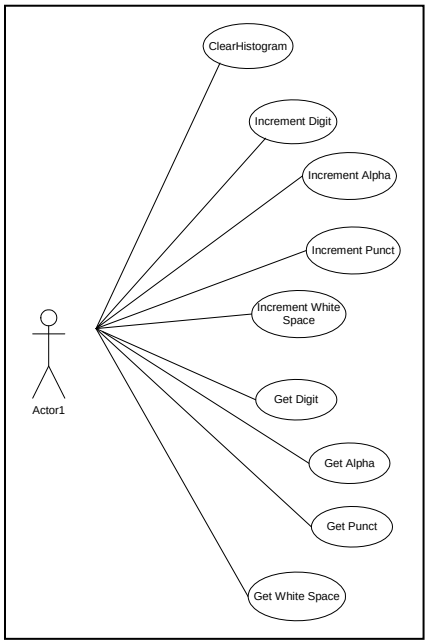
Use Case Diagram



One could include an exception for each that occurs when the count reaches the maximum integer size.

Clear Histogram

Set all counters to 0

Exception

Counters not cleared

Increment Digit

Increment the digit counter

Exception

Counter overflow, invalid initial condition

Increment Alpha

Increment the alpha counter

Exception

Counter overflow, invalid initial condition

Increment White Space

Increment the white space counter

Exception

Counter overflow, invalid initial condition

Increment Punct

Increment the punctuation counter

Exception

Counter overflow, invalid initial condition

Get Digit

Get the digit counter

Exception

Invalid container value

Get Alpha

Get the alpha counter

Exception

Invalid container value

Get White Space

Get the white space counter

Exception

Invalid container value

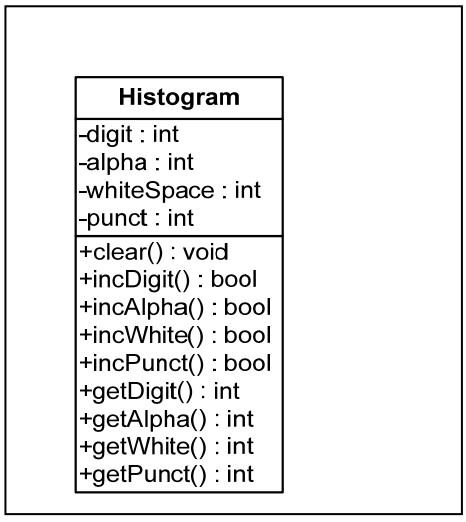
Get Punct

Get the punctuation counter

Exception

Invalid container value

Class Diagram



Test Plan

1. Test that the counter in each category (alphas, digits, punctuation, and white space) can be incremented and that the count of each concurs with the count of the same category in a specified test data file.
2. Test that the contents of each category can be printed and that the count of each concurs with the count of the same category in a specified test data file.
3. Test that the counters in each category can be cleared.
4. Test that counter cannot overflow.
5. Test that the output stream operator can be overloaded to print a histogram.

Test Cases

1. Create Histogram – Declare instance of a new histogram.

   Confirm no memory exception
2. Enter data into Histogram – Create a test file containing a known number of alphas, digits, punctuation, and white space. Use the function parseAdd() to parse the file and for each character in the file, increment the corresponding counter in the histogram.
3. Verify data entered into Histogram correctly and Histogram can be displayed – Display the contents of the histogram using the overloaded output stream operator. Confirm that the histogram displayed each category and that the count in each counter agreed with the corresponding count in the test data file.
4. Verify data entered into Histogram correctly and Histogram categories can be displayed. Display the contents of each category individually in the histogram using the overloaded output stream operator. Confirm that the histogram displayed properly and that the count in each counter agreed with the corresponding count in the test data file.
5. Test Clear – Clear the histogram.
6. Verify Clear – Verify that the counters in each category have been reset to the value 0.