MIDTERM EXAM SKILLTEST	
Course Code: DSA 201L	**Program:** BSCPE
Course Title: DATA STRUCTURE AND ALGORITHM	**Date Performed:** SEPT 6, 2025
Section: 2B	**Date Submitted:** SEPT 6, 2025
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1.Objectives

- To display the elements.
- Count the number of elemets.
- Count the number of odd and even integers.
- Make a Menu for each element

2. Discussion

In this program I will create a list of numbers from 20 to 49 and I will put an interaction so what function you want to display. You can choose to display all the numbers and see how many numbers are on the list or count how many are even and how many are odd. The program keeps running until you select the option to exit. It's built in a clear, organized way using separate functions for each given task.

3. Materials and Equipment

- Computer or CPU
- Google Colab
- Github

4. Procedure

First, I created an empty list called the (arr). This will fill up the list of the integers starting from 21 to 49 using a for loop in the range of (21-50). For the main loop I applied what I thought during the lesson in the array which I can create a menu that will offers each given that that i will impliment, these are the display elements, count the number of elements, count the number of odd and even integers, and lastly the exit so the program will stop. I put a function that will call each element which are the, Calls display_elements() to show each number with its index, Calls count_elements() to calculate and show the total count, Calls count_odd_even() to calculate and show the count of even and odd numbers, Breaks the loop and ends the program.

```python
def display_elements(arr):
    print("Array elements:")
    for i, element in enumerate(arr):
        print(f"Index {i}: {element}")

def count_elements(arr):
    return len(arr)

def count_odd_even(arr):
    even_count = 0
    odd_count = 0

    for element in arr:
        if element % 2 == 0:
            even_count += 1
        else:
            odd_count += 1

    return even_count, odd_count

def main():
    arr = []
    for num in range(21, 50):
        arr.append(num)

    print("Array of integers between 21 and 49:")
    print(arr)

    while True:
        print("\nOptions:")
        print("\n")
        print("1. Display elements")
        print("\n")
        print("2. Count the number of elements")
        print("\n")
        print("3. Count the number of odd and even integers")
        print("\n")
        print("4. Exit")
        print("\n")
        choice = input("Enter your choice (1-4): ")

        if choice == '1':
            print("\n")
            display_elements(arr)

        elif choice == '2':
            count = count_elements(arr)
            print("\n")
            print(f"Number of elements: {count}")

        elif choice == '3':
            even_count, odd_count = count_odd_even(arr)
            print("\n")
            print(f"Even integers: {even_count}")
            print("\n")
            print(f"Odd integers: {odd_count}")

        elif choice == '4':
            print("Goodbye!")
            break
        else:
            print("Invalid choice. Please enter 1-4.")

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

5. Output

```
Array of integers between 21 and 49:
[21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49]

Options:


1. Display elements
2. Count the number of elements
3. Count the number of odd and even integers
4. Exit
Enter your choice (1-4): 1


Array elements:
Index 0: 21
Index 1: 22
Index 2: 23
Index 3: 24
Index 4: 25
Index 5: 26
Index 6: 27
Index 7: 28
Index 8: 29
Index 9: 30
Index 10: 31
Index 11: 32
Index 12: 33
Index 13: 34
Index 14: 35
Index 15: 36
Index 16: 37
Index 17: 38
Index 18: 39
Index 19: 40
Index 20: 41
Index 21: 42
Index 22: 43
Index 23: 44
Index 24: 45
Index 25: 46
Index 26: 47
Index 27: 48
Index 28: 49
```

```
Options:


1. Display elements
2. Count the number of elements
3. Count the number of odd and even integers
4. Exit
Enter your choice (1-4): 2


Number of elements: 29

Options:


1. Display elements
2. Count the number of elements
3. Count the number of odd and even integers
4. Exit
Enter your choice (1-4): 3


Even integers: 14


Odd integers: 15

Options:


1. Display elements
2. Count the number of elements
3. Count the number of odd and even integers
4. Exit
Enter your choice (1-4): 4
Goodbye!
```

6. Conclusion

In my opinion, this program effectively illustrates the basic ideas behind building and modifying a data structured set using an interactive menu interface. It efficiently produces a certain range of numerical data, from 21 to 49, and clearly displays the menu to the user. Coupled it with an ongoing loop for user interaction, it demonstrates a fundamental and structured data method for creating useful software programs that can process by the user input, that can compute, and present data as needed.

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