FALL 2014 GROUP 1

CSCI 50600

CODE COVERAGE

Twitter Project

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**Code Coverage:**

**Definition:**

It is the percentage of code covered in each of the test cases for each iteration.

**Formula:**

% of lines covered= Number of lines covered X 100

Total number of Lines

**Purpose of Code Coverage:**

It is to test out whether the code runs properly and how many test cases have passed and how many have failed. It helps us to fix those parts which are not working.

**Parts Tested in Code Coverage:**

1. The front end is tested. (TypeScript, HTML5)

2. The back end is tested.(PHP, Server Side)

**Front End Code Coverage:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Iteration** | **Front End Percentage covered** | | | |
|  | # of Test Cases | # Passed | # Failed | % Lines covered |
| 1 | 5 | 3 | 2 | 55% |
| 2 | 6 | 6 | 0 | 67.33% |
| 3 | 8 | 7 | 1 | 100% |
| (Fixed in 3) | 8 | 8 | 0 | 100% |
| 4 | 9 | 9 | 0 | 100% |

**Back End Code Coverage:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Iteration** | **Percentage covered** | | | |
|  | # of Test Cases | # Passed | # Failed | % Lines covered |
| 1 | 4 | 4 | 0 | 100% |
| 2 | 6 | 4 | 2 | 66.33% |
| (Fixed in 2) | 6 | 6 | 0 | 100% |
| 3 | 11 | 7 | 4 | 55.33% |
| (Fixed in 3) | 11 | 11 | 0 | 100% |
| 4 | 12 | 11 | 1 | 100% |

**Robustness test cases of program for code coverage:**

* Done at the end in iteration 3
* These always included in the # of test cases:
  + Tried to enter a blank screen name
  + Tried to enter an arbitrarily large tweet
  + Tried to use SQL injection in username
* The above was just a sanity check to make sure it worked with multiple people
  + Had 8 people login at once to see if the system slowed down
* These are Robust BVA test cases that deal with the extreme ends of the number of tweets in the database.
  + Robust BVA on the tweet numbers
    - Minimum: 1 (no tweets)
    - Minimum-:0
    - Max: INT\_MAX
    - Max: INT\_MAX + 1
      * I.e. what happens when the number of tweets exceeds MAX\_INT
    - Test INT\_MAX against 32 bit machine since Amazon VM is 64 bit
      * Used a Windows XP VM that’s 32 bit
      * It didn’t work, thought up this test last second
* We tested for cross browser compatibility

**To improve robustness:**

* Increased quality and quantity of test cases in iterations 1, 2, 3 and 4 to improve overall coverage and make sure the test cases pass
* Prevented empty screen name
* Used prepare statements to query database and prevent SQL injection
* Put a length limit on the tweet

**References:**

1. *Software Engineering Modern Approaches Second Edition* Eric J. Braude and Michael E. Bernstein, Wiley Publications.

2. B. W. Boehm, J. R. Brown, M. Lipow, Quantitative Evaluation of Software Quality, TRW Systems and Energy Group, (1976).