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| **Interface Design** | |
| Breakdown the Game Board | |
| **Layer Image** | **Description** |
| Background Image | **Background Image:**  A static image drawn for aesthetic purposes. It’s the bottom layer of the game and serves as a base for everything else on the game board to set.  Other aesthetic features may be overlaid above other elements of the game (such as the tiles or tokens). |
|  | **Tiles/Path:**  This is the element of the game where most of the play happens; tiles are used within the game to give instruction to the players and to advance the game. The tiles are laid out as a path which also serves to show the game’s progression. |
|  | **Tokens (Players/Cars etc.):**  This layer is where the objects of the game are modified; they stay within the path and move from tile to tile. Tokens are used to represent the players and their assets and move along the path of the tiles. |
| HUD Elements:  Money: £6K  Assets: House x1 Etc. | **“Heads up Display” Elements:**  Elements such as a player’s progression/ money/ assets and age would be displayed in text/images here. This layer would overlay everything else on the board. Meta game functionality would also be displayed such as a pause, help or quit buttons. |
|  | **Spinner:**  This is the centrepiece of the board that acts as a dice would with numbers from 1 - 10. It has other functionality within the game such as use within tile instructions. The spinner controls the progression of the game allowing players to advance the number indicated on it.  The spinner will be animated to simulate a spin and land on a random number |
|  | **Decks of Cards:**  These cards provide instructions for the players for certain aspects of the game; examples include buying properties, having a family or getting a promotion. The decks are separated into sections e.g. Life Cards, Property Cards and so on. During game play a player will have to draw cards when prompted. |
|  | **Dialog Boxes:**  These are in the form of prompts for a player to take a certain action or to inform them of something that happens during the game. The dialog would overlay everything on the game board. It would contain at least one button to close the dialog and continue the game. |

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| Breakdown of game structure | | |
| **Screen Name** | **Description** | **Aspects** |
| Menu | The menu serves as the home screen of the game, the first screen that a player would be met with.  **Facilities of the Menu:**   * Player can start a game (Play Game Screen) * Player can look at the game instructions (Help Screen) * Player may be able to look at the game credits (Credits Screen) * Player may exit the software | * Menu background Image * Menu Title text * Menu Navigation Buttons * Any extra images for aesthetics |
| Help | The help screen would provide instructions for a player on how to properly use the software and play the game. Such instructions would include the rules of the game and input controls. | * Help background Image * Buttons for navigation * Help text for Rules * Help text for Controls & Instructions * Any extra images for aesthetics * Any Extra Images to illustrate instructions/rules |
| Play Game | This screen provides the actual game board for the gameplay. Where players will compete to win the QUB Game of Life.  The Bulk of the programming will go into the game board and gameplay as these are the main aspects of this software. | * Background Image if Necessary * Full Game Board (See game board section) * Buttons for navigation/meta functionality |
| End Game | This screen will serve to end the game when a player has run, it will display who has won and possibly their statistics | * Background Image * Buttons for Navigation * Text for Game Winner and possibly Game Statistics * Any extra images for aesthetics (e.g. showing winners player token/assets) |
| Possible | |  |
| Splash | A screen that would be shown before the menu and may allow certain assets to be loaded into the game (e.g. large images or database)  The splash screen would consist of an image of the game logo, possibly with an animation or sound. | * Background Image * Logo Image * Animated features * Sound Features |
| Credits | A screen that would be accessed on the menu and would provide some text that contains the game’s credits (team name, sub groups within the team etc.) | * Background Image * Text for credits * Any extra images for aesthetics * Navigation buttons |

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| Overall Layout of Board |

OK

LANDED ON TILE:

WIN LOTTERY

COLLECT £10k

**HUD ELEMENTS:**

**Players:**

**£10000**

**£20000**

**NEXT TURN**

**END TURN**

6

**DECKS OF CARDS**

**DECKS OF CARDS**

Size: 1920px by 1080px

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| Overall Layout of Board Reference | | |
|  | **Element Name** | **Description** |
| 1 | HUD Element Area | Area where text & images that display information regarding the game an example shown is a players money, assets and the current player who’s turn it is. The information in this area will update in real time to reflect what’s happening in the game |
| 2 | Tiles and Tile Path | Area that tokens are fixed on. Tiles allow for an action when a player lands on it, this action will bring up a dialog box which gives information to the player |
| 3 | Spinner | The spinner consists of a static image which will spin when clicked (When a player is prompted to click it) It will output a random number between 1 & 10 which represents the number of spaces the player will move. |
| 4 | Dialog box (Land on tile as example) | A dialog box will appear when a player lands on a tile, when a card is picked or when a player clicks the menu or pause buttons. |
| 5 | Tokens | These are images that represent the player. A player will poses a car token and up to 6 family tokens (Represented by a person, a spouse, pets and children.) These move from tile to tile based on the spinner number. |
| 6 | Card Decks | These are cards of different categories that a player can select when prompted to do so. Cards will give players ‘experiences’ or assets which will be cashed in upon the end of the game. Other decks such as the career or degree deck will grant a player a certain job or certain degree. |
| 7 | Buttons | Buttons provide other functionality to the game, for example ending your turn or pausing the game. |

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| Overall Design of Board (Images) | |
| **1. Concept Image**  First image produced to reflect the design of the board.  This concept featured a 3 dimensional design of the board with protruding features. Originally the path was supposed to represent a bus route for the Belfast metro service. Another ambitious feature was the spinner replacing the city halls dome. |  |
| **2. Concept refined**  This image was created when coding began to give a reference of how the path would look as well as the player tokens.  This image shows the initial idea for the paths shape, with the University pathway integrated into the lower quarter. It was then decided that the university area would be placed separate to one side. This was because of vertical space limits. |  |
| **3.Finalised Game**  This is the finished overall look of the game. This image was screen grabbed from a play through of the game. |  |

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| Graphical Breakdown of Game Board | |
| C:\Users\Ryan\Desktop\photo_2016-05-02_12-58-50.jpg | |
| Element Reference | |
| 1 | Tokens/Cars/Pets |
| 2 | Tiles |
| 3 | Buttons |
| 4 | Quarter Images |
| 5 | Logo |
| 6 | Background Image |
| 7 | Spinner |
| 8 | Wallet |
| 9 | Loan |
| n/a | Cards |

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| List of Graphical Elements | | | | | | | |
| Below is an exhaustive list of the graphics used within the game that represent the various elements. Each graphic was created for the game and is original work. | | | | | | | |
| Token List | | | | | | | |
| **Generic Tokens** | | | | | | | |
| Male | Female | Generic | Spouse Male | Spouse Female | (Unchosen) | Baby/Child | Pets (Dog & Cat) |
|  |  |  |  |  |  |  |  |
| **Career Tokens** | | | | | | | |
| Career  Lawyer | Career  Lawyer Female | Career  Chef | Career  Chef Female | Career  Chemist | Career  Chemist Female | Career  Software | Career Software Female |
|  |  |  |  |  |  |  |  |
| Career Doctor | Career Doctor Female | Career Artist | Career Artist Female | Career Fireman | Career Firewoman | Career Manager | Career Manager Female |
|  |  |  |  |  |  |  |  |
| Career Policeman | Career PoliceWoman |  | | | | | |
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| Car List | | | | | | |
| **Preliminary Design** | | | | | | |
| C:\Users\Ryan\Desktop\Year2 Images\cars\car_01_small.png | This design was intended to be used as it fit more with the theme of the games overall design. However there wasn’t a feasible way to implement it programmatically. The team decided to just use flat images for the cars (below) so that tokens may be placed on top of them. | | | | | |
| **Implemented Design** | | | | | | |
| Car 01 | Car 02 | | Car 03 | | Car 04 | |
| C:\Users\Ryan\Desktop\Year2 Images\cars\newCar_02.png | C:\Users\Ryan\Desktop\Year2 Images\cars\newCar_01.png | | C:\Users\Ryan\Desktop\Year2 Images\cars\newCar_04.png | | C:\Users\Ryan\Desktop\Year2 Images\cars\newCar_03.png | |
|  | |  | |  | |  |
| Tile List | | | | | | |
| **Original List** | | | | **Minimized List** | | |
| C:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_Sheet.png | | | | C:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\blue_01.pngC:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\blue_02.png | | |
| C:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\orange_01.pngC:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\orange_02.png | | |
| C:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\orange_03.pngC:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\orange_04.png | | |
| C:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\red_01.pngC:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\red_02.png | | |
| C:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\red_03.pngC:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\green_01.png | | |
| C:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\career01.pngC:\Users\Ryan\Desktop\Year2 Images\tiles\tiles_images\tiles_new\uni01.png | | |

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| --- | --- | --- | --- |
| Button List | | | |
| Retire Early Button | End Turn Button | | End Game Button |
| C:\Users\Ryan\Desktop\Year2 Images\buttons\btn_RetireEarly.png | C:\Users\Ryan\Desktop\Year2 Images\buttons\btn_EndTurn.png | | C:\Users\Ryan\Desktop\Year2 Images\buttons\btn_EndGame.png |
|  |  | |  |
| Quarter Images List | | | |
| University Quarter | | Titanic Quarter | |
| C:\Users\Ryan\Desktop\Year2 Images\quarter_images\Quarter_Img03.png | | C:\Users\Ryan\Desktop\Year2 Images\quarter_images\Quarter_Img02.png | |
| Cathedral Quarter | | Falls Quarter | |
| C:\Users\Ryan\Desktop\Year2 Images\quarter_images\Quarter_Img04.png | | C:\Users\Ryan\Desktop\Year2 Images\quarter_images\Quarter_Img05.png | |
|  | |  | |
| Background Image | | | |
| C:\Users\Ryan\Desktop\Year2 Images\bg.png | | | |

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| Spinner & Loan Images | | |  | |
| Spinner Image | | | Loan Image | |
| C:\Users\Ryan\Desktop\Year2 Images\spinner_Images\spinner_Image01.png | | | C:\Users\Ryan\Desktop\Year2 Images\letters01.png | |
|  | | |  | |
| Wallet Images | | |  | |
| Wallet Open | | | Wallet Closed | |
| C:\Users\Ryan\Desktop\Year2 Images\wallet01.png | | | C:\Users\Ryan\Desktop\Year2 Images\wallet02.png | |
|  | | |  | |
| Card Lists | | | | |
| **House Cards** | | | | |
| University: House 01 | University: House 02 | University: House 03 | | University: House 04 |
| C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House01.png | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House02.png | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House12.png | | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House13.png |
|  |  |  | |  |
| Falls: House 01 | Falls: House 02 | Falls: House 03 | | Titanic: House 01 |
| C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House03.png | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House04.png | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House05.png | | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House06.png |
| Titanic: House 02 | Titanic: House 03 | Cathedral: House 01 | | Cathedral: House 02 |
| C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House07.png | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House08.png | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House11.png | | C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House09.png |
| Cathedral: House 03 |  |  | |  |
| C:\Users\Ryan\Desktop\Year2 Images\cards\Card_House\card_House10.png |  |  | |  |
|  |  |  | |  |
| **Souviner Cards** | | | | |
| Titanic: Souviner 01 | Titanic Souviner 02 | Titanic Souviner 03 | | Cathedral Souviner 01 |
|  |  |  | |  |
| Cathedral: Souviner 02 | Cathedral: Souviner 03 | University: Souviner 01 | | University: Souviner 02 |
|  | card_Sou07 |  | |  |
| University: Souviner 03 | Falls: Souviner 01 | Falls: Souviner 02 | | Falls: Souviner 03 |
|  |  |  | |  |
|  | |  | | |
| **Career Cards** | | **University Career Cards** | | |
| Career 01 | Career 02 | Uni Career: 01 | | Uni Career 02 |
|  |  |  | |  |
| Career 03 | Career 04 | Uni Career 03 | | Uni Career 04 |
|  |  |  | |  |
| Career 05 |  | Uni Career 05 | |  |
|  |  |  | |  |

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| Animated Aspects of the Game | | |
| Some graphical elements required additional code to be written in order for them to appear moving during the game. The elements are shown below along with code screenshots that show how they are animated within the game. | | |
|  | | |
| The Games Spinner | | |
| C:\Users\Ryan\Desktop\Year2 Images\spinner_Images\spinner_Image01.png | | One of the things we decided as a group was to make the spinner in the centre of the board actually rotate when pressed. The first iteration of the code and methods used is below. The spinner was painted to a canvas as a graphics2D object. Mathematics was used to determine what angle it landed at. A random number between one and ten decided this angle so that the spinner would land on the desired segment reflecting the random Integer output. |
|  | | |
| Moving Tokens & Cars | | |
| token_01token_01C:\Users\Ryan\Desktop\Year2 Images\cars\newCar_02.png | As another design feature we decided to show the tokens or cars act as though they’re moving from tile to tile during gameplay. To do this basically coordinates of tiles were implemented so a token object could find its destination from its current position. This code portion shows this;  this.setxCoord(player.getxCoord() + (player.getEntityImage().getWidth() / 2) - (this.getEntityImage().getWidth() / 2) - XDifference);  this.setyCoord(player.getyCoord() - (this.getEntityImage().getHeight() / 2) + YDifference);  Using a timer object the coordinates of a player are set periodically until it reaches its destination tile (As per whatever number the spinner tells them to move). The code also ensure it gets the centre coordinates of objects using their respective image width and height divided by two. | |