Tower Dream

Incremental & Regression Testing

Sprint 2

Team 15

Yixiong He, Tiger Lu, Kevin Jiang, Weifeng Huang, Zhe Chen

❖CLASSIFICATION OF COMPONENT

Login Module:

- Login Screen
  - Input: Email, Password, login button, Register button
  - Output: Navigate to the game screen or Descriptive error
  - Parent Dependency: None
  - Child Dependency: Login action, Register Screen

- Register Screen
  - Input: Email, Password, Register button
  - Output: Register Successfully Screen or Descriptive error
  - Parent Dependency: Login Screen
  - Child Dependency: Register Action, Main Menu Action
- Login Action
  - Input: Email and Password
  - Output: Login success or failure
  - Parent Dependency: None
  - Child Dependency: Main menu screen

- Register Action
  - Input: Email and Password
  - Output: Register successfully or failure
  - Parent Dependency: Register Screen
  - Child Dependency: Login Screen
- Log-Out Action
  - Input: Log-Out Option
  - Output: Log out successfully or failure
  - Parent Dependency: In-Game Screen
  - Child Dependency: Log Screen

UI Module:

- Main Menu Screen
  - Input: Main menu options
  - Output: Entering the new game
  - Parent Dependency: Login Screen
  - Child Dependency: In-Game Screen

- In-Game Screen
    - Input: None
    - Output: Defending towers and defensive troops moving
    - Parent Dependency: Main Menu Screen
    - Child Dependency: Help-info Box Action
- Help-info Screen
    - Input: info button
    - Output: Help-info information
    - Parent Dependency: In-Game Screen
    - Child Dependency: In-Game Screen

- Pause-Game Screen
    - Input: Pause button
    - Output: The current game stops
    - Parent Dependency: In-Game Screen
    - Child Dependency: In-Game Screen, In-Game Sell Defenses Actions and In-Game Optimal Target Action

Game Activities Module:

- Main Menu Action
    - Input: Main Menu Options
    - Output: Each new game
    - Parent Dependency: Login Screen
    - Child Dependency: None

- In-Game Upgrade Defense Action
    - Input: None
    - Output: Upgrade the defenses
    - Parent Dependency: In-Game Screen
    - Child Dependency: None

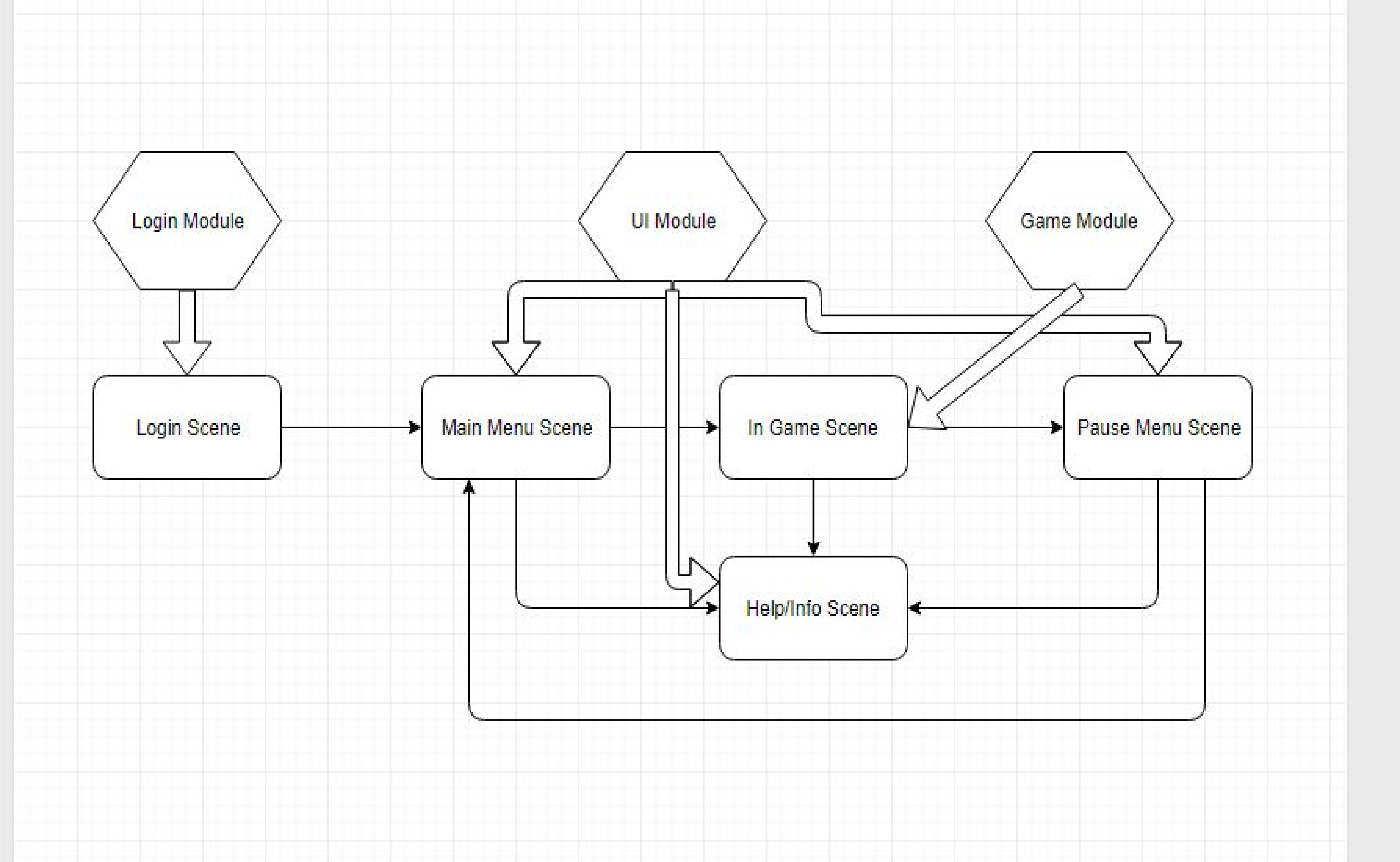
- In-Game Defend A Variety Of Enemies Action
    - Input: None
    - Output: Defend against a variety of enemies
    - Parent Dependency: In-Game Screen
    - Child Dependency: None

- Help-info Box Action

  - Input: info button
  - Output: Pop up Help-info information
  - Parent Dependency: In-Game Screen
  - Child Dependency: In-Game Screen
- Save-Game Action
  - Input: None
  - Output: Save the current game
  - Parent Dependency: In-Game Screen
  - Child Dependency: In-Game Screen, In-Game Sell Defenses Actions and In-Game Defend A Variety Of Enemies Action

Incremental testing technique

We are using the bottom up testing approach, as we tested different modules/scenes individually first, then we tested transitions and integrations between scenes and modules



Using top down testing would make it too hard to find individual bugs, therefore bottom up testing was more efficient and useful.

Incremental and Regression Testing

Register and Login Module

- Testing is designed for checking the normal functionality of login and register, also checking for invalid characters.

Defect Log for Register & Login Module

Defect #	Description	Severity	How Corrected
1	Login is not implemented into game	1	Implement working php scripts into unity game.
2	Non-alphanumeric characters are allowed	2	Write checks for invalid characters

Regression Testing

Defect #	Description	Severity	How Corrected
1	Adding two buttons into the login page and organize with the right position when the keyboard pops up to enter the text into the email and password fields	1	Relocate buttons on the login page
2	When the cursor is in the box of the email/password, the keyboard pops up.	3	Modify the properties of the login layout and keyboard popping up action

Defect Log for Register & Login Module

Defect #	Description	Severity	How Corrected
1	Log-out is not implemented into game	1	Implement working php scripts into unity game.
2	After Logging out the account, the app did not take you back to the log-in page	2	Correct the code to take back to the log-in page

Regression Testing

Defect #	Description	Severity	How Corrected
1	Adding Log-out buttons into the in game page and organize with the right position	1	Relocate the button on the In Game page
2	When the log out window pops up, it can not go back to the original game scene.	3	Redesign the log out window layout and add the go back option in the property.

Menus/UI Module Module

- Testing is designed for checking the functionality of each button directing the user to the related scene in the game.

Defect Log for Menus/UI Module

Defect #	Description	Severity	How Corrected
1	When upgrading defenses characters will not be changed always	1	Checked the characters properties in the setting and set different levels of characters according to different defenses.
2	Save the game button won’t fully work when pausing the game	1	Edited pause menu script to add the options of saving the game when pausing, and back to 1 when pause menu is gone

Regression Testing

Defect #	Description	Severity	How Corrected
1	Changing the different setting of the buildings and make it more suitable for the users	3	In the EditorBuilfSettings property, we make the m_scenes set to different enabled.
2	Modifying the components to be a different type of GUI, does not look like the other screens in the app	3	Modify the position of the save and pause buttons and make them coincide with the previous screens.

Gameplay Module

- Tests that are designed to check in game features such as combat and building.

Defect Log For Gameplay Module

Defect #	Description	Severity	Corrected
1, 2	Defenses cannot be moved when the user is upgrading the defense	1	The levels are not designed yet, and each levels will have different restricted boundaries. So the boundaries are not set yet but it will be implemented through layers and movement restrictions along with level creation.
2	Hard to tell when it is setup time and wave time	2	Created an obvious indication to separate building wave and enemy wave, it will also automatically adjust to new wave set.
3	Standing directly in front of an enemy unit will cause it to be blocked and unable to move.	1	Made player unit to ignore unit collision, so user will not be able to stall the wave on purpose. The enemy unity will keep its collision for possible compatibility when we implement offensive end on the gameplay module.
4	Saving mode does not respond to the saving action	1	Save the entire game process in the remote server
5, 8	Friendly units also show up as	1	Fixed the possible cause

	a counter in enemies left. Enemies left counter bugs due to refresh rate not being quick enough. If enemy dies too fast, counter sometimes doesn’t decrease		of the problem with tags (used to count enemies), added distinguish tags to all units.
6	Gold gain is not fully functional	1	Add the gold gain function in the game play scene.

Regression Testing

Defect #	Description	Severity	How Corrected
1	Adding new fields to Tower.prefab file to make it indicate the defensing wave	3	Modify the components of the tower fields
2	Change the player movement to different format	3	Update player movement to more features mode
3	EnemyCrossed() function called different times every frame	1	In the function, when no more waves and enemies remain, player beats the level.