MIDTERM SKILL-TEST	
Course Code: CPE 201L	**Program:** BS in Computer Engineering
Course Title: Data Structures and Algorithms	**Date Performed:** September 6, 2025
Section: CPE 2-A	**Date Submitted:** September 6, 2025
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1. Objectives

- To demonstrate how to declare and initialize arrays (lists) in Python.
- To apply indexing in assigning values to specific positions in an array.
- To display array contents using print() statements.
- To determine the maximum element in an array using built-in functions.
- To reverse an array using slicing techniques in Python.

2. Discussion

Arrays (or lists in Python) are data structures used to store multiple values in a single variable. In this skill-test, we initialized an array with string representations of even numbers and performed operations like displaying, finding the maximum (based on string comparison), and reversing the array using slicing.

3. Materials and Equipment

- Google Colab
- GitHub
- Python
- Laptop/PC and Internet Connection

4. Procedure

1. Initialize a list with 15 elements.
2. Assign even numbers (as strings) to each index.

3. Print the elements.
4. Use max() to find the maximum element.
5. Print the maximum element
6. Use slicing to reverse the array.
7. Print the reversed array

5. Output

```
Arr = [0] * 15
Arr[0] = "20"
Arr[1] = "22"
Arr[2] = "24"
Arr[3] = "26"
Arr[4] = "28"
Arr[5] = "30"
Arr[6] = "32"
Arr[7] = "34"
Arr[8] = "36"
Arr[9] = "38"
Arr[10] = "40"
Arr[11] = "42"
Arr[12] = "44"
Arr[13] = "46"
Arr[14] = "48"

# a.) Display the elements
print("a.) Array elements:")
print(Arr)

# b.) Find the maximum element
max_element = max(arr)
print("\nb.) Maximum element:", max_element)

# c.) Reverse the array
reversed_array = Arr[::-1]
print("\nc.) Reversed array:")
print(reversed_array)
```

```
a.) Array elements:
['20', '22', '24', '26', '28', '30', '32', '34', '36', '38', '40', '42', '44', '46', '48']

b.) Maximum element: 48

c.) Reversed array:
['48', '46', '44', '42', '40', '38', '36', '34', '32', '30', '28', '26', '24', '22', '20']
```

Figure 1: Screenshot of the program

The screenshot shows the result of running the program. First, the array displays all 15 elements, which are even numbers from "20" to "48", stored as strings. This confirms that the

array was initialized and assigned correctly. Then, the program finds and prints the maximum element in the array. Since the values are stored as strings, Python compares them alphabetically (not numerically), but because the strings are well-formed numbers, "48" is still correctly identified as the maximum. Lastly, the array is printed in reverse order, showing that the slicing technique (Arr[::-1]) worked as expected. Each part of the output matches the intended operations, showing that the code functions correctly.

6. Conclusion

This skill-test helped us better understand how to work with arrays (or lists) in Python. We practiced how to initialize a list, assign values to specific positions, and use basic Python functions to manipulate and display data. By finding the maximum element and reversing the array, we also learned how Python handles string comparisons and slicing. Overall, this was a useful activity to data structure operations, and it builds a strong foundation for more advanced topics in algorithms and 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