Report

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CFS2160 – Software Design and Development
Assignment 2

Contents

Modelling

Introduction

Before developing the Who Wants to Be a Zillionaire game, I used different UML models to plan and visual everything I was going to do.

Before I used UML, I created a scenario analysis for the game. I choose to do a scenario analysis so that I could manage the program more easily, because I was breaking down the large task into smaller chunks.

Scenario Analysis

Primary Path

1. Player starts game.
2. Player enters name.
3. 2nd player enters name.
4. Players then select a category.
5. 1st player answers a question.
6. Player selects next.
7. 2nd player answers a question.
8. Repeat steps 5-7 until a player wins £1,000,000.

Alternative Path

4.1 Player enters more than 2 players.
- Ask the user to remove a player before selecting category.
- If the user does this correctly, continue with step 4.

4.1 User only enters one player name.
- Ask the user to enter another name before selecting a category.
- If the user does this correctly, continue with step 4.

5.1 Player gets question wrong.
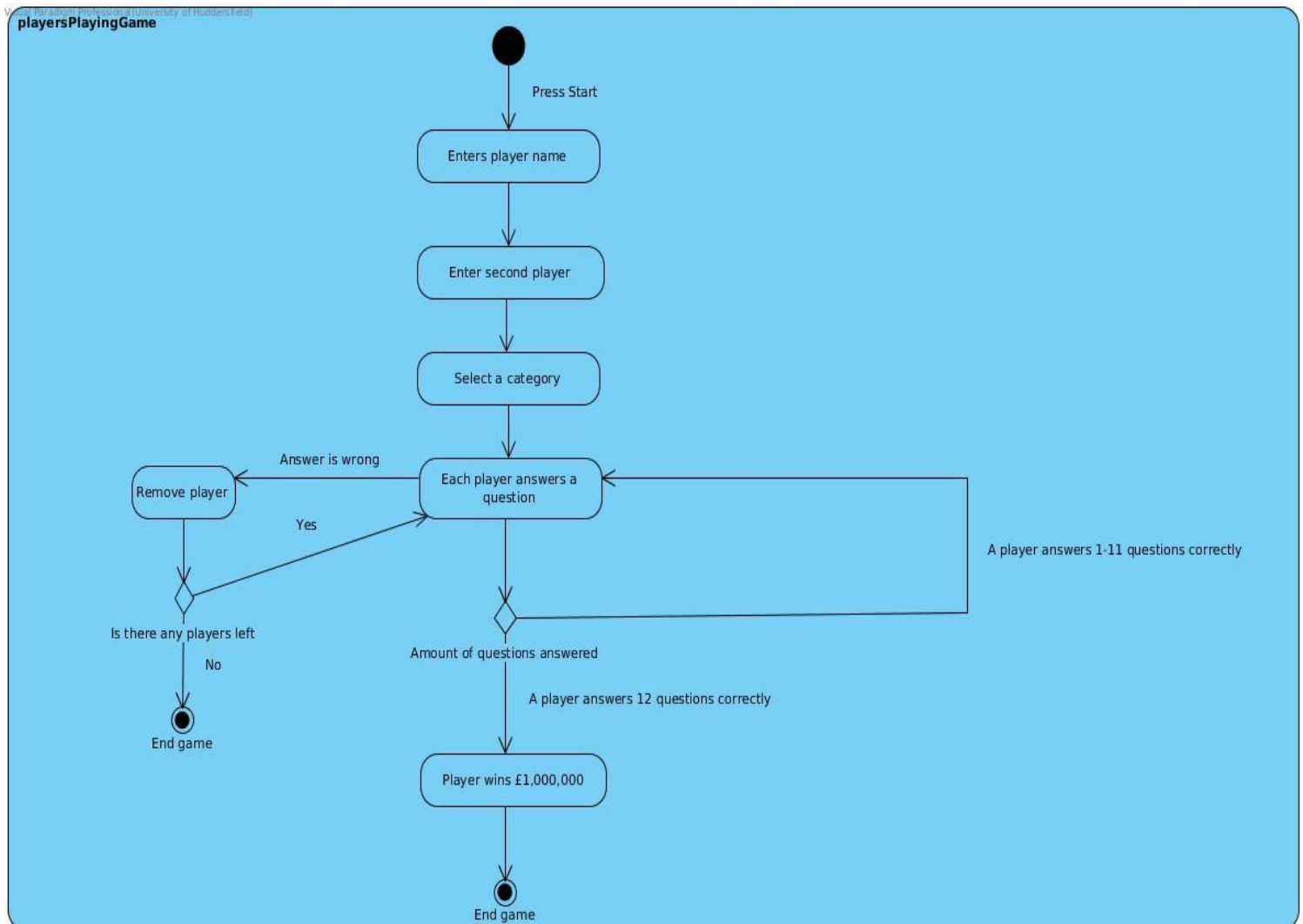- Remove player from the game.
- Continue with step 6

Exception Path

8.1 No player left in game, so nobody wins £1,000,000.
- Tell user no players left in game, and therefore the game has ended.
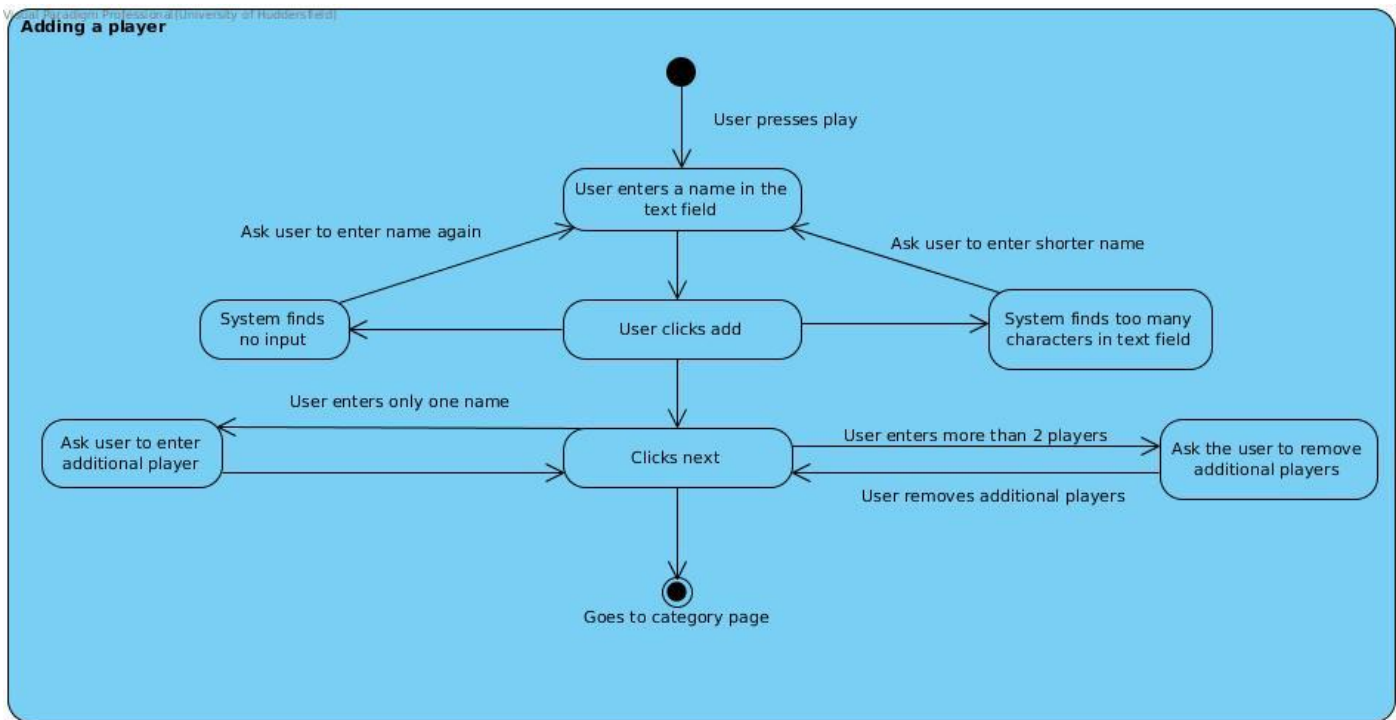
Activity Diagram

After creating a scenario analysis, I created some activity diagrams. This was so that I can visually see what the events and actions were.

Whole game

I first created an activity diagram to represent the fully working game. (Note this is the diagram above). This activity diagram was also demonstrating how the player would answer a question. After a player had answered a question I would check if the player had won £1,000,000, depending on the amount of questions the player had answered. If the player had answered all 12 questions correctly, they would win the game. If they got the question wrong I would remove the player, and check if there are still players in the game. If they got the question correct but haven't reached £1,000,000 yet, the next player would have their turn. If all players have answered the question incorrectly, and there are no players left, the game will end.
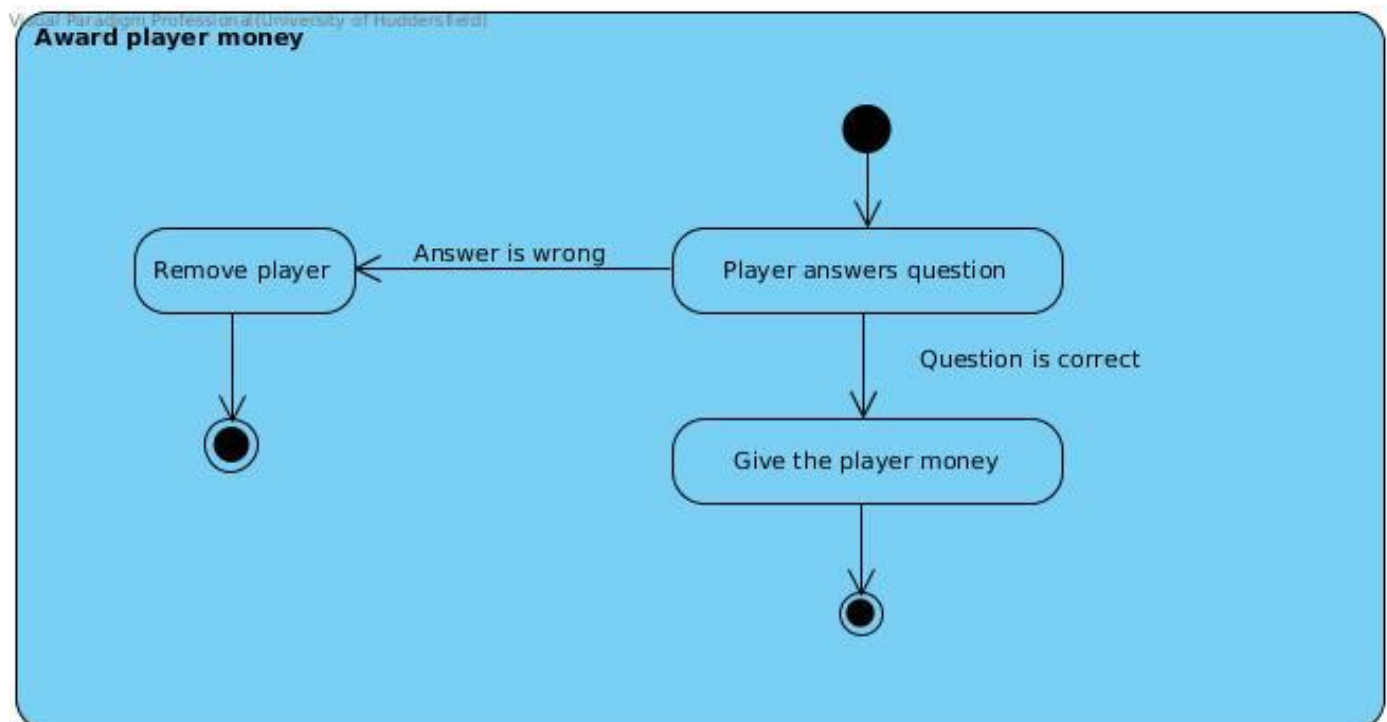
Adding a player

Adding a player

User presses play

User enters a name in the text field

Ask user to enter name again

Ask user to enter shorter name

System finds no input

User clicks add

System finds too many characters in text field

User enters only one name

Ask user to enter additional player

Clicks next

User enters more than 2 players

Ask the user to remove additional players

User removes additional players

Goes to category page

If the players click add I thought of problems which could occur. The player could enter nothing, or they could have entered to many characters. Therefore, the user would go on the alternative path. This is shown in the diagram above.
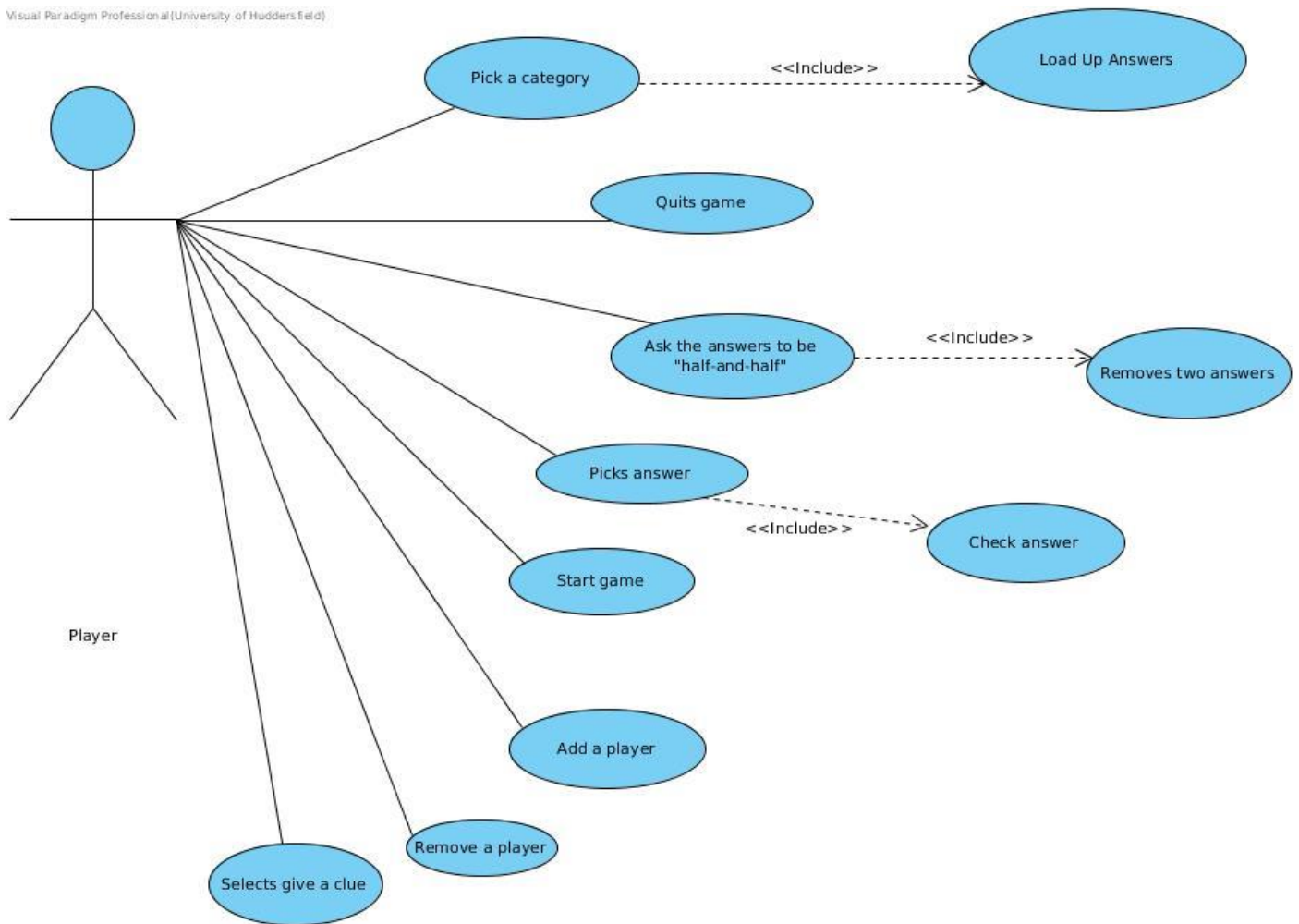
If the user clicked next, and entered too many player names or only one player name the user would again go on to the alternative path. This is show in the diagram above.

Awarding the player money

Award player money

Remove player

Answer is wrong

Player answers question

Question is correct

Give the player money

Use Case Diagram

I then created a use case diagram, as I wanted to know how the player would interact with the game system. The stick character is called an actor. In this case it is the player who is using this game. The blue ovals are the use cases. This represents the functionality of the game. The lines represent the associations, which is the link between the player and the game functionality.
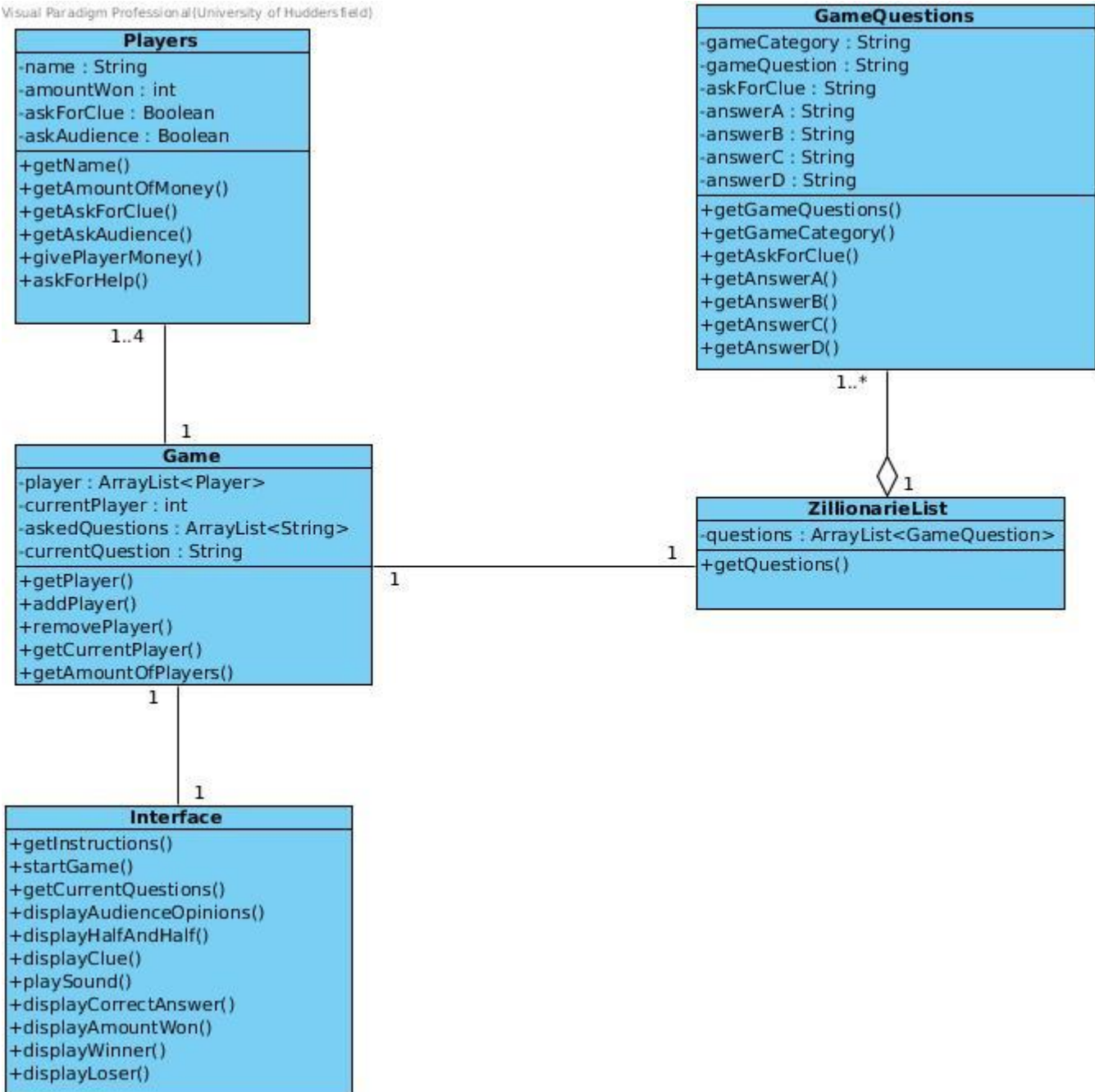
I also included <<Include>> relationships between some use cases. As these use cases always invoke another use case.

This is what I was trying to show with the include relationships:

- So I would always get the question and answer based on the category chosen by the player, and I created a method for this.
- If the player asks the answer to be "half-and-half", I would always remove two answers. Leaving the correct answer, and a random wrong answer.
- When the player selects an answer, I would always check if the answer is correct.

7

Class Diagram

Players

-name : String
-amountWon : int
-askForClue : Boolean
-askAudience : Boolean

+getName()
+getAmountOfMoney()
+getAskForClue()
+getAskAudience()
+givePlayerMoney()
+askForHelp()

1..4

GameQuestions

-gameCategory : String
-gameQuestion : String
-askForClue : String
-answerA : String
-answerB : String
-answerC : String
-answerD : String

+getGameQuestions()
+getGameCategory()
+getAskForClue()
+getAnswerA()
+getAnswerB()
+getAnswerC()
+getAnswerD()

1..*

1

Game

-player : ArrayList<Player>
-currentPlayer : int
-askedQuestions : ArrayList<String>
-currentQuestion : String

+getPlayer()
+addPlayer()
+removePlayer()
+getCurrentPlayer()
+getAmountOfPlayers()

1

ZillionarieList

-questions : ArrayList<GameQuestion>

+getQuestions()

1

1

1

Interface

+getInstructions()
+startGame()
+getCurrentQuestions()
+displayAudienceOpinions()
+displayHalfAndHalf()
+displayClue()
+playSound()
+displayCorrectAnswer()
+displayAmountWon()
+displayWinner()
+displayLoser()

After creating the activity diagrams I then created a class diagram. This was to show how the classes would interact with each other. The ZillionaireList and Games class would act as controller classes, the Players and GameQuestions class are entities classes. Whilst the interface is the boundary class. The ZillionaireList is made up of GameQuestions, and that is why I used aggregation between these two classes.
In my game I had a maximum of 4 players that's why the players class is set to 1 to 4.
I also stored the used questions to another array list, which is in the games class, and the array is called askedQuestions.

Sequence Diagrams

I also created some sequences diagrams, to again show how the classes would interact with other.
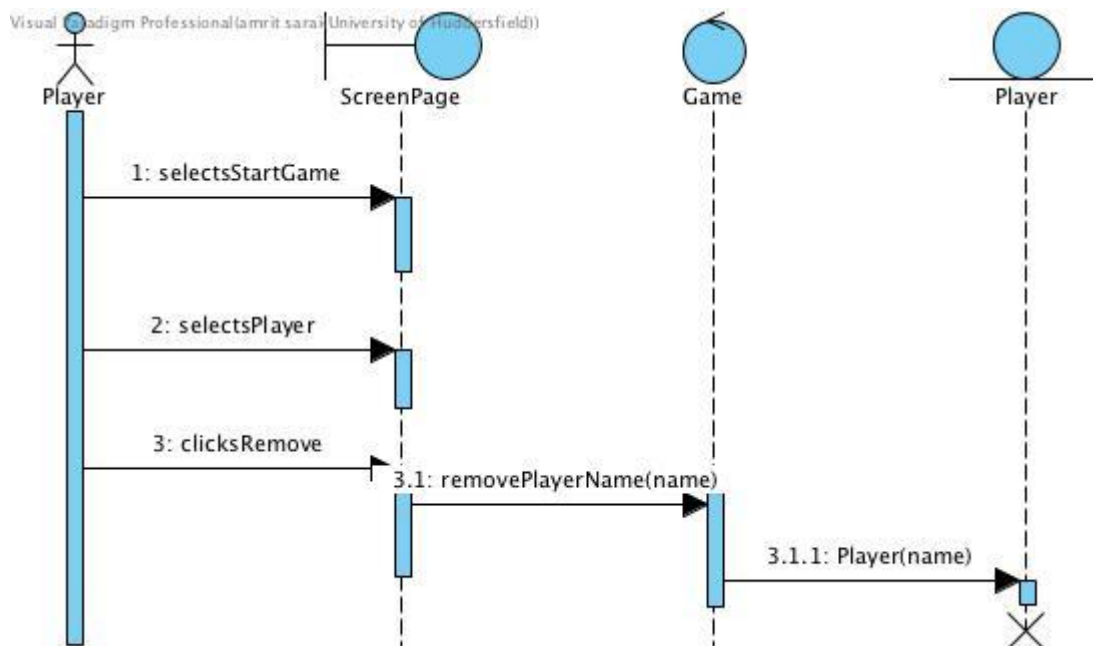
Loading up question based on category
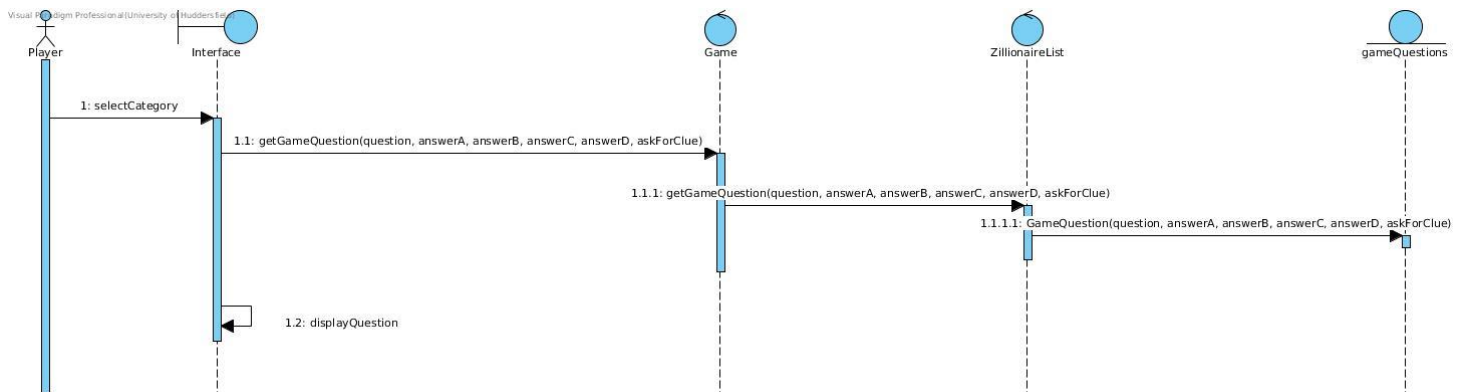
Here is the method of how I would get my questions when the player first selects the category. I would check if the GameQuestion contained that category in the Game class, and then get that question based upon that category.
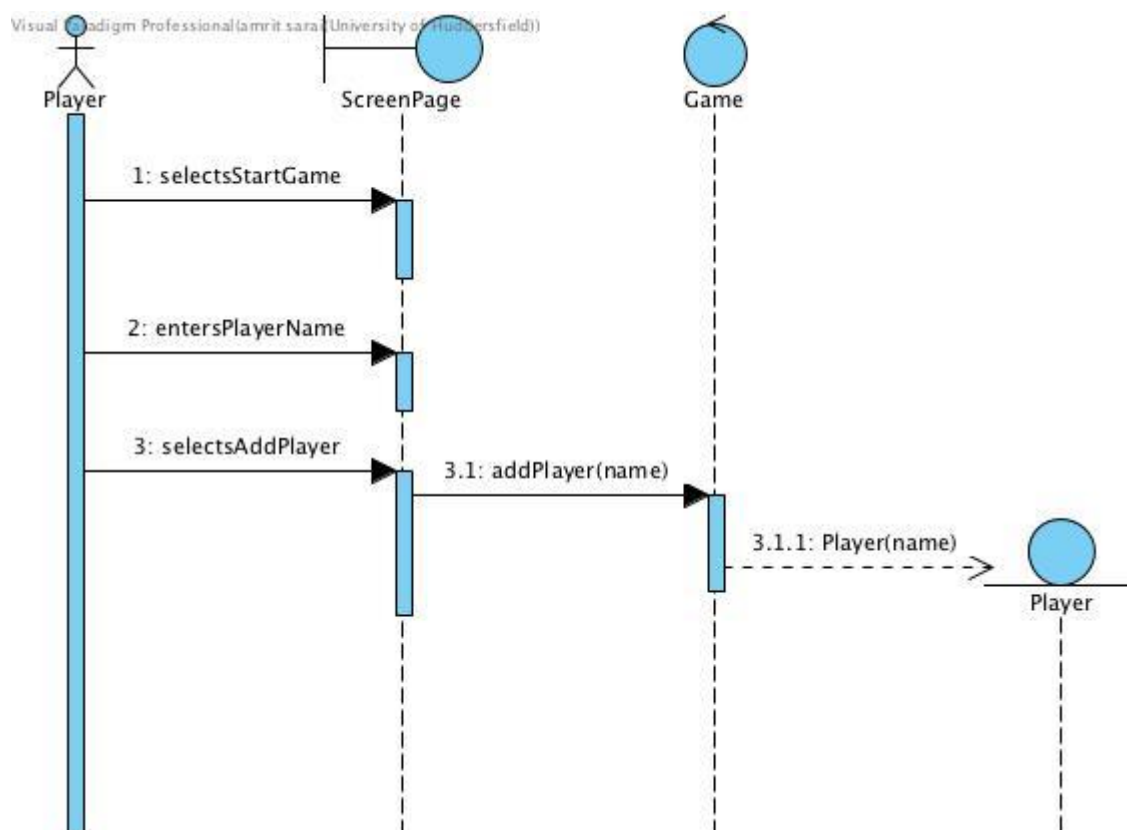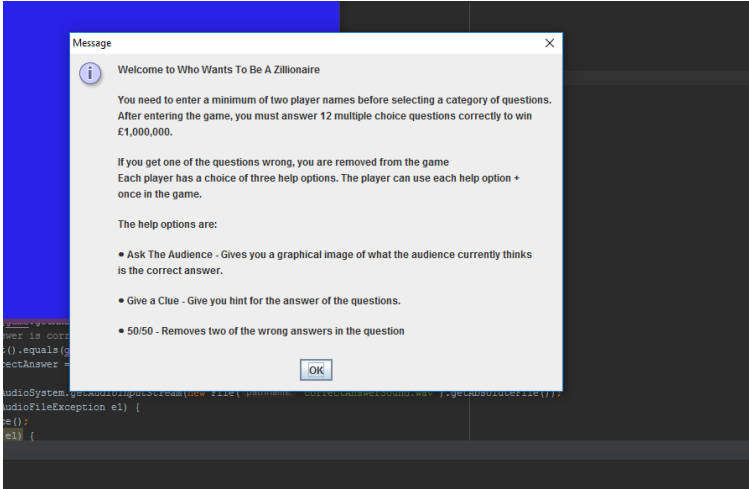
Player asks audience
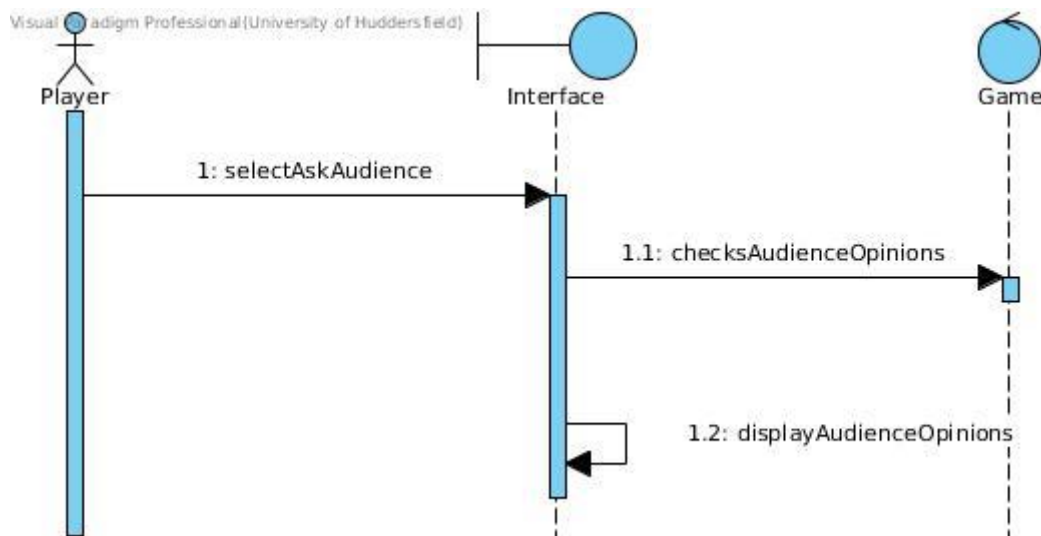
Removes player
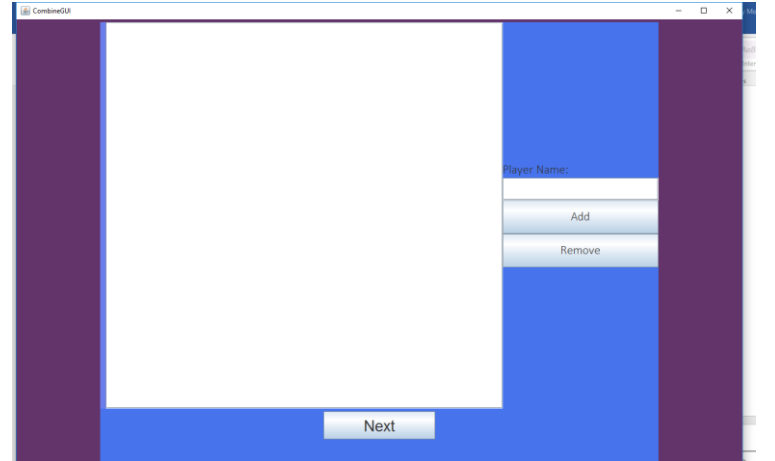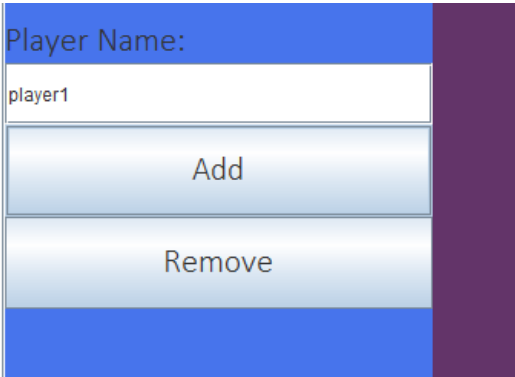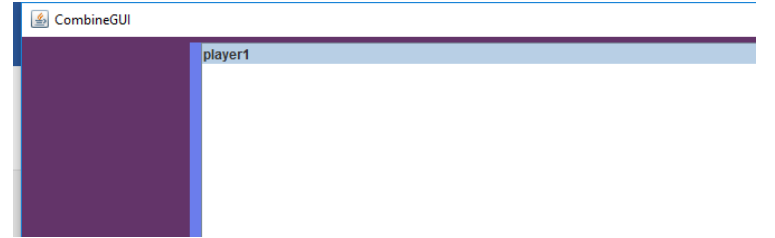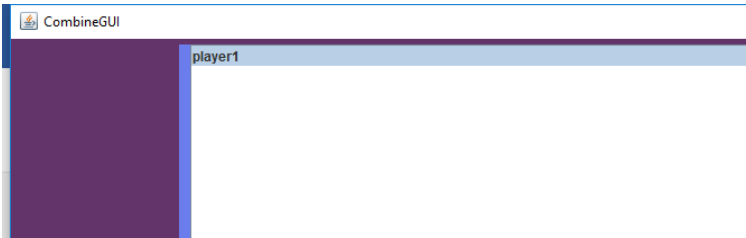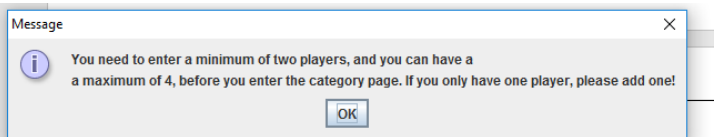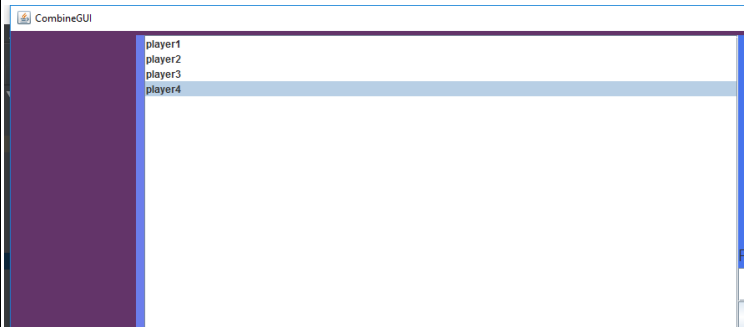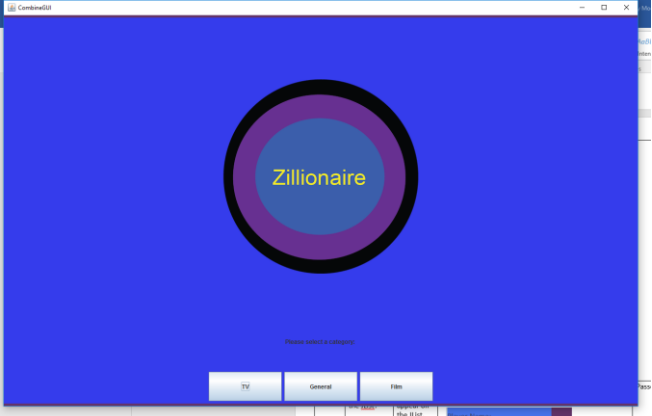
Adds player

Testing

| Test	What is being tested	What I expect from the test	Output	Passed Test and why
1	Does the instruction appear when you click instructions?	I expect the instructions to appear.	Before: After: 	Passed – because the instructions appear on the screen.
2	Does the game start when you click start?	I expect the add player screen to appear	Before:	Passed – the adding player screen appears.

After:

| 3 | Does it add the player to the JList? | I expect the player to appear on the JList. | Before: After: | Passed – the player appears on the JList. |

| 4 | Does it check the amount of players entered? | I expect an error if the player enters only one name or enter more than 4 names. I also expect the category page to appear when you enter the right number of players. | If the player only enters one name:

Message ✕
ⓘ You need to enter a minimum of two players, and you can have a a maximum of 4, before you enter the category page. If you only have one player, please add one!
[OK]

If the player enters right amount of players:

Zillionaire | Passed – an error message appears if they haven't entered the correct number of players. If correct number of players the category appears. |
| 5 | Allows a player to choose | I expect the questions | Before: | Passed – The question |

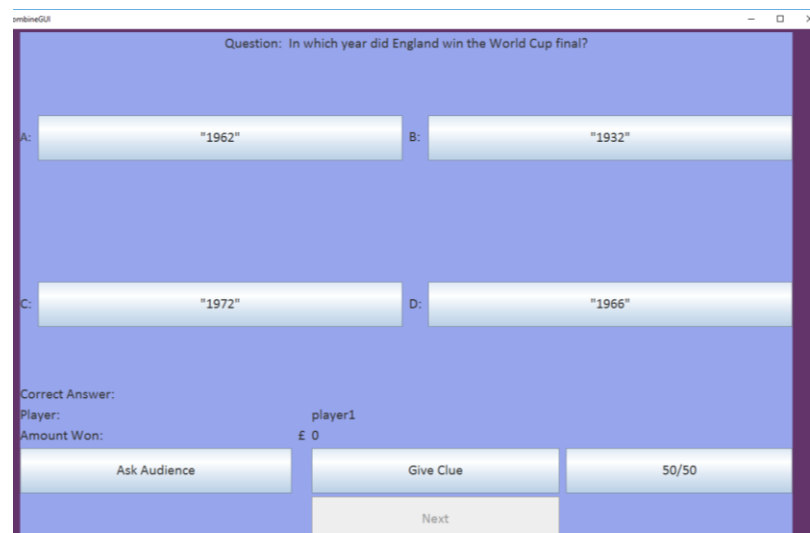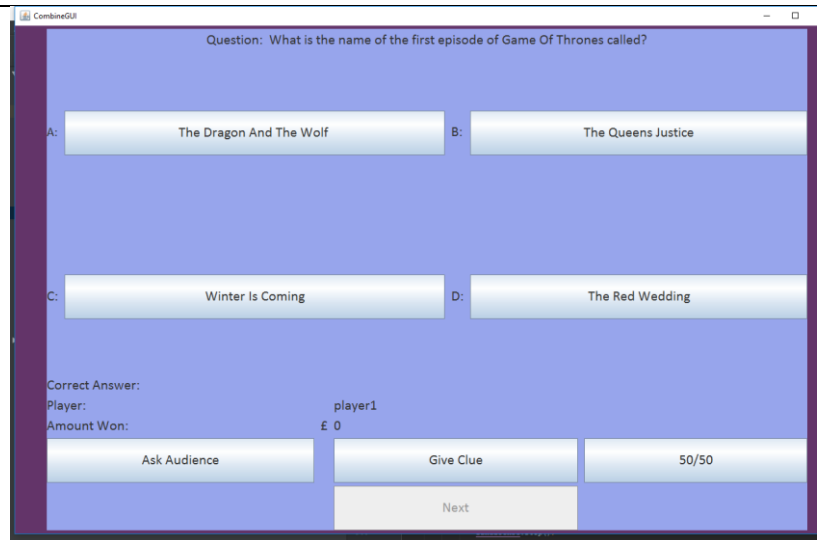|	the category of each question.	to appear based on the category selected.		appears based on the category.
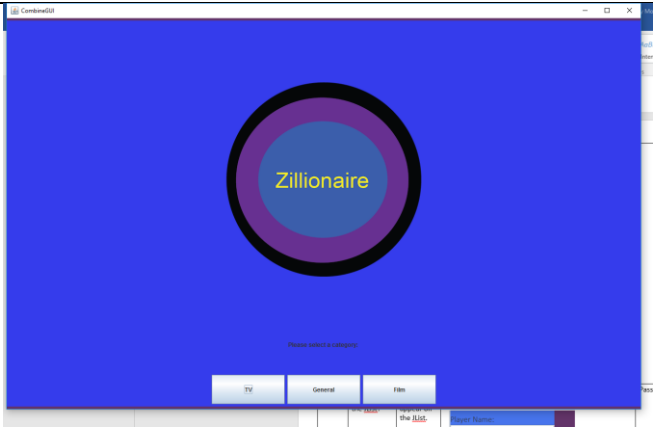
			When user selects TV:
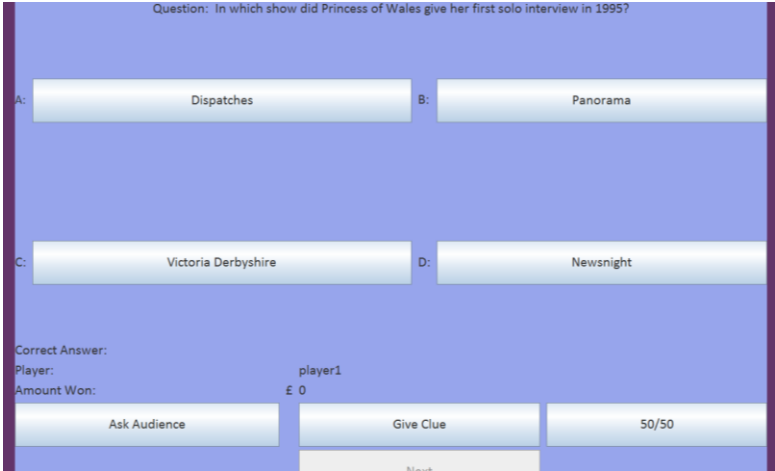			
			The category is TV:
			
			``
			},
			{
			    "gameCategory": "TV-Shows",
			    "gameQuestion": "In which show did Princess of Wales give her first solo interview in
			    "askForClue": "It was a very controversial interview aired on BBC",
			    "answerA": "Panorama",
			    "answerB": "Dispatches",
			    "answerC": "Victoria Derbyshire",
			    "answerD": "Newsnight"
			},
			{
			``
			
			When user selects General:	

```
615          {
616              "gameCategory": "General Knowledge",
617              "gameQuestion": "In which year did England win the World Cup final?"
618              "askForClue": "England did make it to the 1966 World Cup Final.",
619              "answerA": "\"1966\"",
620              "answerB": "\"1972\"",
621              "answerC": "\"1932\"",
622              "answerD": "\"1962\""
623          },
624
```

When user selects movies:

The category is movies:

```
65          {
66              "gameCategory": "Movies",
67              "gameQuestion": "In which year was the film Jurassic World released?",
68              "askForClue": "The sequel to Jurassic World is going to be released in 2018.",
69              "answerA": "\"2015\"",
70              "answerB": "\"2016\"",
71              "answerC": "\"1999\"",
72              "answerD": "\"2001\""
73          },
```

6	Is the question displaying at random?	I expect the question to be different every	1st time:	Passed – The question were different every

time I load up the game.

2nd time:

time I loaded up the question screen.
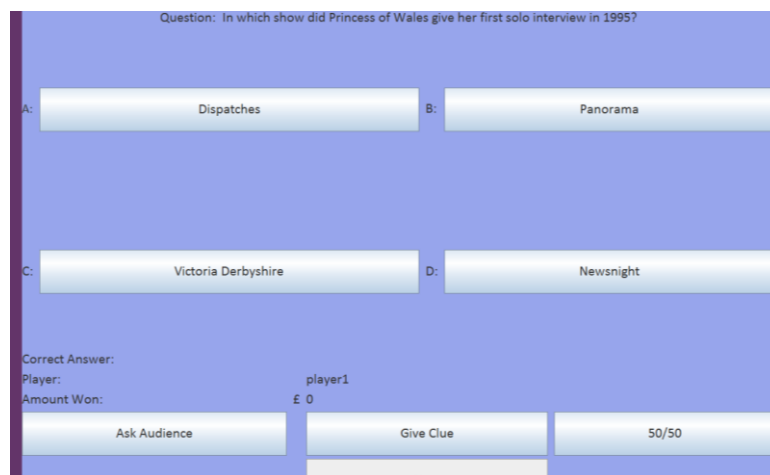
3rd time:

Question: What is the name of the TV-Show starting Jason Bateman and Laura Linney?

A: IT Crowd   B: Desperate Housewives

C: 13 Reasons Why   D: Ozark

Correct Answer:
Player: player1
Amount Won: £ 0

Ask Audience   Give Clue   50/50

Next

4th time:

Question: In Doctor Who what does TARDIS stand for?

A: Talking Ants Ride Ducks In Space   B: Toliets And Rescures Distance In Space

C: Time and Relative Dimensions in Space   D: Time and Realitivity Dimonds in Spain

Correct Answer:
Player: player1
Amount Won: £ 0

Ask Audience   Give Clue   50/50

Next

5th time:

Question: Which tv series use the phrase "The Truth Is Out There"?

A: X-Files   B: Emmerdale

C: Friends   D: Grey's Anatomy

Correct Answer:
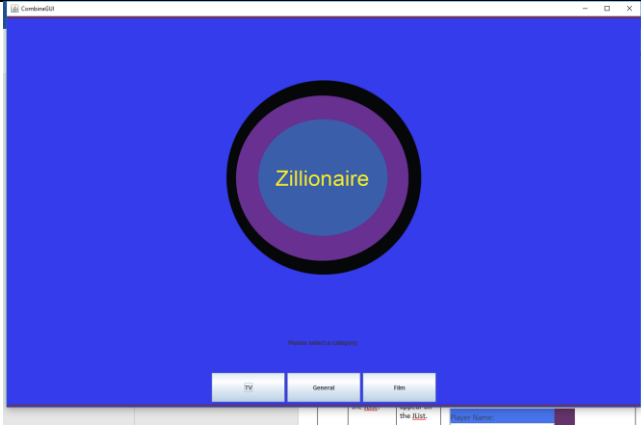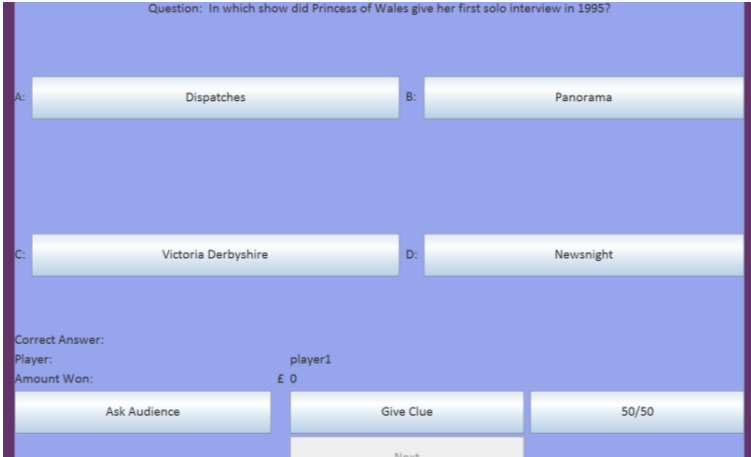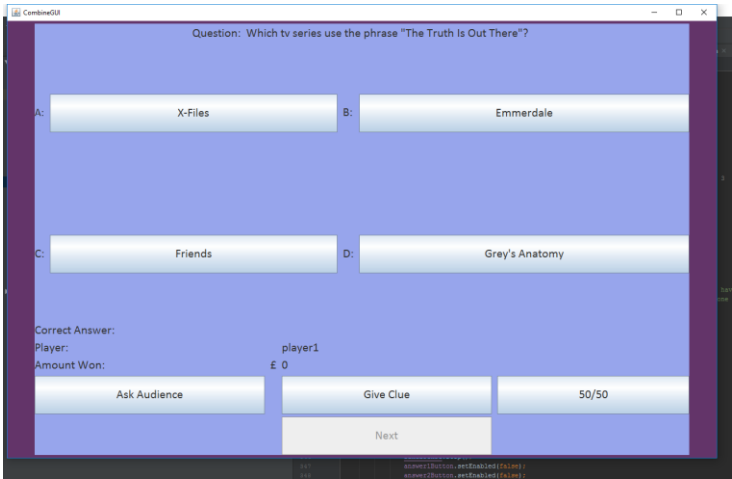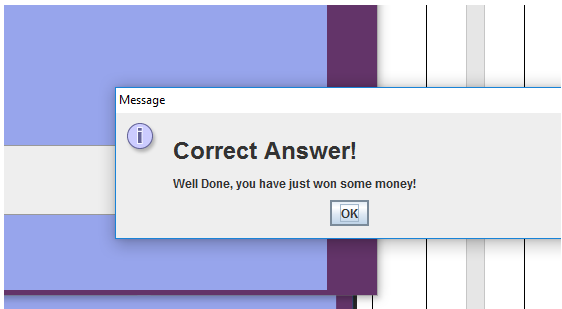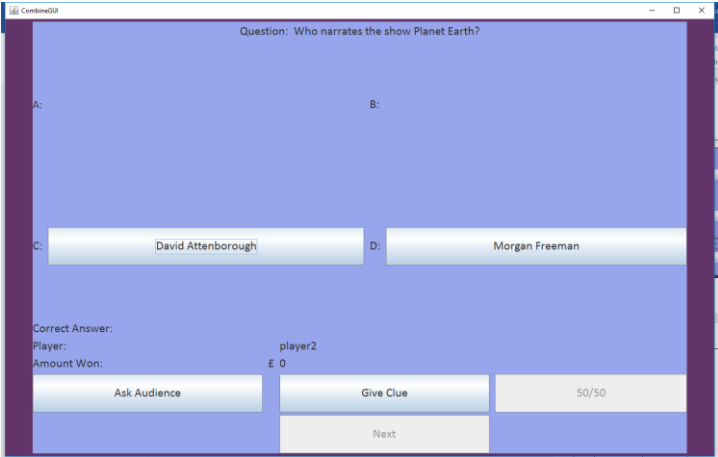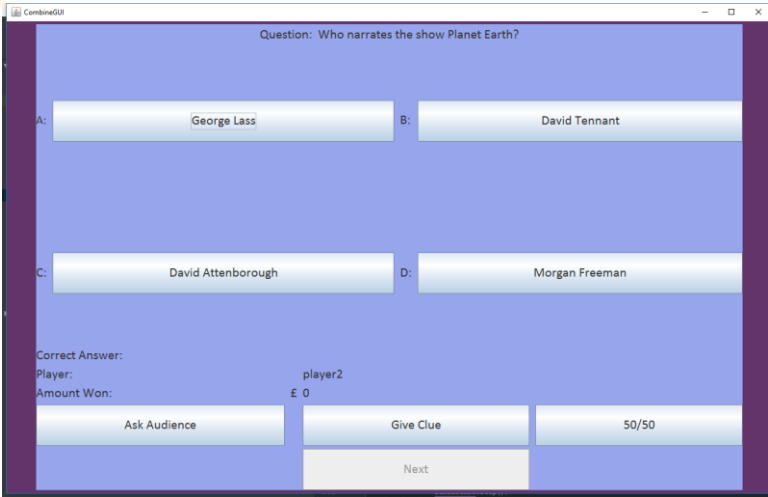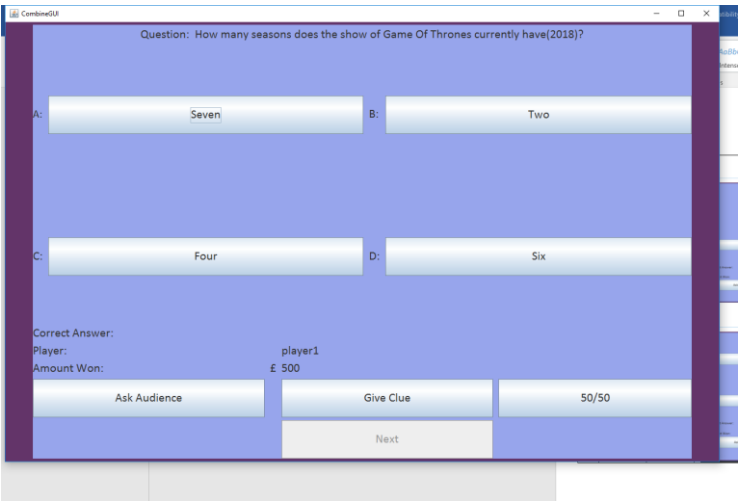Player: player1
Amount Won: £ 0
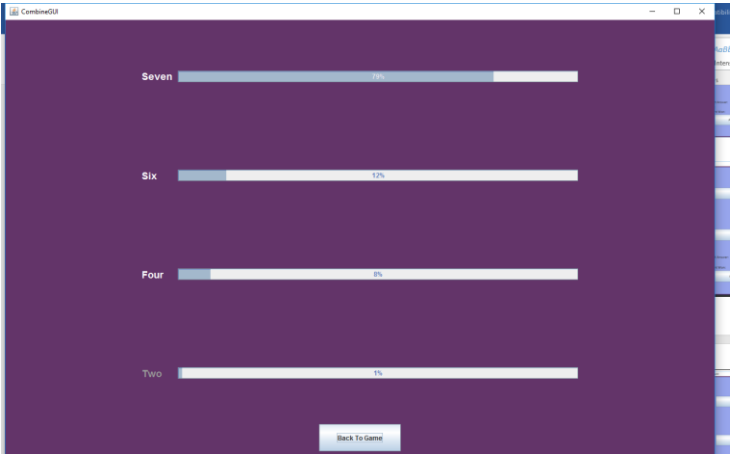
Ask Audience   Give Clue   50/50

Next
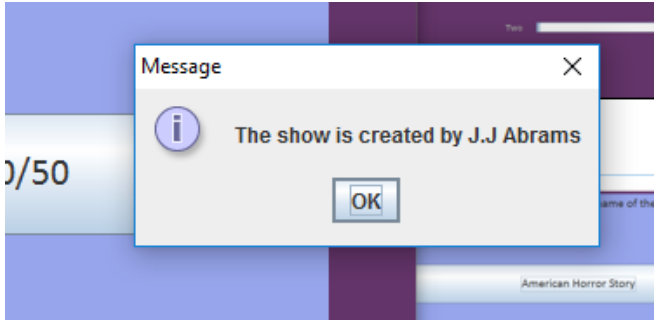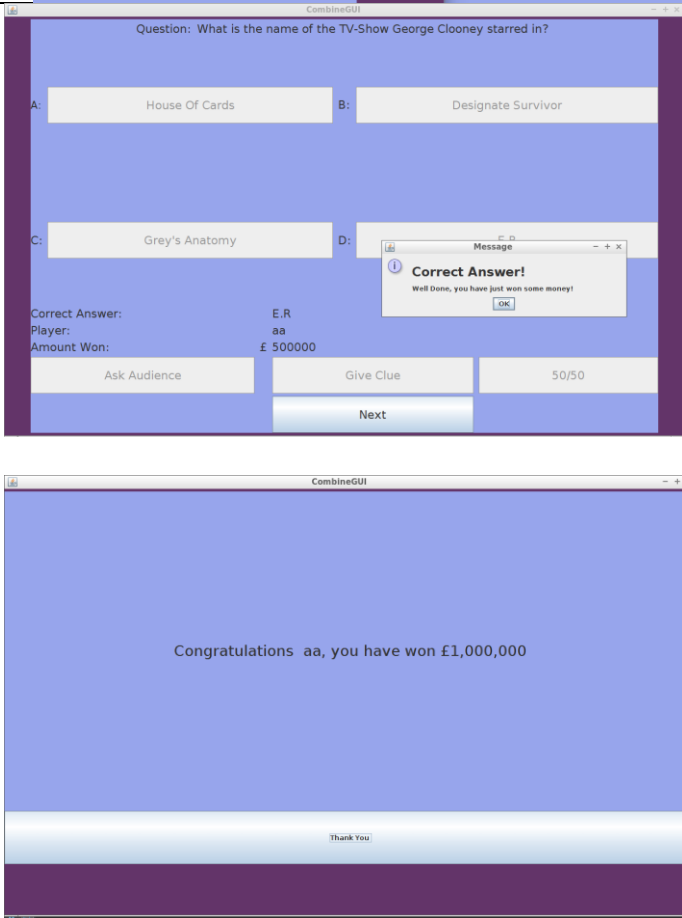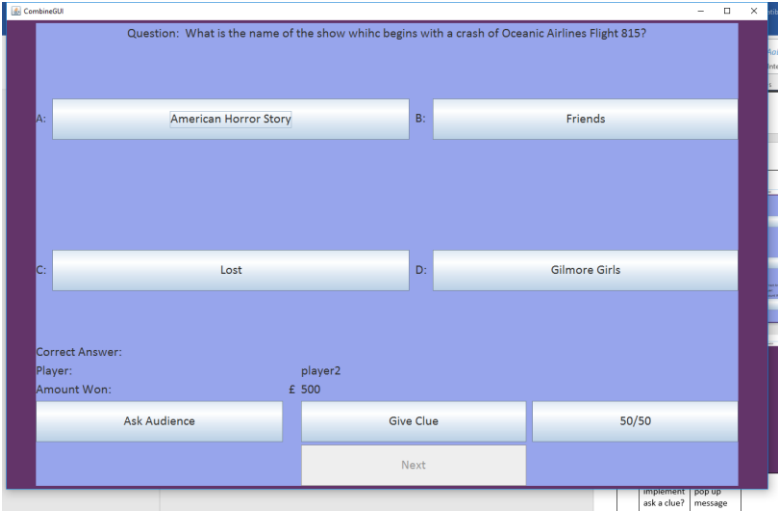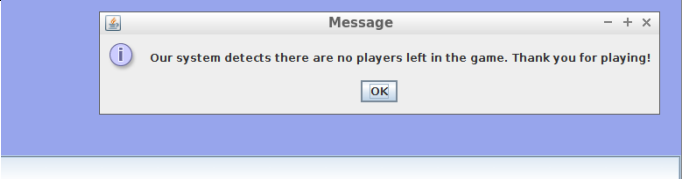
7	Does it provide a facility to answer question?	I expect 4 answer buttons to appear when selecting a category .		Passed – all 4 answer buttons appear for the player to enter.
8	Does the game inform the player if the answer is correct?	I expect the game to display a pop-up if the answer is correct, and a pop-up if the answer is wrong.		Passed – A pop up message appears if the answer is correct. The answer also appears at the bottom of the screen.

Correct Answer:	X-Files
Player:	player1
Amount Won:	£ 500
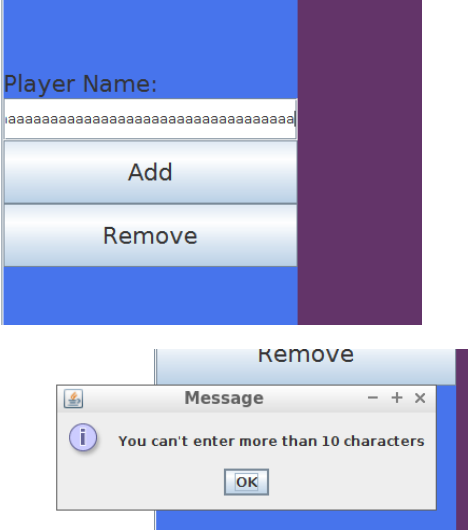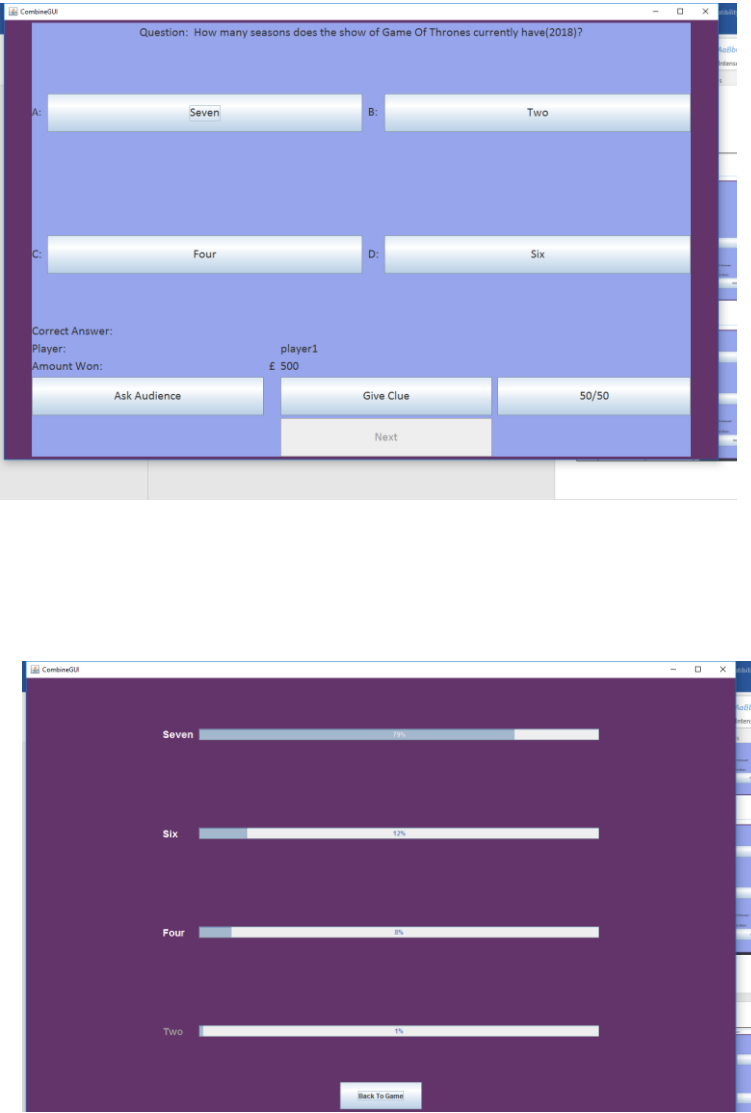
| 9 | Does it keep track of the amount of money credited | I expect amount won money, to increase every time the player gets the answer correct. | The images in test 8 also show the output for test 9. | Passed – The images in test 8 show that amount of money is credited when the player gets the answer right. |
| 10 | Does it implement 50:50? | I expect two of the buttons to disappear, and I expect one of the visible buttons | | Passed – The image show that two of the answers disappear when the player |

		to be the answer.		clicks 50:50, and one of the answers Is correct.
11	Does it implement ask the audience?	I expect 4 progress bars to appear showing percentages, and the possible answers.		Passed - When the player asks the audience, the ask the audience page appears with the Progress bars and shows the percenta

				ge. The percentages also adds up to 100.
12	Does it implement ask a clue?	I expect a pop up message to appear when the player asks for a clue.		Passed – A clue pop up message appears.

13	Does it allow a player to win?	I expect a page to display the player has won if they get the 12th question correct.		Passed – When the player gets the 12th question correct, the winner page appears and displays the players name.
14	Does it go to the next question even if the player hasn't answered the question?	I expect it not to go to the next question, as the player has to answer the question before		Passed – Doesn't go to the next question because button is disabled.

		clicking next.		
15	Does it explain why the game has ended if there are no players left in the game?	I expect a pop-up explaining why the game has ended, and then the game to end.		Passed – When there is no players left in the game a pop up appears and the game quits.
16	Does it have a character limit, when	I expect the game not to let me enter a player		Passed – When I entered too many character

	entering the player name into text field?	name if the character length is greater than 10.			an error pop ups.
17	Does it let the player use each helpline more than once?	I expect a player to be able to use each helpline only once.			Passed – Only allows the player to use each helpline once.

Question: Who created the TV-Show Grey's Anatomy?

A: Amy Sherman Palladion   B: Shonda Rhimes

C: Ricky Gervais   D: Chuck Lorre

Correct Answer:
Player: player1
Amount Won: £ 1000

Ask Audience   Give Clue

Next

Message

Helpline used
You have already asked the audience!

OK