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

Art Assets Module:

- Character Models
  - Input: Unity Store Asset
  - Output: In Game objects have art models

- Menu/Scene Art Assets
  - Input: Unity Store Asset
 - Output: Game scenes and menus have specialized text/art

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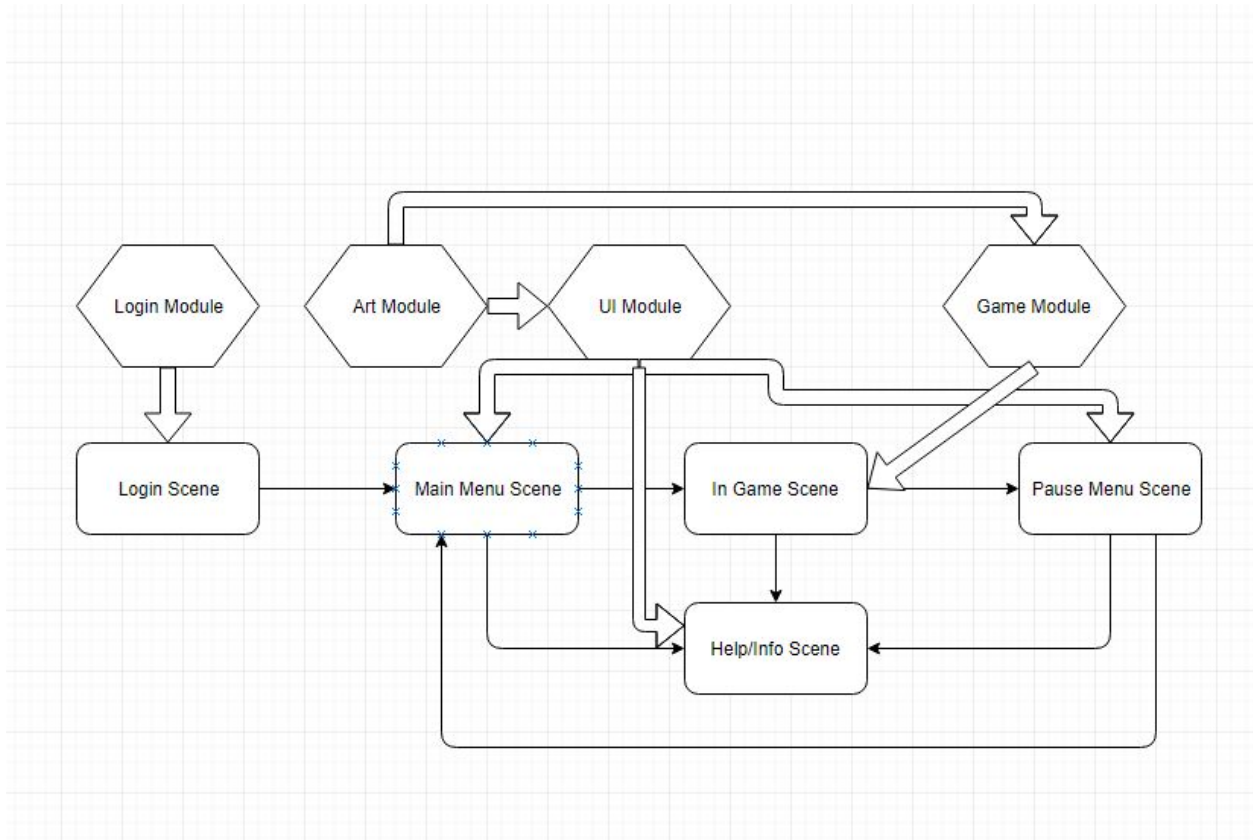
Using top down testing would make it too hard to find individual bugs, therefore bottom up testing was more efficient and useful.

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 still does not work in game	2	Implement working php scripts in game

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
3	If logged in with wrong accounts would give wrong level number for player and wrong menu	2	Changed saving of player level to only be an integer

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 EditorBuildSettings 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.

Art Assets Module

- Testing is designed to have working object models and art assets to appear in game correctly and smoothly

Defect Log for Art Assets Module			

Defect #	Description	Severity	How Corrected
1	Wrong module showed up for enemy art assets	1	Checked the assets manager and fixed the assets given for each enemy
2	Some models would not load in game	2	Used different models that were more compatible with our in game objects

Regression Testing			

Defect #	Description	Severity	How Corrected

1	Some art models would interfere with level loading and would crash the game	3	Utilized different models that were more compatible
2	Changing art models would hurt loading speed and in game would lag	3	Utilized different models that were more compatible with our game

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	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	Some newly made enemies would not move correctly towards the end zone	2	Fixed enemy move path for new enemies
3	New towers would not attack enemies	2	Fixed targeting and enemy prioritization for towers
4	Hero attacks would hit your own towers	1	Changed target detection for hero spells and attacks

	Regression Testing		
Defect #	Description	Severity	How Corrected
1	Change the player movement to different format	1	Update player movement to more features mode
2	Changing move path for enemies also affected tower targeting and prioritization	2	Fixed/edited towers targeting
3	Newly added levels also affected enemy moving pattern and they would sometimes get stuck	2	Fixed enemy moving path to be more automatic instead of fixed
4	Hero's attacks sometimes would bug the hero's movement and cause him to not be able to move/move weird	2	Fixed hero movement and added check for whether hero is currently attacking so it does not interfere with movement