

# Software Systems Development

## **AS - UNIT 2**

Candidate Number	8070
Project Title	

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# Analysis

## **Nature of the investigation**

My program is a turn-based strategy game called []. It will begin on a splash screen, which will then lead to the main menu, from which you can access the game itself, the leaderboard and a help form. Upon entering the game, the player meets the pre-game form, which explains how to play. Once the user continues, they are asked three geographical/historical questions which determine their starting money, which they must then use to create units and take cities in order to defeat an opposing CPU.

## Overall aim of the investigation / problem

The aim of this program is to improve the user's critical thinking, problem solving and strategic planning skills through an enjoyable and engaging challenge.

# Requirements of the system

## Functional

- Intro/splash screen -
  - Splash screen which loads the login facility after a random amount of time
- User Registration Facility
  - Facility which allows the user to create a new user, with a unique username, password, and username abbreviation (to display on a leaderboard), to which values such as scores can be saved
- Login Facility -
  - Facility which allows users to login to their created account user their unique username and password
- Main menu -
  - Screen which leads to all other aspects of the program such as the game itself, the leaderboard and the help form
- Game -
  - Turn based strategy game
  - Unit creation facility
  - Movement system to allow the player to move units around the map
  - Facility which allows units to attack and be attacked
  - Enemy CPU for the player to fight against
  - (Player win) - Score calculated and saved at the end of the game (20 turns) based on the players remaining units and controlled cities
  - (Player loss) - Try again screen
- Leaderboard -
  - Screen which displays all user scores alongside their username abbreviations in order from highest score to lowest
- Current score -
  - Integer which saves the current score of the user logged in
- Help Screen -
  - Help screen accessed via the main menu which explains how the game is played
- Random question generator -
  - Facility which draws questions and answers randomly from a text file

## Non Functional

- Consistent design/theme (form size, location, colour scheme)
- Engaging and fluid gameplay
- Replayability (via enemy CPU and randomised questions)
- Sound effects and music

- Readable and consistent font

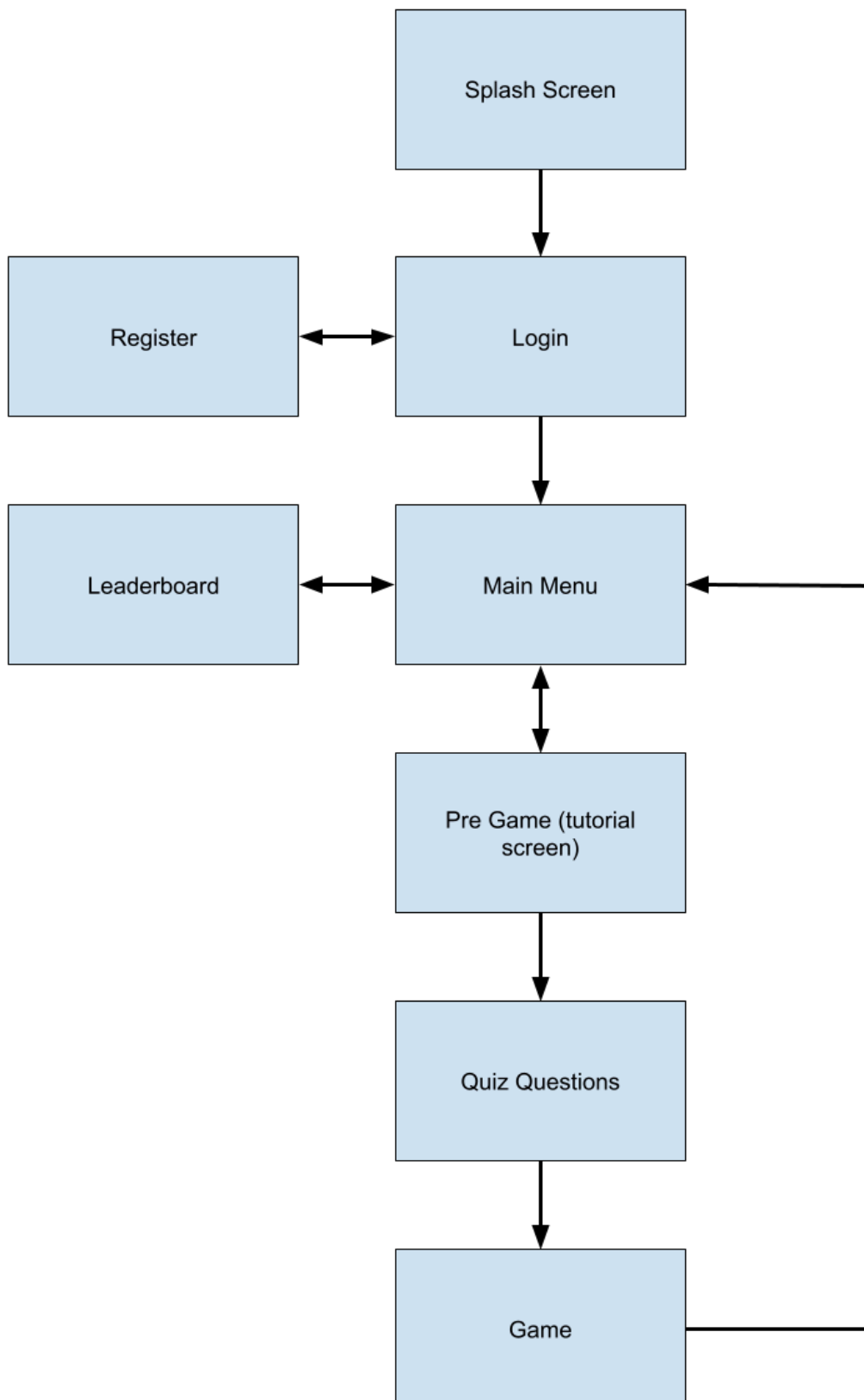
[illegible]

Blog / diary of work



# Design

## System Overview - Flow Chart

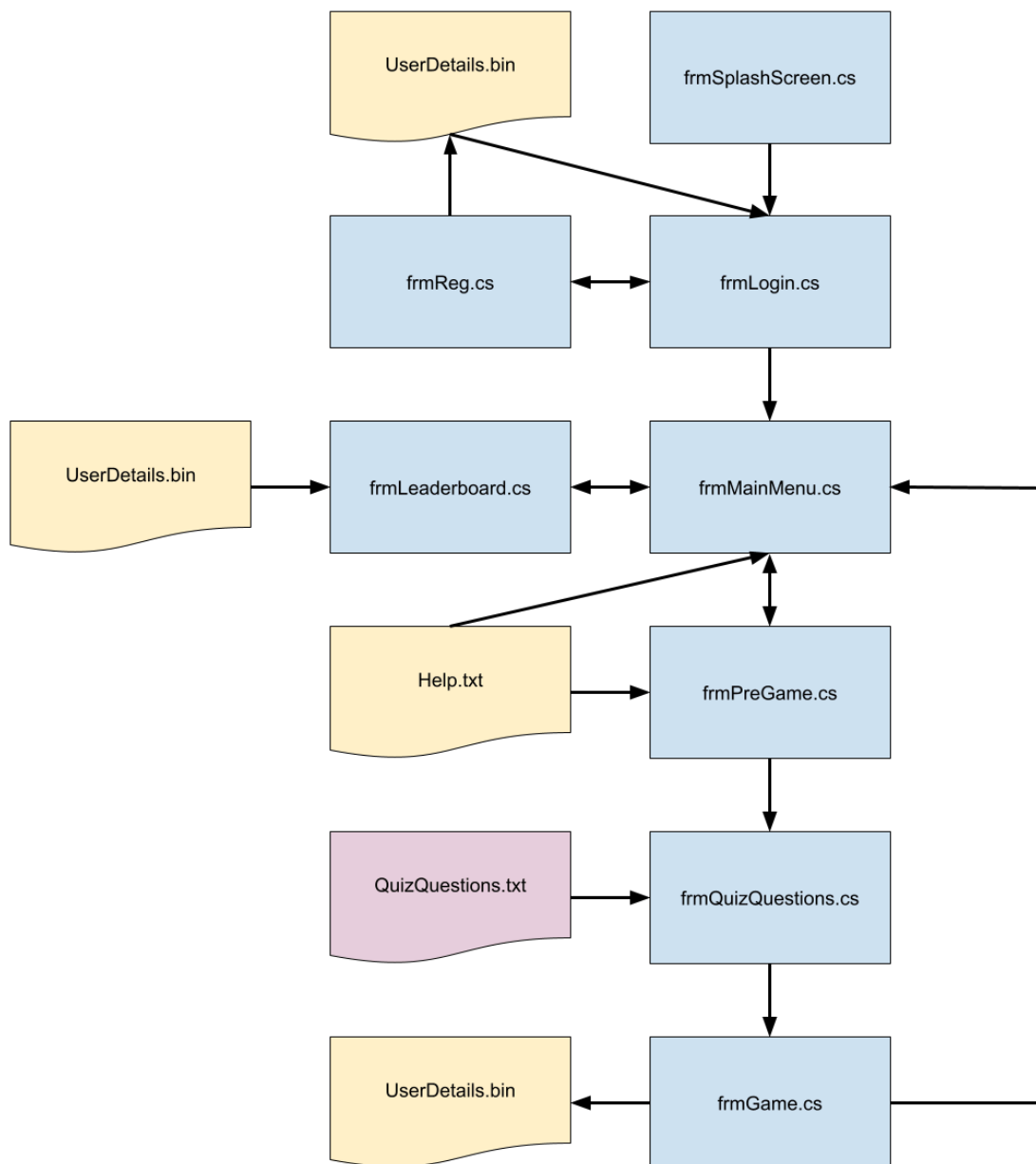


# Project Components

Program.cs	This class will create and initialise an instance of frmSplashScreen.cs
frmSplashScreen.cs	Simple splash screen displaying an image of the game map and a loading bar. This form will open frmLogin.cs and close when the bar reaches the end of the screen
frmLogin.cs	Login form which will allow the user to log into their account using textboxes if the username and password are correct
fromReg.cs	Registration form which will allow the user to create username, password and three letter abbreviation of their username which must be all caps (for the leaderboard). This information will be used to save data such as score to the user
frmMainmenu.cs	Main menu form which will display after clicking login buttons which open frmGame.cs and frmLeaderboard.cs
frmPreGame.cs	This form will display after clicking btnPlay in frmMainMenu.cs and will explain the game to the user. btnContinue will open frmQuizQuestions.cs and frmGame.cs
frmQuizQuestions.cs	This form will display at the same time as and in front of frmGame.cs, giving the user 3 questions randomly selected from Questions.txt, and award a certain amount of starting money to the player based on how many questions they answer correctly (3 per question)
frmGame.cs	This form contains the game itself and will allow the user to create, move and attack units and award points based on how many cities and units they control after 20 turns
frmLeaderboard.cs	This form will display a leaderboard containing all users who have successfully completed the game and their scores, in descending order of scores
GlobalVariables.cs	This class will contain the global variables necessary for each player; <ul style="list-style-type: none"> <li>• str username</li> <li>• str password</li> <li>• str abbrev</li> <li>• int lastScore</li> <li>• int highScore</li> <li>• int moneyFromQuiz</li> </ul>
Questions.txt	This text file will contain all possible questions and answers for frmQuizQuestions.cs and will be used to populate pnlQuestion and check the user's answer

UserDetails.bin	This binary file will contain the username, password, username abbreviation, high score and last score of each user and will be read from whenever a user logs in and written to whenever a user registers or completes a game
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## Detailed Flow of System







Label which displays the current turn number.  
Button which exits the game.

Movement buttons which display when a unit is clicked and within range and next the button which ends the current turn

Panel which displays  
when a controller city  
is clicked

city labels will change colour  
when the mouse is hovered over  
them and will display  
pop-ups that indicate if the  
player controls that city

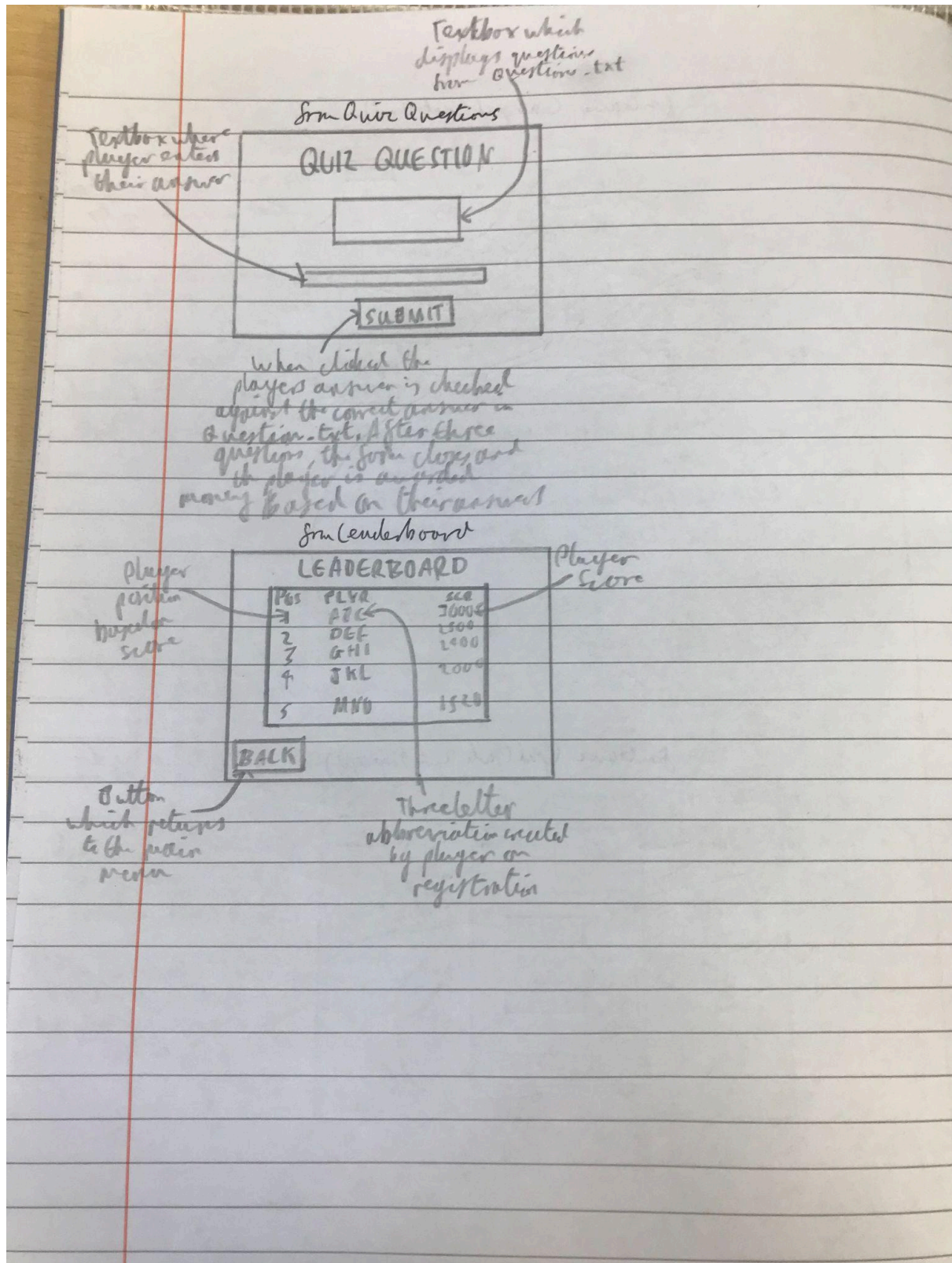
Jim Crane (Paul Crane Unit Displayed)

Button which hides  
pal. colored hair

Unit  
leaves

Info about each  
of the voters such  
as health, attitude,  
etc.

System which creates  
the selected ~~team~~ <sup>or</sup>  
the selected city of  
the player has enough  
money



## Initial Designs Feedback -



# Blank Questionnaire -

## Initial Design Sketches Feedback

rcourtney799@e2ken.net [Switch accounts](#)

Not shared

How easy is the UI of the login and registration facilities to understand and navigate?

1 2 3 4 5

Complex ☐ ☐ ☐ ☐ ☐ Simple

How user friendly are the login and registration facilities?

1 2 3 4 5

Not user friendly ☐ ☐ ☐ ☐ ☐ Very user friendly

What would you change about these facilities to improve the user friendliness and ease of navigation? (if applicable)

Your answer

How easy is the UI of the main menu to understand and navigate?

1 2 3 4 5

Complex ☐ ☐ ☐ ☐ ☐ Simple

How user friendly is the main menu?

1 2 3 4 5

Not user friendly ☐ ☐ ☐ ☐ ☐ Very user friendly

What would you change about the main menu to improve the user friendliness and ease of navigation? (if applicable)

Your answer

How engaging is the overall design and theme of the program?

1 2 3 4 5

Not engaging ☐ ☐ ☐ ☐ ☐ Very engaging

How consistent is the overall design and theme of the program?

1 2 3 4 5

Not consistent ☐ ☐ ☐ ☐ ☐ Very Consistent

What is your opinion on the font choice for the program?

1 2 3 4 5

Very bad ☐ ☐ ☐ ☐ ☐ Very good

How consistent is the overall design and theme of the program?

1 2 3 4 5

Not consistent ☐ ☐ ☐ ☐ ☐ Very Consistent

What is your opinion on the font choice for the program?

1 2 3 4 5

Very bad ☐ ☐ ☐ ☐ ☐ Very good

What is your opinion of the colour scheme of the program?

1 2 3 4 5

Very bad ☐ ☐ ☐ ☐ ☐ Very good

What is your overall opinion of the program's initial design?

Your answer

Do you have any other issues you would like to raise?

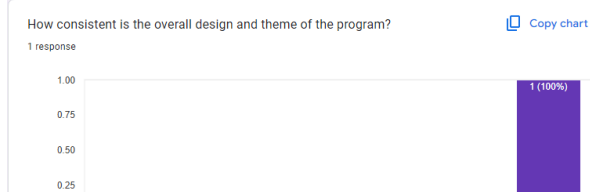
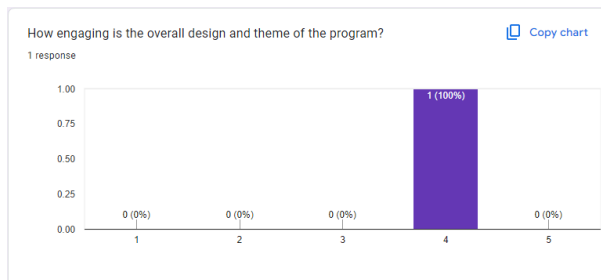
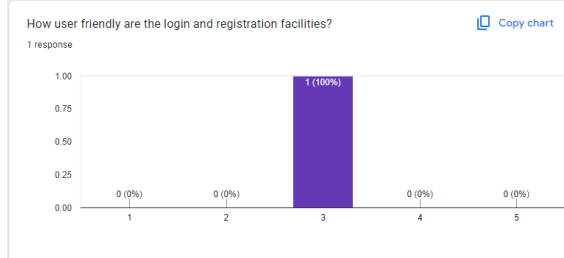
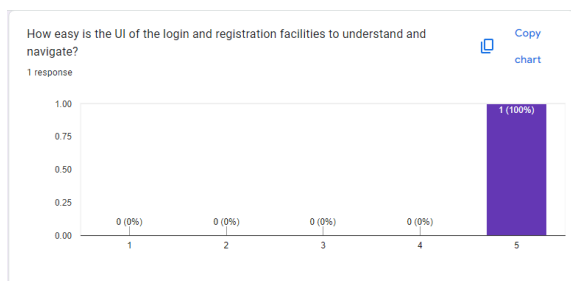
Your answer

Submit

Clear form



## Questionnaire Response



What would you change about these facilities to improve the user friendliness and ease of navigation? (if applicable)

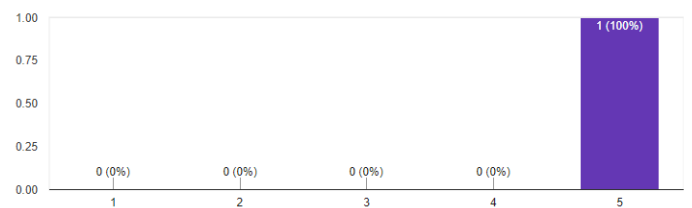
1 response

I would add options to clear the textboxes and show your password, as well as a message to inform the user when the entered details are incorrect

How easy is the UI of the main menu to understand and navigate?

Copy chart

1 response



What is your overall opinion of the program's initial design?

1 response

Overall, the program has a strong and consistent theme, although there are some changes which can be made to improve user friendliness

Do you have any other issues you would like to raise?

1 response

No



## Refined designs

## Form Pseudo Code

## Class Diagrams

## Game question scripts & answers

# Testing

# Testing

frmSplash

Test #	Description	User Requirement	Test Data	Expected Outcome	Actual Outcome	Testing Evidence	Successful
1.1	Form Loading	FR 4	n/a	Form loads as expected	Form loaded as expected		YES
1.2	Progress bar starts at 0%	FR 4	n/a				
1.3	Progress bar increments	FR 4	n/a				
1.4	Progress bar stops at 100%	FR 4	n/a				
1.5	Once progress bar hits 100% form closes	FR 5	n/a	Form closes at 100% progress bar	Form did not close	Fig 1.7	NO

frmMainForm

Test #	Description	User Requirement	Test Data	Expected Outcome	Actual Outcome	Testing Evidence	Successful
2.1	Splash screen loads when frmMainForm opens.						
2.2	Once frmSplash closes						



	after 5 seconds frmMainForm is displayed						
2.3	Click new user button			New user windows opens			
2.4	Click login			Login form opens			

frmNewPlayer

Test #	Description	User Requirement	Test Data	Expected Outcome	Actual Outcome	Testing Evidence	Successful
3							



## Corrective Action

1.5	Once progress bar hits 100% form closes	FR 5	n/a	Form closes at 100% progress bar	Form did not close	Fig 1.7	NO
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Dfkjhskjfhksjdfhsdfsd

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sdfsd

## Acceptance Testing

# Evaluation

Requirements of the system

## Future Developments

## Evaluation of features and functionality



Evaluation of personal and technical skills / abilities.

Evaluate GANTT chart and progress throughout the project.

Evaluate log / blog to assess progress made throughout the investigation.

