Dr. Chatterjee's CS 3150
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Fall 2023

In-Class Pointers

Problem 1:

Write a program that calculates the sum and average of an array of numbers using pointers.

This program needs to do the following:

- 1. It first asks the user to input the number of elements in the array.
- 2. It checks if the input is valid (i.e., a positive number) and exits with an error code if not.
- 3. It creates an array of integers and a pointer ptr that points to the first element of the array.
- 4. It then prompts the user to input the elements of the array, storing them using the pointer arithmetic (ptr + i).
- 5. After inputting the elements, it calculates the sum and average of the array using pointers.
- 6. Finally, it displays the sum and average.

```
PS C:\Users\wes\github-repos\cs3150_fall2023\In-Class Pointers> & '.\wshakespear_In-Class Pointers Assignment_Part 1.exe'
Please enter the length of the array: 10
Enter index 0: 1
Enter index 1: 2
Enter index 2: 3
Enter index 3: 4
Enter index 4: 5
Enter index 5: 6
Enter index 6: 7
Enter index 7: 8
Enter index 8: 9
Enter index 9: 10
The sum is: 55
The average is: 5
```

Problem 2:

Write a program that will reverse an array using pointers:

This program needs to do the following:

- 1. It prompts the user to input the number of elements in the array and checks for valid input.
- 2. It creates an array of integers and stores the user's input in the array.
- 3. It defines a reverseArray function that takes the array and its size as parameters and reverses the array using pointers.
- 4. Inside the reverseArray function, two pointers start and end are used to traverse the array from both ends, swapping elements as they go.
- 5. After reversing the array, it displays the reversed array.

```
PS C:\Users\wes\github-repos\cs3150_fall2023\In-Class Pointers> & '.\wshakespear_In-Class Pointers Assignment_Part 2.exe'
Please enter a length for array: 10
Enter array index 0: 1
Enter array index 1: 2
Enter array index 2: 3
Enter array index 3: 4
Enter array index 4: 5
Enter array index 5: 6
Enter array index 6: 7
Enter array index 7: 8
Enter array index 8: 9
Enter array index 9: 10
Reversed index 0: 10
Reversed index 1: 9
Reversed index 2: 8
Reversed index 3: 7
Reversed index 4: 6
Reversed index 5: 5
Reversed index 6: 4
Reversed index 7: 3
Reversed index 8: 2
Reversed index 9: 1
```