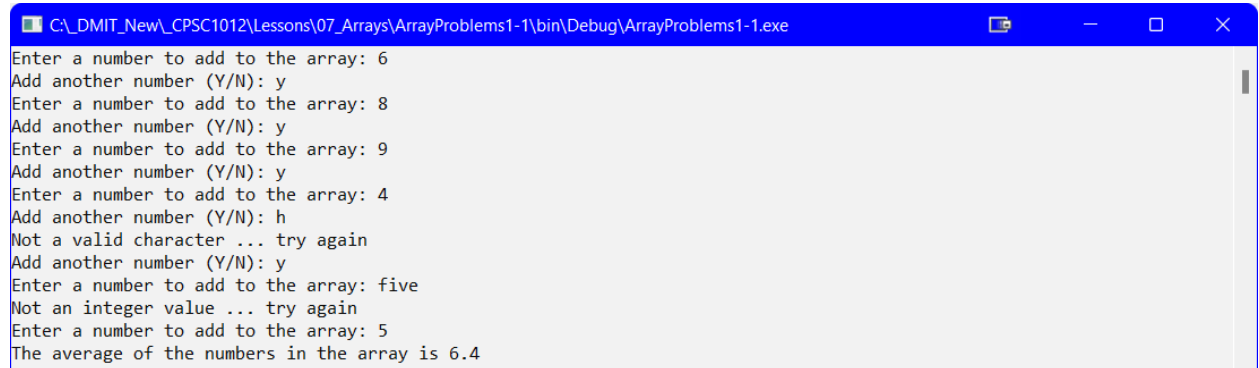


Array Problems - 1

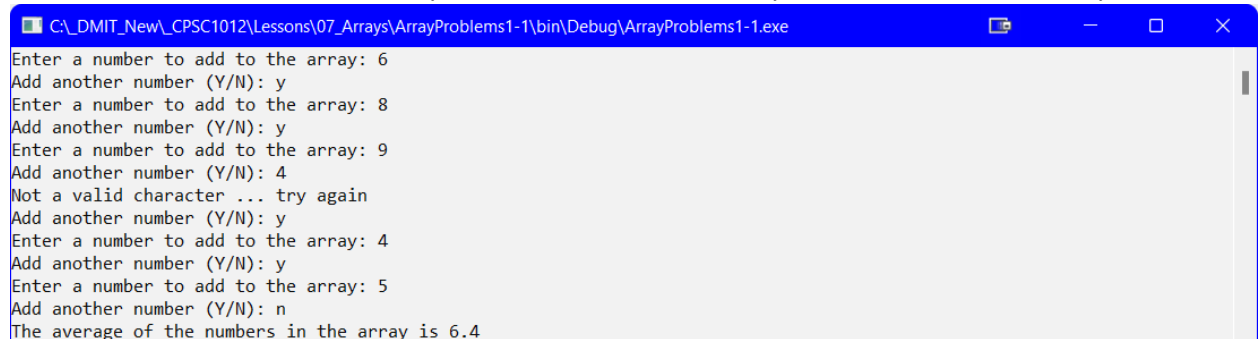
1. Create a program that will allow the user to enter up to 25 numbers into an array. Calculate and display the mean average of the numbers.

Sample output:



```
C:\DMIT_New_CPSC1012\Lessons\07_Arrays\ArrayProblems1-1\bin\Debug\ArrayProblems1-1.exe
Enter a number to add to the array: 6
Add another number (Y/N): y
Enter a number to add to the array: 8
Add another number (Y/N): y
Enter a number to add to the array: 9
Add another number (Y/N): y
Enter a number to add to the array: 4
Add another number (Y/N): h
Not a valid character ... try again
Add another number (Y/N): y
Enter a number to add to the array: five
Not an integer value ... try again
Enter a number to add to the array: 5
The average of the numbers in the array is 6.4
```

The above screenshot is for an array of 5 numbers to show that you cannot overflow the array



```
C:\DMIT_New_CPSC1012\Lessons\07_Arrays\ArrayProblems1-1\bin\Debug\ArrayProblems1-1.exe
Enter a number to add to the array: 6
Add another number (Y/N): y
Enter a number to add to the array: 8
Add another number (Y/N): y
Enter a number to add to the array: 9
Add another number (Y/N): 4
Not a valid character ... try again
Add another number (Y/N): y
Enter a number to add to the array: 4
Add another number (Y/N): y
Enter a number to add to the array: 5
Add another number (Y/N): n
The average of the numbers in the array is 6.4
```

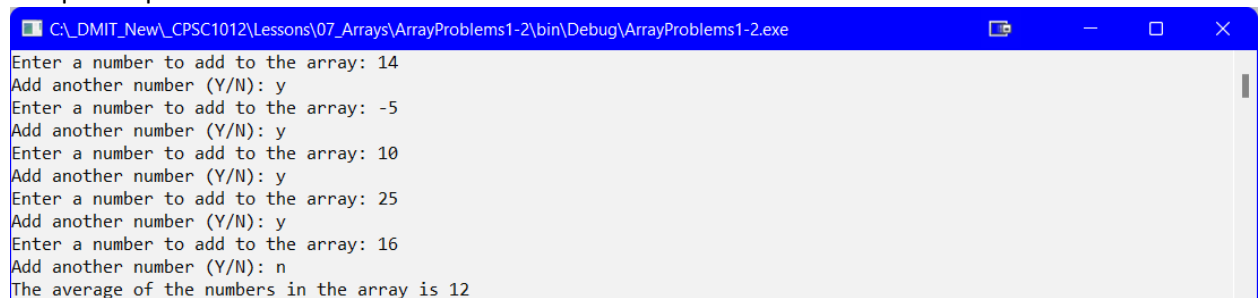
The screenshot above is for an array of 25 numbers but allowing the user to stop entering numbers into the array.

2. Update your solution to the previous problem (make a copy and save as a new project) to use two methods with the following signatures in your solution:

`static int GetUserNumbers(int[] numbers):` The method will load user input numbers into the array and return the count of numbers entered.

`static int MeanAverageOfNumbers(int[] numbers, int count):` The method will return the mean average of the numbers in the array.

Sample output:



```
C:\DMIT_New_CPSC1012\Lessons\07_Arrays\ArrayProblems1-2\bin\Debug\ArrayProblems1-2.exe
Enter a number to add to the array: 14
Add another number (Y/N): y
Enter a number to add to the array: -5
Add another number (Y/N): y
Enter a number to add to the array: 10
Add another number (Y/N): y
Enter a number to add to the array: 25
Add another number (Y/N): y
Enter a number to add to the array: 16
Add another number (Y/N): n
The average of the numbers in the array is 12
```

3. Modify the previous program (make a copy and save as a new project) so that the program also displays the largest value, the smallest value, and the mode (if you don't know what the mode is, look it up) of the numbers. Use a modular approach in your solution. Your program should have at a minimum the following methods:

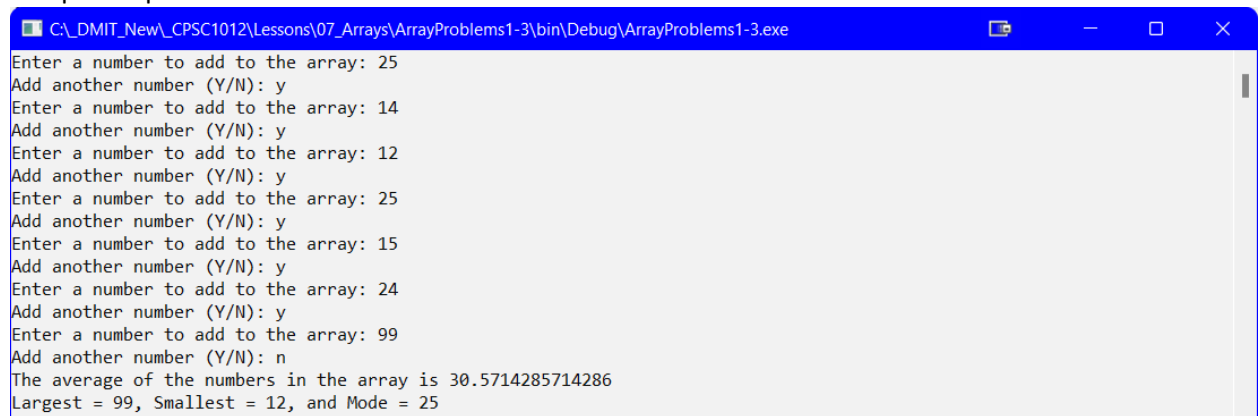
`static int LargestNumber(int[] numbers, int count):` The method will return the index of the largest number in the array.

`static int SmallestNumber(int[] numbers, int count):` The method will return the index of the smallest number in the array.

`static int Mode(int[] numbers, int count):` The method will return the mode of the numbers (if there is more than one, only one needs to be shown).

The **Mode** of a set of numbers is the number that occurs the most in the set. If there is more than 1 number that occurs the most, just use the first one found.

Sample output:



```
C:\_DMIT_New_CPSC1012\Lessons\07_Arrays\ArrayProblems1-3\bin\Debug\ArrayProblems1-3.exe
Enter a number to add to the array: 25
Add another number (Y/N): y
Enter a number to add to the array: 14
Add another number (Y/N): y
Enter a number to add to the array: 12
Add another number (Y/N): y
Enter a number to add to the array: 25
Add another number (Y/N): y
Enter a number to add to the array: 15
Add another number (Y/N): y
Enter a number to add to the array: 24
Add another number (Y/N): y
Enter a number to add to the array: 99
Add another number (Y/N): n
The average of the numbers in the array is 30.5714285714286
Largest = 99, Smallest = 12, and Mode = 25
```

4. Create a program that will allow the user to enter marks for a quiz. The user will need the ability to enter the following:

- The total for the quiz
- Up to, but no more than, 25 quiz marks and corresponding student names

Once the data has been entered, display a menu of options to the user to allow for the following:

- View all marks
- View the highest mark
- View the lowest mark
- Find the mean average of the marks
- Quit the program

Each of the three view options should display the data as a table with appropriate headings. The remaining options are left for you to implement as you see fit.

Sample output:

```
C:\DMIT_New\CPSC1012\Lessons\07_Arrays\ArrayProblems1-4\bin\Debug\ArrayProblems1-4.exe
Enter total for the quiz: 120
Invalid mark entered (max is 100) ... try again
Enter total for the quiz: 50
Enter student's name: Bob
Enter student's mark: 51
Invalid mark entered (max is 50) ... try again
Enter student's mark: 35
Add another (Y/N): y
Enter student's name: Sally
Enter student's mark: 45
Add another (Y/N): y
Enter student's name: Obi-Wan
Enter student's mark: 49
Add another (Y/N): y
Enter student's name: Zack
Enter student's mark: 25
Add another (Y/N): y
Enter student's name: Ziggy
Enter student's mark: 22
Add another (Y/N): n

Select from the following options
    1. View all marks
    2. View the highest mark
    3. View the lowest mark
    4. Find the mean average of the marks
    5. Quit the program
Option: 1
Student      Mark
Bob          35
Sally        45
Obi-Wan      49
Zack         25
Ziggy        22

Select from the following options
    1. View all marks
    2. View the highest mark
    3. View the lowest mark
    4. Find the mean average of the marks
    5. Quit the program
Option: 2
Student      Mark
Obi-Wan      49

Select from the following options
    1. View all marks
    2. View the highest mark
    3. View the lowest mark
    4. Find the mean average of the marks
    5. Quit the program
Option: 3
Student      Mark
Ziggy        22
```

Select from the following options

1. View all marks
2. View the highest mark
3. View the lowest mark
4. Find the mean average of the marks
5. Quit the program

Option: 4

Quiz average = 35.20

Select from the following options

1. View all marks
2. View the highest mark
3. View the lowest mark
4. Find the mean average of the marks
5. Quit the program

Option: 5

Goodbye ...