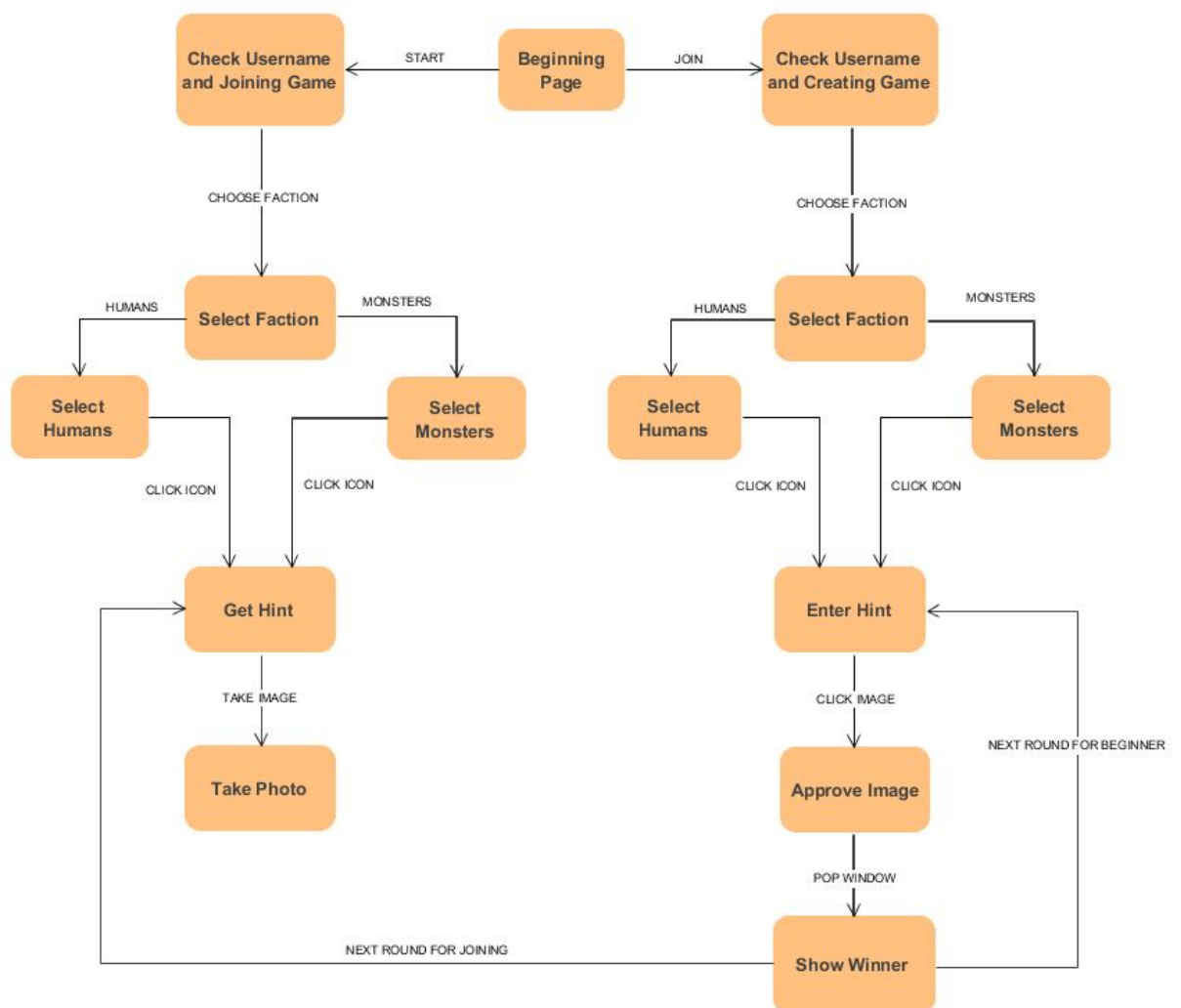


CS 408 Incremental Testing and Regression Testing

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1. Classification of Components

1.1 Define all Components



Start a game:

Input	Click "Start A Game" button
Output	Redirect to input username
Parent Dependency	Null
Child Dependency	Input Username

Join a game:

Input	Click "Join A Game" button
Output	Redirect to input username
Parent Dependency	Null
Child Dependency	Input Username

Input username:

Input	Username
Output	Success or failure message
Parent Dependency	Start A game, join a game
Child Dependency	Choose a faction

Select a faction:

Input	Click "Human" or "Monster" button
Output	Redirect to "Select an Avatar" page
Parent Dependency	Input Username
Child Dependency	Select an Avatar

Select an Avatar

Input	Click avatar image button to choose
Output	Redirect to "Set a Hint" or "Waiting" Page
Parent Dependency	Choose a faction
Child Dependency	Set a Hint, Waiting

Set a Hint

Input	Enter a hint for current round, click "Ready"
Output	Success or failure message
Parent Dependency	Select a Avatar
Child Dependency	Waiting page, Take an image, View score

Get a Hint

Input	Read hint for current round
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Output	Hint displayed.
Parent Dependency	Waiting Page
Child Dependency	Result Page
Take an image	
Input	Select "Take Image" button
Output	Camera application opens on mobile, allowing users to take a photo.
Parent Dependency	Waiting Activity
Child Dependency	Result Page
View score	
Input	Click "Score" button
Output	Score table pops up
Parent Dependency	Set a hint
Child Dependency	Null
Result page	
Input	Click "Next Round" button
Output	Redirect to new round
Parent Dependency	Take an image
Child Dependency	Set a Hint, Waiting page

1. 2 Form of Incremental Testing

The form of incremental testing we followed is top-down. We finished most of the implementation of sprint 1 components described in product log, and merged components together. There are some back-end components under development, and those components are disconnected with the merged code. In this case, bottom-up method is not suitable for us. The code we merged can run smoothly in series. Thus, we decide to develop top-down incremental testing.

2. Incremental and Regression Testing

2.1 Automation

We automated parts of regression testing by using unit test cases made specifically for our test plan. For front end, we used the Espresso Framework and

for the server testing we used Mocha. Espresso testing framework provided by Android Testing Support Library provides APIs for writing UI tests to simulate user interactions within a single application. Mocha is a JavaScript test framework running on Node.js.

2.2 Defect Log

Incremental Testing

Severity: 1(Severe) - 3(Not severe)

Module	Countdown Timer		
Defect #	Description	Severity	How to Correct
1	The timer on game page does not count down	2	The function triggering the timer to countdown was implemented with mistake. The defect was corrected by creating a mechanism to trigger the timer with time limit once the program jumps to the game page.

Module	Joining a game		
Defect #	Description	Severity	How to Correct
1	Two processes are running at the same time on the server. One process is waiting for an error. Once an error is received, the process is triggered and it begins to run. The other process runs and when it has a error, it is sent to the other process. Eg. When joining a game, the input game number is wrong,	1	The check button now checks for a valid room number. If the room is not valid, the server emits an error event and the handler changes creates a Toast that runs on the main thread. Then, it sets the submit button to disabled mode and users are not able to click on it.

	<p>error occurs and sends it to the waiting process. The second process should block the error, and the first process should not jump to the selected avatar. However, the process is not blocked due to the error.</p>		
2	<p>An array with maximum number of players (8) was initialized at the start. When players hit the back button and reselect another avatar, The app crashes with <code>ArrayIndexOutOfBoundsException</code>.</p>	1	<p>Reduce count when users hit the back button.</p>
3.	<p>Count was initially incremented on the Listener thread which makes the count incremented when the parent thread tries to add the icon.</p>	2	<p>Count is incremented the parent thread</p>
4.	<p>Server sends an event to all sockets connected to the room whenever a player joins the game. The event contains all players in the room. When the icon has been created, It recreates itself again when the event is received.</p>	1	<p>Send to specific socket when the socket first joins the game instead of all sockets.</p>

Module	Start Game Input Username		
Defect #	Description	Severity	How to Correct

1	We can choose faction without inputting a username and checking uniqueness of username	1	We have two buttons on the same page. One is check username and the other one is choose faction. We solved the defect that choose faction button is not enabled until user successfully input username and the username is been checked valid.
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Module	Join Game Input Username		
Defect #	Description	Severity	How to Correct
1	We can submit a game code without inputting a username and checking uniqueness of username	1	We have two buttons on the same page. One is check username and the other one is submit game code. We solved the defect that submit game code button is not enabled until user successfully input username and the username is been checked valid.

Module	Result Page		
Defect #	Description	Severity	How to Correct
1	Have trouble jumping to the result page which contains winning picture	1	The result page is developed as an activity. We fixed this by adding the result page activity to AndroidManifest.xml which cooperates all activities for this application.

2	Winner's picture does not show up on the result page	1	The winner page was developed with a scroll view, the space reserved for winning picture is under scrollview. We fixed it by removing the useless scrollview and reserve space for winning picture directly on the page.
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Module	Server 2		
Defect #	Description	Severity	How to Correct
1	Socket iD was initially set when the create game button is pressed. However, when players wants to join a game, the server does not recognize any socket Id as they are not set.	1	Global variable socketID is now set on 2 different occasions. When a user creates a game and joins a game. The listener listens for socket id emitted from the web server.

Module	Connection between Faction and Avatar		
Defect #	Description	Severity	How to Correct
1	When choosing a human faction, some provided avatars did not belong to humans.	2	We fixed this by setting a strict filter. When a faction is chosen, we use the faction to filter avatars. Some avatars who do not belong to the chosen faction will not be prompted for selection.

Module	Code Conflict		
Defect #	Description	Severity	How to Correct
1	Merging MainActivity resulted code conflict and some developments are covered.	1	Delete the merged version. Rename several MainActivity to different names, and merge code manually by copying code from different source to a single file, and update developments.

Regression Testing

Module	Select Avatar		
Defect #	Description	Severity	How to Correct
1	When a user selects an avatar, the avatar image button was not disabled. Another user could have selected the same avatar again.	3	Change setEnabled feature of avatar.

Module	Input Username		
Defect #	Description	Severity	How to Correct
1	Space was not accounted for when checking the username.	3	Change the regex statement so it accounts for space in usernames.

Module	Taking an image		
Defect #	Description	Severity	How to Correct

1	After merging code, there was some trouble with the camera functionality.	1	Referred back to previous code to check which code line was missing due to merging.
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Module	View Hint		
Defect #	Description	Severity	How to Correct
1	View hint button was initially on the waiting page and everyone could look at the hint before the timer even started.	2	View hint button moved to game page where the timer was located.
2	After the view hint button was moved to the game page, when the user set a hint on the waiting page, the hint did not appear on the game page.	2	User SharedPreferences to share the hint in the HintActivity class and retrieve the hint in HintPage class. Then set text to the hint.

Module	Connection between Faction and Avatar		
Defect #	Description	Severity	How to Correct
1	In incremental testing, we found out that connection between human faction and human avatar does not work well. We decide to test the connection between monster faction and monster avatar.	2	Select monster faction and see if filter avatars belong to monster. Before fixing the defect happened to human faction, the monster faction suffers the same problem. After the human faction problem is solved, the connection between monster faction and monster avatar works validly.

Module	Countdown Timer		
Defect #	Description	Severity	How to Correct
1	Once fixed countdown timer problem described in incremental testing, we decide to test if the timer works correctly with various time input	2	Test timer to see if it can be trigger to count down with large inputs, such 5 minutes, 30 minutes and 1 hour. Similarly test timer with small inputs, such as 10 secs, 5 secs and 1 sec. After timer defect is fixed, it works well with various time input.

Module	Add Activities to AndroidManifest.xml		
Defect #	Description	Severity	How to Correct
1	When figuring out that result page activity is not added to AndroidManifest.xml, we decided to check if any other activities are not added to manifest even though some activities are under development	1	By checking activity folder and activities listed in AndroidManifest.xml, we find out that several activities are not added to manifest. Since they are under development and have not be merged, the incremental testing did not detect them. To fixed them by adding all activities to AndroidManifest.xml even though some are under development.

