Feature: Main Menu Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose a valid menu option	1	Accept the value, perform what menu item #1 is meant to do, and reprint the menu.	Value was accepted, menu item 1 ran correctly, and the menu was reprinted.	Pass
2	Choose a main menu option that does not exist	7.5	Return an error and reprint the menu.	An error message was displayed, and the main menu was reprinted.	Pass
3	Enter a string at the main menu	word	Return an error and reprint the menu.	An error message was displayed, and the main menu was reprinted.	Pass

Feature: Menu Item #1 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose menu option #1	1	An array of a default size of 3 should be created using the default constructor.	An array of size 3 was created by the default constructor.	Pass

Feature: Menu Item #2 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose menu option #2 and enter valid integer	2 3	Prompt the user for the size of the array, when an integer is entered initialize the array to match the entered size, and then reprint the main menu.	User was prompted to enter the size for the array, the array was initilialized to the size of 3, and the menu was reprinted.	Pass

2	Choose menu option #2 and enter a string	2 hello	Prompt the user for the size of the array, return an error message when the string is entered, and return user to the main loop.	User was prompted to enter the size for the array, then an error message displayed telling the user to enter a valid integer, and finally the user was returned to the main menu loop.	Pass
3	Choose menu option #2 and enter a negative integer	2 -2	Prompt the user for the size of the array, return an error message when the invalid integer is entered, and return user to the main loop.	User was prompted to enter the size for the array, then an error message displayed telling the user to enter a valid integer, and finally the user was returned to the main menu loop.	Pass
4	Choose menu option #2 and enter a decimal value	2 4.5	Prompt the user for the size of the array, return an error message when the decimal is entered, and return user to the main loop.	User was prompted to enter the size for the array, then an error message displayed telling the user to enter a valid integer, and finally the user was returned to the main menu loop.	Pass

Feature: Menu Item #3 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose menu option #3 and enter valid float.	3 7.6	Prompt the user for a value, when a float is entered add that float to the array.	User was prompted to enter a value, and the float 7.6 was passed to the array.	Pass
2	Choose menu option #3 and enter a string.	3 num	Prompt the user for a value, return an error message when the string is entered, and return user to the main loop.	User was prompted to enter a value, then an error message displayed telling the user to enter a valid number, and finally the user was returned to the main menu loop.	Pass

3	Choose menu 3 and try to enter more values than the size of the array.	1 3 7.3 3 2.4 3 0.5 3 2.4	Selecting menu option #1 creates an array of default size of 3. The user should be allowed to enter values up until the fourth time a value is attempted to be passed. An error message should then be displayed and the user should be returned to the main menu.	The user was able to enter values 7.3, 2.4, and 0.5. However, when value 2.4 was entered, an error message was returned telling the user that the array is full. The user was then returned to the main menu.	Pass

Feature: Menu Item #4 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose menu option #4 when the array is empty	1 4	Select option 1 in the main menu to create an empty array, then select option 4 which should not show any values.	Menu option 1 created an array with no values, and menu option 4 did not display any values.	Pass
2	Choose menu option #4 when the array has values	3 2.5 3 1.2 4	After the array values have been added using menu option 3, menu option 4 should display the values of the array.	Floats 2.5 and 1.2 were added to the array, and when menu option 4 was selected it displayed the two values	Pass

Feature: Menu Item #5 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose menu option #5 when the array is empty	1 5	Select option 1 in the main menu to create an empty array, then select option 5 which should return an error telling the user that the array is empty	Menu option 1 created an array with no values, and menu option 5 told the user that the array is empty.	Pass

2	Choose menu option #5 when the array has values	3 3.0 3 4.0	After the array values have been added using menu option 3, menu option 5 should display the correct average (3.5), the correct minimum (3.0) and maximum values (4.0) in the array, the value of the maximum modulo minimum (1.0), and the factorial of the maximum value (4.0!=24)	Floats 3.0 and 4.0 were added to the array, and when menu option 5 was selected it displayed the average of 3.5, maximum value of 4.0, maximum modulo minimum of 1.0, and factorial of 24.	Pass
3	Choose menu option #5 when the largest array value is a negatie	3 -2 3 -7	After the array values have been added using menu option 3, menu option 5 should display the correct average (-4.5), the correct minimum (-7.0) and maximum values (-2.0) in the array, the value of the maximum modulo minimum (-2.0), but no factorial since the factorial of a negative is undefined	Floats -2.0 and -7 were added to the array, and when menu option 5 was selected it displayed the average of -4.5, maximum value of -2.0, maximum modulo minimum of -2.0, and a message saying that the factorial of a negative is undefined	Pass

Feature: Menu Item #6 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose menu option 6 and enter a valid integer, then enter valid values for the array	6 3 2.5 3.2 1.1	After the user selects option 6, the user should be prompted to enter how many values they would like to add, once a valid integer has been entered the user should be prompted that number of times to enter a value. Then the user should return to the main menu	The user was prompted to enter how many values they would like to add, then was prompted to enter that many values, and then returned to the main menu	Pass
2	Choose menu option 6 and enter a negative integer	6 -3	After the user selects option 6 and enters a negative number, an error message should display and the user should be returned to the main menu	The user was prompted to enter how many values they would like to add, then when a negative value is entered an error message was displayed and the user was returned to the main menu	Pass

3	Choose menu option 6 and enter a float	6 2.3	After the user selects option 6 and enters a float, an error message should display and the user should be returned to the main menu	The user was prompted to enter how many values they would like to add, then when a floating point value is entered an error message was displayed and the user was returned to the main menu	Pass
4	Choose menu option 6 and enter a string	6 -5	After the user selects option 6 and enters a negative number, an error message should display and the user should be returned to the main menu	The user was prompted to enter how many values they would like to add, then when a string value is entered an error message was displayed and the user was returned to the main menu	Pass
5	Choose menu option 6 and enter more values than the array can hold	6 4 1 2 3 4	After the user passes the size of the array, the program should tell the user that the array is full and not pass the entered value into the array	The array size is by default 3, so when the user got to their fourth value and attempted the enter it, the program returned a message saying that the array was full	Pass

Feature: Menu Item #7 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Populate a file with values and then read them back	2 6 3 1 2 3 8 file.txt 7 file.txt 4	After the user populates the array with 3 values, writes them to a file, and then reads them back from the file, the array should contain the first 3 values twice	The user created an array of size 6, entered values 1, 2, 3 into the array, wrote them to a file, and read them from the file. After they were read back, the values within the array were 1, 2, 3, 1, 2, 3	Pass

2	Choose menu option 7 and enter a file name that doesn't exist	7 nofile	After the user selects option 7 and enters a file name that doesn't exist, an error message should display and the user should be returned to the main menu	The user was prompted to enter a file name, then when a file that does not exist was entered an error message was displayed and the user was returned to the main menu	Pass
3	Choose menu option 7 and enter a file name that doesn't have any values	1 8 f.txt 7 f.txt 4	The user initializes an empty array and passes the values to a new file, then reads the values into the current array. The array should be empty	The user created an empty array, passed it to a file, read from a file, and the array was empty.	Pass
4	Read from an array that has more values than the length of the current array	2 5 6 5 1 2 3 4 5 8 f.txt 1 7 f.txt 4	The user passes 5 values to a file and then attempted to save those 5 values back into an array that only had a length of 3. The first 3 elements from the file should be passed into the array but the last 2 should be cut off, and there should be a message telling the user that the 2 last floats from the file did not go in.	The first 3 values from the file were passed into the array, and the last 2 were not. The user was given 2 error messages telling them the array was full.	Pass

Feature: Menu Item #8 Processing

Test #	Description	Input	Excpected Result	Actual Result	Status
1	Populate an array with values and then write them to a file	2 10 6 5 1 2 3 4 5 8 f.txt	After the user populates the array with values and writes them to a file, the file should have the number of values on the first line, and then each line after should have a single value on it.	The user created an array of size 10 and entered 5 values, and then saved the values to a file called f.txt. This file had an integer 5 at the top, and then each line after had an individual float value on it.	Pass
2	Write an empty array to a file	8 f.txt	The file should have integer 0 on the first line, and then 3 null values each on their own line.	The file had integer 0 on the first line and then 3 null values each on their own line.	Pass
3	Choose menu option 7 and enter a file name that doesn't have any values	1 8 f.txt 7 f.txt 4	The user initializes an empty array and passes the values to a new file, then reads the values into the current array. The array should be empty	The user created an empty array, passed it to a file, read from a file, and the array was empty.	Pass

Feature: Menu Item #9 Processing					
Test #	**Description**	**Input**	**Excpected Result**	**Actual Result**	**Status**
1	Choose menu option #9	9	A goodbye message should display and the program should exit	A goodbye message was displayed and the program exited.	Pass