



Testing, Evaluating And Maintaining

MAJOR WORK
LAVANYA SOOD

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Test Data

| Test Data | Description/Justification Of Use |
|----------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Rolldice return value set to 10 | The <u>rolldice()</u> function is set to 10 and is used to test whether the jail function works or not. It is used to test the functionality of the jail function. |
| Input of names: Test data "Regina" – Valid "Michelle23" – Invalid "Archie\$#" – Invalid "Bob" – Valid | To test what type of characters are allowed in the player name the test data was used. Only lower and upper case alphabets can be used by the player to input their names. |
| Rolldice return value set to 1 | The <u>rolldice()</u> function is set to 1 to test how each position on the board works. |
| Rolldice return value set to 5 | The <u>rolldice()</u> function is set to 5 to test what occurs when the player lands on a chance spot. Thus it tests how the <u>chancecards()</u> function works. |
| Rolldice return value set to 20 | The <u>rolldice()</u> function is set to 20 to test how the "Game Of Luck"; the wheel game works in the program |
| Rolldice return value set to 2,3 and 8 | The <u>rolldice()</u> function is set to the specific values on each turn to test how the player's pawn moves around the board and whether it is able to move around the corners. |

Module Testing

Selecting Pawn Module

| Action | Expected Output | Actual Output |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| When the second pawn button was selected by the first player:  | The selected pawn was displayed on the board  | The selected pawn was displayed on the board.  |
| When the fourth pawn button was selected by the first player  | The selected pawn was displayed on the board  | The selected pawn was displayed on the board.  |
| When the first pawn button was selected by the second player  | The selected pawn was displayed on the board  | The selected pawn was displayed on the board.  |

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| When the third pawn button was selected by the second player:  | The selected pawn was displayed on the board  | The selected pawn was displayed on the board.  |
| When the user selects no player | An alert appears asking the user to select a player | An alert appears asking the user to select a player |

ROLLDICE() FUNCTION

```
2
5
7
② 11
② 7
5
4
8
7
6
③ 8
7
12
3
10
11
6
7
6
4
10
3
7
9
10
```

The roll dice function was copied to a separate file and while loop was set up to test how the rollDice() function worked. This while loop was set to allow the rollDice() function to run 100000 times and the results were displayed in the console. The results are displayed on the picture on the left and were always within the desired range. As shown, the number 7 was the results several times. The module was tested 100000 times to test the consistency of the results. Thus, the module was successfully tested.

PAYRENT() FUNCTION

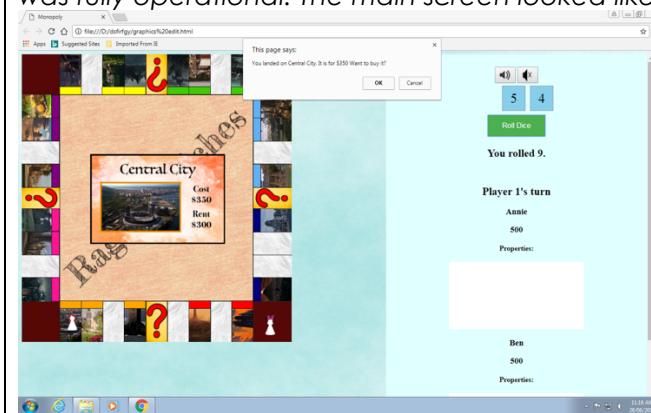
| Action | Expected Output | Actual Output |
|---------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------|
| If player lands on an empty property | The pop-up box allowing the user to buy the property is displayed | The pop-up box allowing the user to buy the property is displayed |
| If the player lands on a property purchased by another player | The player pays the owner the rent and then the turn ends | The player pays owner the rent and the turn ends |
| If the player lands on a property purchased by them. | Nothing happens and the turn of the player ends | Nothing happens and the turn of the player ends |

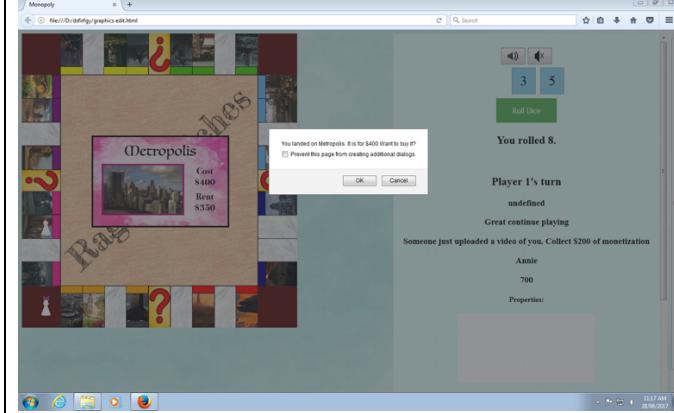
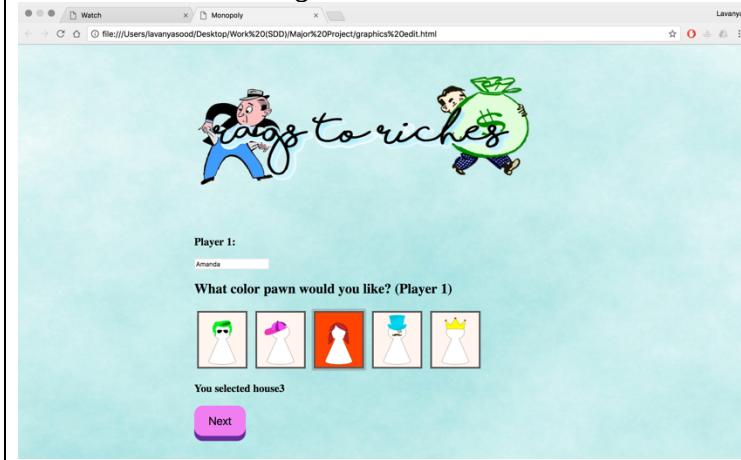
MOVEPLAYER() FUNCTION

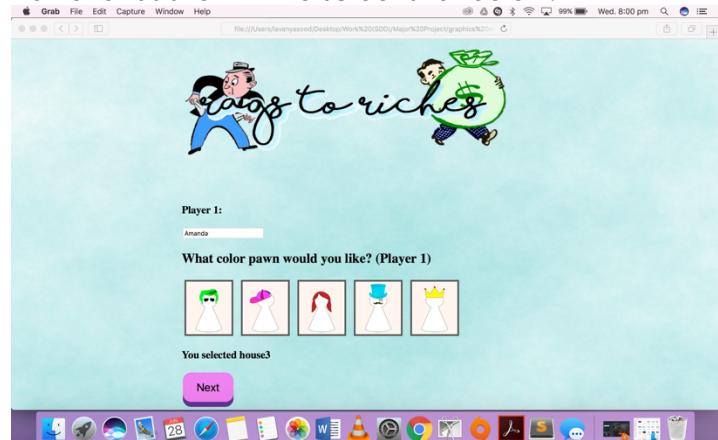
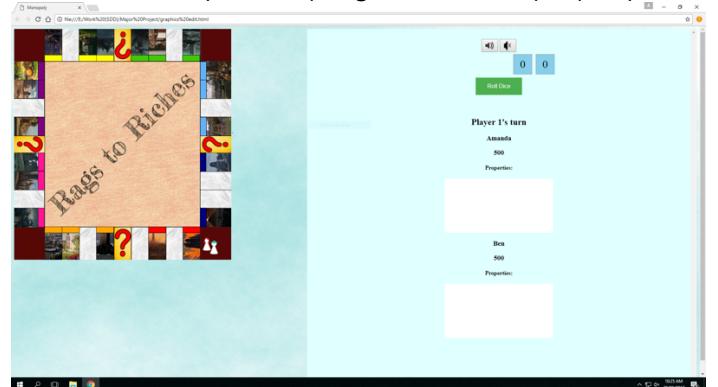
| Action | Expected Output | Actual Output |
|---------------------------------|---------------------------------|---------------------------------|
| When the player lands on chance | A chance card pops up | A chance card pops up |
| When the player lands on go | The player receives 200 dollars | The player receives 200 dollars |
| When player lands on jail | The jail pop up box appears | The jail pop up box appears |
| When player lands on wheel | The "Game of luck" div pops up | The "Game Of Luck" div pops up |

System Testing

System Testing was done to ensure that the software worked on various platforms:

| Operating System | Browser | Result |
|-------------------------|-------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Windows 7 | Google Chrome | <p>When the program was opened on Google Chrome it was fully operational. The main screen looked like this:</p>  <p>The pop-up box was displayed on top of the browser and the other functions were appropriately working</p> |
| | Internet Explorer | <p>The program did not open past the initializing screen and thus the program cannot be operated on Internet Explorer</p> |
| | Mozilla Firefox | <p>When the program was opened on Firefox it was functioning properly.</p> <p>The game was working as expected however the only difference was that the pop-up box was displayed in the middle of the browser and fades the main game</p> |

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| | | <p>screen as shown in the screenshot below:</p>  <p>However, this does not disrupt the way the program should work.</p> |
| MacOS Sierra | Google Chrome | <p>The program worked perfectly when tested on Google Chrome. The initializing screen looked as follows:</p>  <p>The browser is able to focus on the button selected by the user as it is activated by changing the background color of the button.</p> |

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| | Safari | <p>When the program was tested on Safari the main functionality of the program was working perfectly. However as show in the screenshot below:</p>  <p>The screenshot shows a game window titled "Rags to riches". At the top, there are two cartoon characters: one in a blue suit and hat, and another carrying a large green sack with a dollar sign on it. Below them is the title "Rags to riches". The main area is titled "Player 1:" with the name "Amanda" entered. A question "What color pawn would you like? (Player 1)" is displayed above five small icons representing different colored pawns. Below these icons, a message says "You selected house3". A pink "Next" button is visible. The bottom of the screen shows a Mac OS X-style menu bar with various application icons.</p> |
| Windows 10 | Google Chrome | <p>When the program was tested on Google Chrome all the functionality of the program worked properly.</p>  <p>The screenshot shows a game window titled "Rags to Riches". On the left is a board with several colored squares and question marks. In the center, the text "Rags to Riches" is written diagonally. To the right is a player stats panel. It shows "Player 1's turn" with "Amanda" and "500" points. It also has sections for "Properties" and "Bank" (both at 500). There are also "Sell" and "Buy" buttons. The bottom of the screen shows a Windows 10 taskbar with various application icons.</p> |

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| | | <p>However, as shown in the picture above the side bar was displayed much larger than the actual gameboard.</p> |
| | Windows Edge | <p>When the program was tested on Windows Edge all the functionalities of the game worked successfully without any errors.</p> |

Modifications In Response To System Testing

When the software program was tested on different operating systems, there were no functionality errors throughout and the program worked successfully.

However, when the program was tested on Internet Explorer the program did not work. This could have been due to some error with the browser reading the code. Fixing this problem, would be very time consuming thus I would recommend users to not use Internet explorer to use my program as it works on every other web browser on all operating systems. Modern Mac computers are available with a preinstalled Safari Browser and the modern Windows computers have pre-installed Windows Edge thus the probability of a user have internet explorer on their computer is very minimum itself.

When my program was tested on Google Chrome on Windows 10, there was a proportionality error in the size ratio of the side bar and the game board. This was due to the larger screen of the monitor which led to the larger size bar. I tried fixing this error by increasing the size ratio of the svg but the overall issue was not very major as this bug only occurred if the user played the game in full screen mode, it works perfectly fine normally. However, the game was functioning perfectly and this was thus not a major issue in terms of the program itself but just its aesthetics.

Hence, I would recommend the user to use my program on a specific screen resolution for optimum gameplay with aesthetically pleasing features.

Evaluation of final solution

My final solution of my major project, the game "Rags to Riches" was very pleasing to me as I believe that I was successfully able to achieve the basic functionality that I was aiming for. I was able to reach my goal of making a virtual board game to allow users to enjoy the classical game of Monopoly on their very own devices. I liked that I was able to add a multiplayer aspect to my game that allowed two people to enjoy this game together and thus combined technological gaming with real world social interactions. However, I wish that I would have been able to add an artificial intelligence mode to the game as well which would have allowed the user to play the game alone, if they didn't have anyone to play it with or add more than two players so that multiple people could enjoy the game at the same time.

I was pleased that I was able to add a mini-game of a "Wheel of Luck" to the game which allowed the user to have additional functionality to the game and thus was able to set my interpretation of classical board game apart from the rest. I was also content that I was able to add graphics and music that would be pleasing to my intended audience and thus would attract people towards my product. I was also able to make my game attractive to my intended audience of young adults by adding pop cultural references of popular TV shows as places on my board game and thus increased the appeal of my program. I wish that I would have been able to add the 3D animations that I was hoping to add which would have further increased the appeal of my game. However, I was satisfied with how the aesthetics of my program were overall pleasing and attractive.

Hence, even though I believe that I could have added more features to my program which would have increased the appeal of my game, I was satisfied that my program was able to meet all the game functionalities I had set out to achieve making my program an overall well developed final solution.