True:
    print("\nMenu")
    print("1. Display")
    print("2. Tranverse Elements")
    print("3. Add Elements")
    print("4. Insert Elements")
    print("5. Number of Elements")
    print("6. Delete Element")
    print("7. Exit")
    choice = int(input("Enter your choice (1-7): "))

    if choice == 1:
      display(arr)
    elif choice == 2:
      transverse(arr)
    elif choice == 3:
      append(arr)
    elif choice == 4:
      insert(arr)
    elif choice == 5:
      lenght(arr)
    elif choice == 6:
      delete(arr)
    elif choice == 7:
      print("Exiting Program...")
      break
    else:
      print("Invalid Choice. Please try again.")


if __name__ == "__main__":
  main()
```

Please refer to this link: CPE-201L-DSA-2-A/Skill_Test/Skill_Test.ipynb at main · Ruperto-April-Anne/CPE-201L-DSA-2-A

V. Output

```
Name:

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: A
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: p
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: i
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 4
Insert Element: r
Insert Position: 2
Element inserted successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: l
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 1
Name:  ['A', 'p', 'r', 'i', 'l']
```

```
Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element:
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: A
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: n
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: n
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: e
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element:
Element appended successfully.
```

```
Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: R
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: u
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: p
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: e
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: r
Element appended successfully.

Menu
1. Display
2. Tranverse Elements
3. Add Elements
4. Insert Elements
5. Number of Elements
6. Delete Element
7. Exit
Enter your choice (1-7): 3
Insert Element: t
Element appended successfully.
```

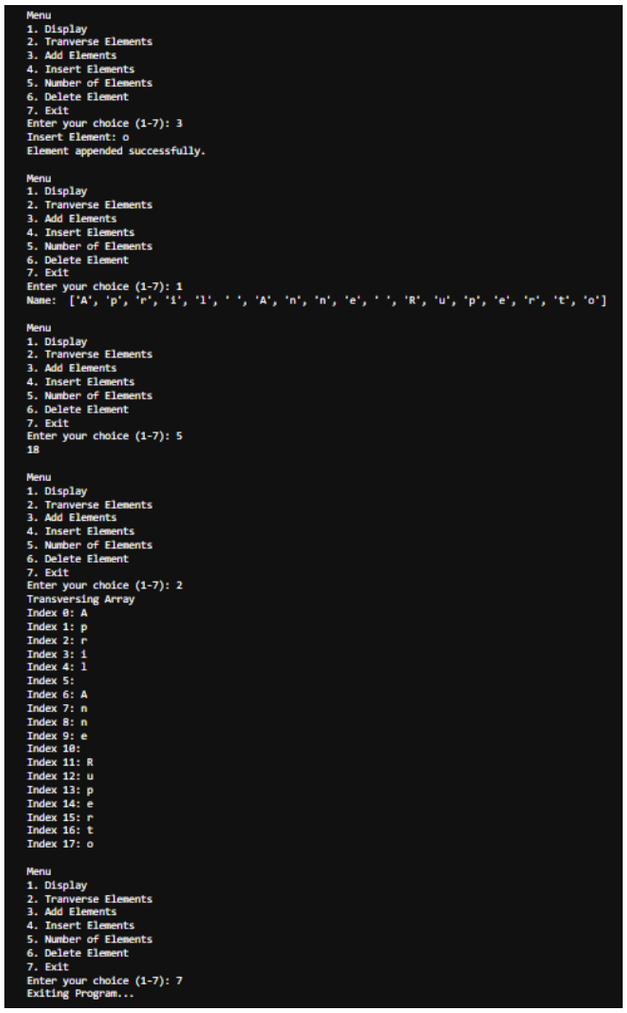

Figure 1 – 4: Screenshot of the Output

VI. Conclusion

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