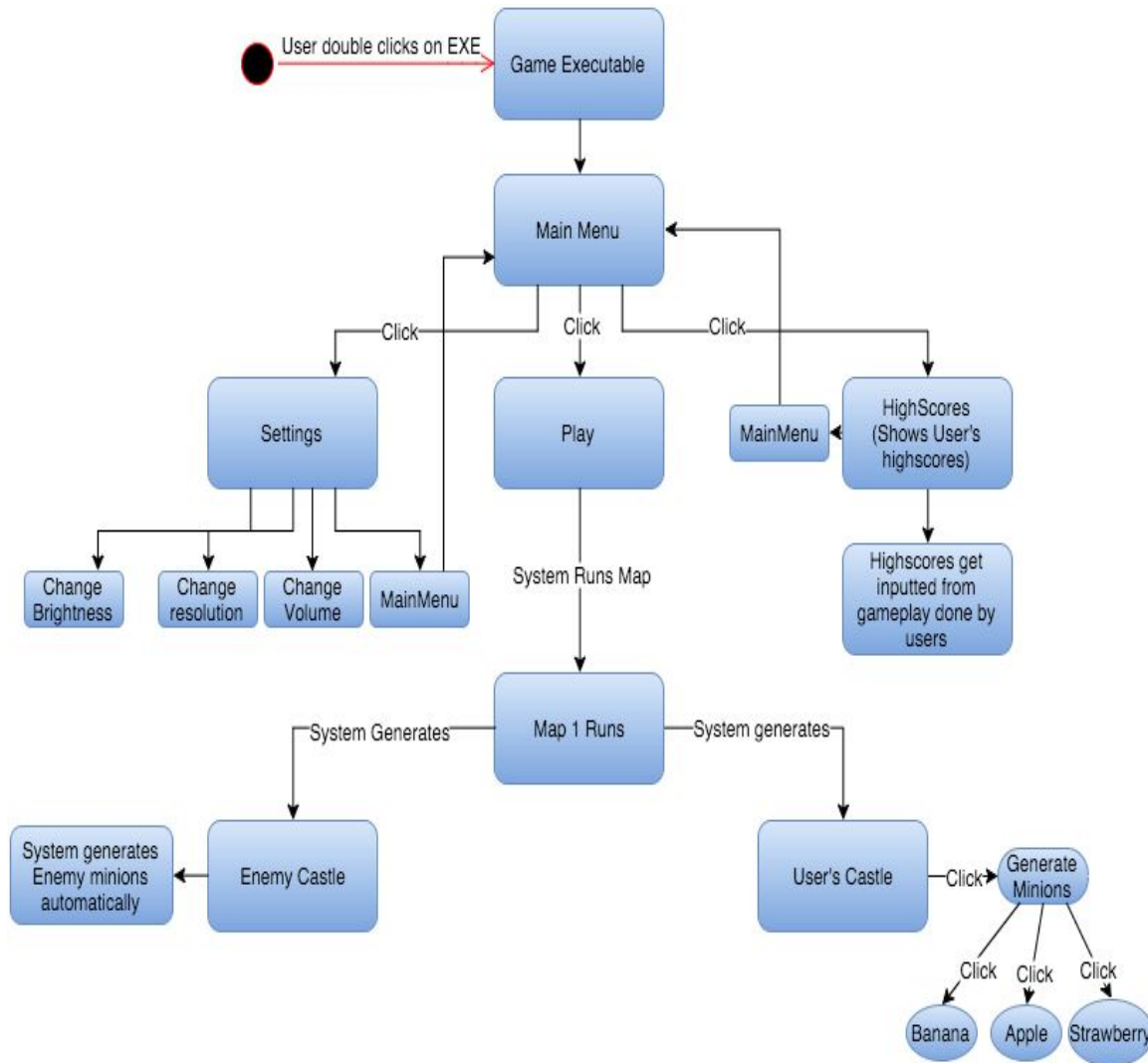


CS408 Incremental Testing, Regression Testing

Abdalla A Almazmi (almazmi), Anna Benjamin (benjamia), Michael Andrew Goldman (goldmanm), Mason P Herhusky (mherhusk), Bangqin Lin (lin461), Wei Zhang (zhan1613)



Classification of Components

- We tested in a top-down manner, since some of the lower layers of our project are not done yet. So we added stubs for the lower level modules that we did not complete in order to simulate the functionality of said modules. Also, we wanted an early demonstration of the capabilities of our program and we decided that the top-down approach was the best way we could achieve that.

Incremental and Regression Testing

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Module	Component 1- Game Executes
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Incremental Testing

Defect #	Description	Severity	How to correct
1	The game closed itself only when the user did not ask it to	1	Reserve the Application.EndGame() function only for when the user presses "Quit" and then "Yes"
2	The size of the game window was not consistent between different devices	1	Setting the game window to scale with the device fixed the issue.

Regression Testing

Defect #	Description	Severity	How to correct
1	Restricting the number of times Application.EndGame() is called prevents the top-right "X" button on the window from working	1	Enable EndGame() to also work on the X button
2	Fixing the size of the game window allowed us to see a bug that was off screen where an extra minion was being spawned	2	We deleted the extra minion.

Module	Component 2- Main Menu
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Incremental Testing

Defect #	Description	Severity	How to correct
1	NullPointerException because menuScript was referring to the high scores button in it's showHighScores method, but it had not been configured properly.	1	Added an onClickEffect to the high scores button linked to the showHighScores method.
2	After clicking the exit button when being prompted "Are you sure you want to quit?" the other buttons on the main menu were clickable.	3	Changed the code in menuScript to disable settingsButton and highScoresButton.

Regression Testing

Defect #	Description	Severity	How to correct
1	The showHighScores method might keep the high scores menu up permanently making the Main Menu obsolete.	1	Add code to make sure that the showHighScores method is functional only when the HighScores button is clicked
2	Changing the code to disable the settingsButton and the highScoresButton could permanently disable the buttons.	2	Add an if statement to disable the settingsButton and the highScoresButton only if the exit prompt is on.

Module

Component 3 - Settings Menu

Incremental Testing

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Defect #	Description	Severity	How to correct
1	Clicking on MainMenu doesn't take the User to the main menu.	2	Add a function to the button to go back to the previous Menu
2	The Volume slider goes over the valid Volume value.	3	Add boundaries in the code in order prevent the user from going over the allowed value

Regression Testing

Defect #	Description	Severity	How to correct
1	Adding the Function could cause the Settings menu to revert back to the Main Menu every time the Settings Menu button is clicked.	2	Make the function only activate when the MainMenu button in the settings menu is clicked
2	Adding the code to prevent the user from going over the given value could prevent the user from being able to control the volume slider.	3	Add code to make sure that the User only couldn't move the slider over or under the specified values.

Module	Component 4 - HighScores
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Incremental Testing

Defect #	Description	Severity	How to correct
1	High scores menu should be correctly displayed when clicking the High Score button.	1	Link a new view to the button of High Score.

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2	High scores by users should be correctly displayed on the high scores menu.	1	Create a variable to save the high score of a user in the end of each game.
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Regression Testing

Defect #	Description	Severity	How to correct
1	Fixing the high scores menu in component 4 caused component 3 not to display.	2	Paying attention to merge conflicts allowed us to find discover the cause of the bug and fix our logic.
2	Fixing the high scores by users in component 4 causes disordered high scores been displayed.	2	The sorting method that we added for the high scores had a ">" when it should have had a "<", changing it fixed the issue.

Module	Component 5 - Play (starts the game)
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Incremental Testing

Defect #	Description	Severity	How to correct
1	Clicking "Play" brings player to a level that's not Level 1.	2	Rearrange the order the level components are added in the code

Regression Testing

Defect #	Description	Severity	How to correct
1	After rearranging the order in which the levels are added,	2	Add a Unity component that transitions between

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	when the player beats Level 1, the game does not progress to the next level/repeats Level 1.		levels/panels
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Module	Component 6 - Map Runs (Game Starts)
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Incremental Testing

Defect #	Description	Severity	How to correct
1	The game shows only part of the map.	1	Make smaller the dimensions of the map and the images in the game

Regression Testing

Defect #	Description	Severity	How to correct
1	The map on the game is too small, to the extent that the buttons are illegible and the map and game UI only occupy a small percentage of the visible area of the executable window.	1	Increase the dimensions of the map and the images in the game

Module	Component 7 - Generating Minions
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Incremental Testing

Defect #	Description	Severity	How to correct
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1	The Minions don't stay on the path specified by the map.	1	Add objects on the borders of the path in order for the minions to not be able to go over those objects
2	The user is able to generate minions even if he/she doesn't have sufficient funds.	2	Add the an if statement to check if the User has sufficient funds and if he/she doesn't a message will pop up letting the User know they do not have enough funds
3	When the user tries to generate an apple, it generates a strawberry instead.	3	The strawberry sprite needed to be added to the assets folder.

Regression Testing

Defect #	Description	Severity	How to correct
1	Adding those collision objects might prevent the minions from being able to move at all.	1	Make sure that the collision range of the objects does not cover the whole path, only the boundaries of that path.
2	Adding the if statement might prevent the User from being able to spawn minions at all.	1	Add code to check if the minion has enough funds and if he/she does he/she would be able to generate those minions.

Module

Component 8 - Enemy's Castle

Incremental Testing

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Defect #	Description	Severity	How to correct
1	The map has multiple paths from the enemy's Castle to player's. Some of them are intercepted with each other which results the minions having a choice of choosing paths at some points or sometimes just not choosing at all. Some paths are completely abandoned by minions because of the way the navigation is set up.	2	Delete those unused paths and only have two single paths on the map which do not intersect with each other.

Regression Testing

Defect #	Description	Severity	How to correct
1	Now having two single paths with no intercept on the map, one single shop/generation point on the player side is not enough for supplying the minions.	2	Add another shop/generation point that is corresponding to the second path.

Module

Component 9 - Generate Enemy Minion

Incremental Testing

Defect #	Description	Severity	How to correct
1	The enemy minions are generated in a constant speed which results the same difficulty	1	Have a float value representing the generation speed of

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	throughout the game.		enemy, use it as a parameter for the instantiate function and keep slightly increasing this float value throughout the gameplay.
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Regression Testing

Defect #	Description	Severity	How to correct
1	Changing the way minions were generated caused a bug where minions were randomly disappearing from the map.	1	Correcting the constraints on the minion pathing on our map fixed the issue of minions disappearing.
2	Changing the constraints on the minino pathing on our map caused our minions to start turning the wrong direction sometimes.	1	We forced the minions to go the right way by making one-way paths.

Module	Component 10 - User's Castle
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Incremental Testing

Defect #	Description	Severity	How to correct
1	The map has multiple paths from the user's Castle to enemy's. Some of them are intercepted with each other which results the minions having a choice of choosing paths at some points or	2	Delete those unused paths and only have two single paths on the map which do not intersect with each other.

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	sometimes just not choosing at all. Some paths are completely abandoned by minions because of the way the navigation is set up.		
2	When the game starts, an enemy hamburger spawned at the user's base.	3	Found the code where the hamburger was being hardcoded in and removed it.

Regression Testing

Defect #	Description	Severity	How to correct
1	Now having two single paths with no intercept on the map, one single shop/generation point on the player side is not enough for supplying the minions.	2	Add another shop/generation point that is corresponding to the second path.
2	The enemy's burger minions stop spawning at all after the defect #2 is fixed.	1	It turns out that the navigation setup is preventing the burger minions from spawning.