UNIVERSITY OF CALOOCAN CITY
COMPUTER ENGINEERING DEPARTMENT

Data Structure and Algorithm

Laboratory Activity No. 5

Implementation of Arrays

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I. Objectives

Introduction

Array, in general, refers to an orderly arrangement of data elements. Array is a type of data structure that stores data elements in adjacent locations. Array is considered as linear data structure that stores elements of same data types. Hence, it is also called as a linear homogenous data structure.

This laboratory activity aims to implement the principles and techniques in:

- Writing algorithms using Array data structure
- Writing a python program that can implement Array data structure

II. Methods

- Write a Python program to create an array of 10 integers and display the array items. Access individual elements through indexes and compute for the sum.
- Write a Python program to append a new item to the end of the array. Original array: numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
- Write a Python program to insert a new item before the second element in an existing array. Original array: numbers = [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]
- Write a Python program to reverse the order of the items in the array. Original array: numbers = [5, 4, 3, 2, 1]
- Write a Python program to get the length of the array. Original array: numbers = [5, 4, 3, 2, 1]

III. Results

Present the visualized procedures done. Also present the results with corresponding data visualizations such as graphs, charts, tables, or image. Please provide insights, commentaries, or explanations regarding the data. If an explanation requires the support of literature such as academic journals, books, magazines, reports, or web articles please cite and reference them using the IEEE format.

Please take note of the styles on the style ribbon as these would serve as the style format of this laboratory report. The body style is Times New Roman size 12, line spacing: 1.5. Body text should be in Justified alignment, while captions should be center-aligned. Images should be readable and include captions. Please refer to the sample below:

SUMMATION OF ALL ELEMENT INSIDE THE ARRAY

```
[5]  numbers = [1,2,3,4,5,6,7,8,9,10]

     print("Original Array: ",numbers)

     sum_of_index = sum(numbers)
     print(f"\nSum of Array: {sum_of_index}")
```

```
Original Array:  [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

Sum of Array: 55
```

APPEND NEW ELEMENT

```
numbers = [1,2,3,4,5,6,7,8,9,10]
print("Original Array: ", numbers)
numbers.append(11)
print("\nUpdated Array: ", numbers)
```

```
Original Array:  [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

Updated Array:  [1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11]
```

REVERSE

```
[2]  numbers = [1,2,3,4,5,6,7,8,9,10]

     print("Original Array: ",numbers)

     numbers.reverse()
     print("\nUpdated Array: ", numbers)
```

```
Original Array:  [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

Updated Array:  [10, 9, 8, 7, 6, 5, 4, 3, 2, 1]
```

INSERTING ELEMENT

```
[3]  numbers = [1,2,3,4,5,6,7,8,9,10]

     print("Original Array: ",numbers)

     num = int(input("\nEnter a number: "))
     numbers.insert(1, num)

     print("\nLatest Array:", numbers)
```

```
Original Array:  [1, 2, 3, 4, 5, 6, 7, 8, 9, 10]

Enter a number: 99
```

LENGTH OF ARRAY

```
number = [5, 4, 3, 2, 1]

print("Original Array: ", number)

haba = len(number)

print("Length of Array: ", haba)
```

```
Original Array:  [5, 4, 3, 2, 1]
Length of Array:  5
```

Figure 1 Screenshot of program

If an image is taken from another literature or intellectual property, please cite them accordingly in the caption. Always keep in mind the Honor Code [1] of our course to prevent failure due to academic dishonesty.

IV. Conclusion

*In Conclusion, I successfully worked with arrays by performing operations like **appending**, **reversing**, **inserting**, **summing**, and finding the **length** of elements. These exercises helped me understand how to manipulate and analyze array data efficiently in Python.*

References

[1] Co Arthur O.. “University of Caloocan City Computer Engineering Department Honor Code,” UCC-CpE Departmental Policies, 2020.