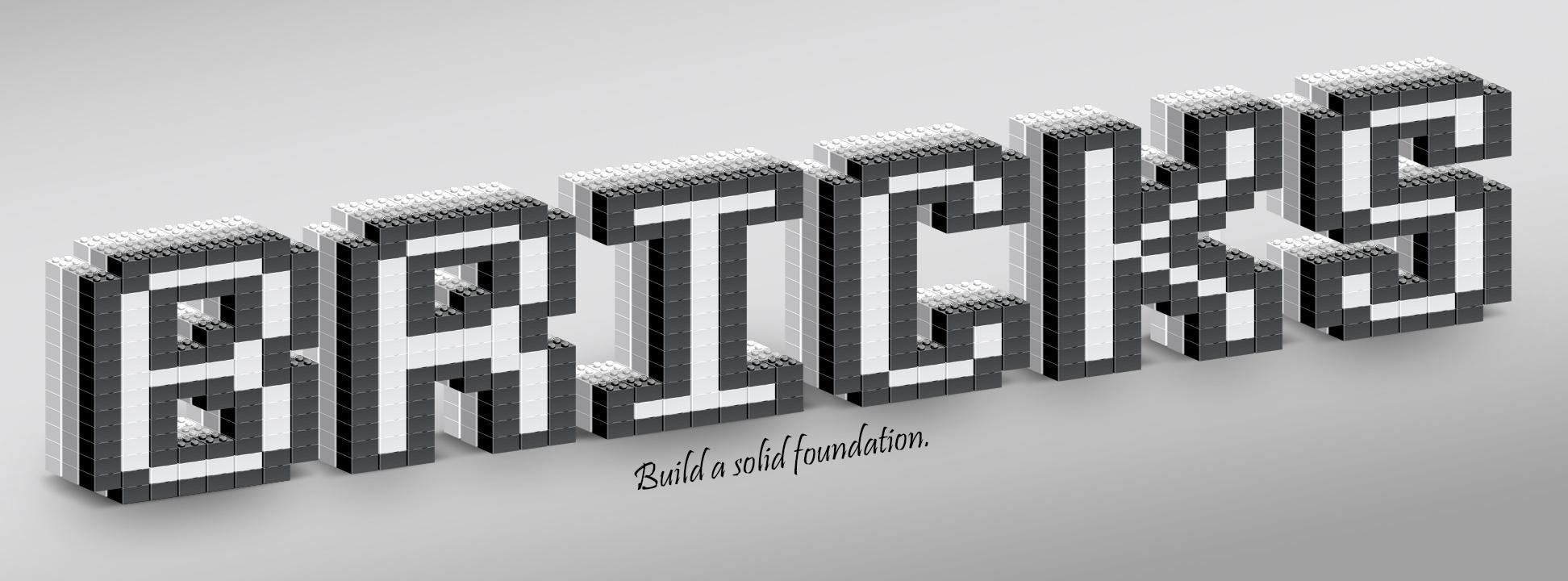
CMSC 447: Software Engineering I December 5, 2017

# **Testing Report**

# **The Redistrictinator**

Client: Geoffrey Weiss



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**The Redistrictinator**

**Testing Report**

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**1. Introduction**

The *Testing Report* for The Redistrictinator is the document that shows the testing details and results from the testing sessions that the developers of Bricks conducted.

**1.1 Purpose of This Document**

The purpose of this document is to provide an overview of the testing process used for this project, including specific testing done, impressions of the testing process, and the results of our testing. This document is intended for the development team of this project.

**1.2 References**

1. *System Requirements Specification Document,* The Redistrictinator
2. *Software Engineering, 10th Edition, Ian Sommerville, Addison-Wesley, 2015*

**2. Testing Process**

The testing process for The Redistrictinator was developed in order to properly cover all the use cases and ensure that the functional requirements were met.

**2.1 Description**

For our group, most members had a use case that was closely associated with the work they had been doing for the past couple weeks. There was some overlap with the use cases, with multiple use cases being in one person’s jurisdiction so this caused others to test others use cases as well. This worked out fine because we only had four use cases so an overlap in testing was bound to occur.

The use cases that were tested twice were that the districts displayed were outputted appropriately with details about the district and that the web app could maintain multiple users at the same time. For each requirement, the tester determined its functionality by testing if that use case was satisfied in the individual components initially and later when the demo was being put together.

This process was close to ideal in that every use case was accounted for and tested. One issue with this process was that in some cases, members of the group tested parts of code that they were already working on, and so there was not a fresh pair of eyes finding errors or faults that the original coder could have overlooked.

**2.2 Testing Sessions**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Date | Location | Time Started | Time Ended | Who | Use Cases |
| 11/15/17 | Zach’s Apartment | 8:00AM | 10:00AM | Zach, Jacob, Sir Nathaniel | Generating Districts |
| 11/25/17 | UMBC, ITE building | 7:00PM | 10:00PM | Zach, Jacob, Sumanth, Ben | Generating Districts  Navigation |
| 12/2/17 | UMBC, ITE building | 1:30PM | 11:00PM | Zach, Ben, Sumanth, Jacob | Generating Districts  Displaying Districts |
| 12/3/17 | UMBC, ITE building | 3:00PM | 5:00PM | Zach, Francis | Generating Districts  Navigation |
| 12/5/17 | UMBC, Engineering building | 6:00PM | 7:10PM | Zach, Sir Nathaniel. Jacob, Sumanth, Francis, Ben | Generating Districts  Load Webpage  Displaying Districts  Multiple Users |

**2.3 Impressions of the Process**

The testing process was very effective. Every time we ran test on our algorithm we were able to receive a visual representation of our code and use that in order to fix it. Just looking at the code was not enough, when we could see a visual representation of our output we could track what our algorithm was doing. When we first had a working algorithm, our districts were scattered throughout the entire map of the state we were generating districts for. After we ran test on it and displayed the districts on google maps, we were able to clearly see the errors in our code. After fixing these errors, the next test session showed more compact districts with more even populations.

The best unit was the front end. We had very little issues with this and do not foresee any future ones with our current system. On the other hand, the worst unit was our back end. The algorithm has had the most issues. We could always improve our algorithm. For example it currently does not create contiguous districts for all states. We could work on fixing the algorithm so that every district is contiguous.

**3. Test Results**

The test results for The Redistrictinator shows how each use case was partitioned so that it could be tested optimally as well as the test cases used and their results.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Google Maps | | | | |
| Equivalence Partitions | Clicking district displays statistics  Displaying districts on map  Statistics are accurate | | | |
| Boundary  Cases | Clicking a place on the map where there isn’t a district | | | |
| Tester Name | Benjamin Jeremenko, Jacob Philip | | | |
| Unexpected Result | Defect | Hovering over a district displayed statistics in random place. | | |
| Suggested/Actual Repair | Chose to make it click district. | | |
|
| Changes Made | Changed listening for hover to listening for click. | | |
| Unexpected Result | Defect | Districts after 53 are all black | | |
| Suggested/Actual Repair | Add javascript to create a random hexadecimal color | | |
|
| Changes Made | Added the javascript | | |
| Expected Result | No Defect | Districts are different colors if below 53 | | |
| Suggested/Actual Repair |  | | |
|
| Changes Made |  | | |
| Unexpected Result | Defect | Districts are not solid color | | |
| Actual Repair | Change from polyline to polygon and color polygons in district same color. | | |
|
| Changes Made | Use polygons to display districts | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Loads Webpage | | | | |
| Equivalence Partitions | Each of the 3 main browsers (Chrome, Safari, Firefox) is a partition | | | |
| Boundary  Cases | Mobile browsers | | | |
| Tester Name | Sumanth Neerumalla | | | |
| Unexpected Result | Defects | CSS did not show up on the Safari Browser | | |
| Suggested/Actual Repair | Removed the buttons that were not loading properly | | |
|
| Changes Made | Changes were made to the HTML | | |
| Expected Result | No Defects | Firefox loaded and displayed properly | | |
| Suggested/Actual Repair |  | | |
|
| Changes Made |  | | |
| Expected Result | No Defect | Chrome loaded and displayed properly | | |
| Suggested/Actual Repair |  | | |
|
| Changes Made |  | | |
| Expected Result | No Defect | Mobile Safari and Chrome loaded and displayed properly | | |
| Suggested/Actual Repair |  | | |
|
| Changes Made |  | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Clicking Navigation Buttons | | | | |
| Equivalence Partitions | Clicking home, about, tutorial, getting started, and generate buttons | | | |
| Boundary  Cases |  | | | |
| Tester Name | Francis Kato | | | |
| Unexpected Result |  | Home button nonfunctional from about page | | |
| Suggested/Actual Repair | Functionality added to button | | |
|
| Changes Made | Changes made to HTML/JavaScript | | |
| Expected Result | No Defect | All other buttons functioned correctly | | |
| Suggested/Actual Repair |  | | |
|
| Changes Made |  | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Generating Districts | | | | |
| Equivalence Partitions | Generating 8 Districts for Maryland  Generating 53 Districts for California | | | |
| Boundary  Cases | Generating 500 Districts  Generating negative number of Districts | | | |
| Tester Name | Zachary Elliott | | | |
| Result | Defects | Non Contiguous Districts | | |
| Suggested/Actual Repair | Change algorithm to make contiguous districts | | |
|
| Changes Made | Still not working | | |
| Unexpected Result | Defects | Any district after 53 is colored black | | |
| Suggested Repair | Add a random color generator in javascript that chooses a different color for each district | | |
|
| Changes Made | none | | |
| Unable to Execute | Defects | Negative number breaks site | | |
| Actual Repair | Put an exception in that soft breaks the site. Gives the user an invalid input page with option to start over. | | |
|
| Changes Made | Algorithm checks for edge cases. | | |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Multiple Users | | | | |
| Equivalence Partitions | All in the same partition | | | |
| Boundary  Cases | More than 5 users | | | |
| Tester Name | Jacob Philip, Sir Nathaniel Fuller | | | |
| Unexpected Result | Defects | When generating districts, displayed the results of one user for all users searching at that time | | |
| Suggested | Adding user sessions | | |
|
| Changes Made | none | | |
| Expected Result | No Defect | Home Page loaded properly with multiple users | | |
| Suggested/Actual Repair |  | | |
|
| Changes Made |  | | |
| Expected Result | No Defect | Tutorial loaded properly with multiple users | | |
| Suggested/Actual Repair |  | | |
|
| Changes Made |  | | |

**Appendix A – Team Review Sign-off**

All of the following team members have reviewed this document and agree to the content and format.

**Team Members:**

Benjamin Jeremenko: \_\_\_\_\_\_\_\_ Date: \_\_\_12/5/17\_\_\_\_\_\_\_

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Jacob Philip: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_12/5/17\_\_\_\_\_\_\_

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sumanth Neerumalla: \_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_12/5/17\_\_\_\_\_\_\_

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Zachary Elliott: \_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_12/5/17\_\_\_\_\_\_\_

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Francis Kato: \_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_12/5/17\_\_\_\_\_\_\_

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Nathaniel Fuller: \_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_12/5/17\_\_\_\_\_\_\_

Comments: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Appendix B – Document Contributions**

Benjamin Jeremenko: Testing Process, Test Results 25%

Jacob Philip: Testing Process, Test Results 25%

Sumanth Neerumalla: Testing Process 10%

Zachary Elliott: Introduction, Testing Process 10%

Francis Kato: References, Testing Process 5%

Nathaniel Fuller: Testing Process 25%