## User Feedback and Feature Selection

Quantitative Data Analysis – Personal Details

Due to the Covid-19 pandemic, the choice of participants for the user feedback study was very limited. Despite this, I still feel as though the feedback study received participants of varying experience when it comes to playing video games. This can be seen in the two pie charts below demonstrating the regularity of video game usage by the participants on mobile or tablet and a personal computer or console (**Fig. 1**).
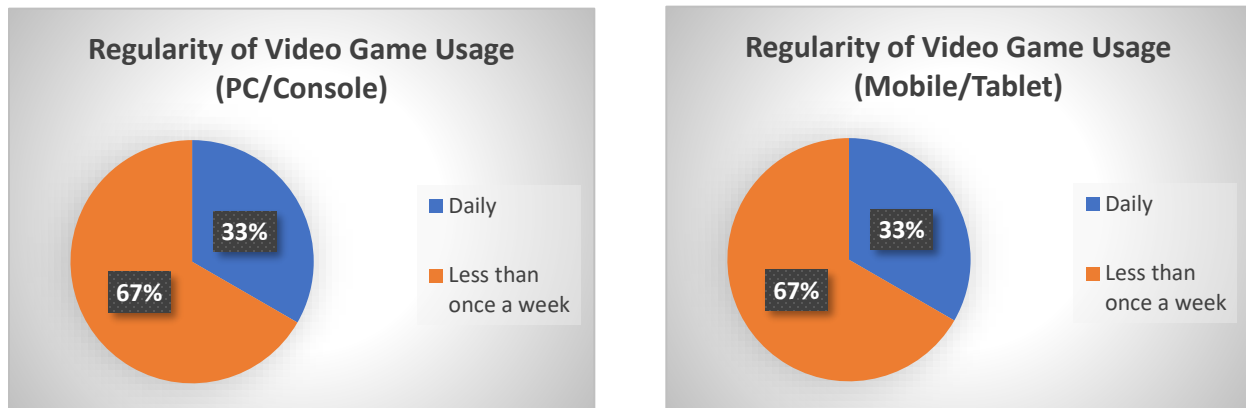
(Fig. 1)

One participant said they played video games on pc or console daily but less than once a week on a mobile phone or tablet and another participant claimed they play video games less than once a week on a pc or console but daily on a mobile or tablet. Therefore, of the three participants, one has a lot of experience in playing console/pc video games, the other has a lot of experience in playing mobile video games and the final one hardly plays video games at all. Despite the findings in these particular questions, all participants said that they use a computer system on a daily basis (**Fig. 2**).
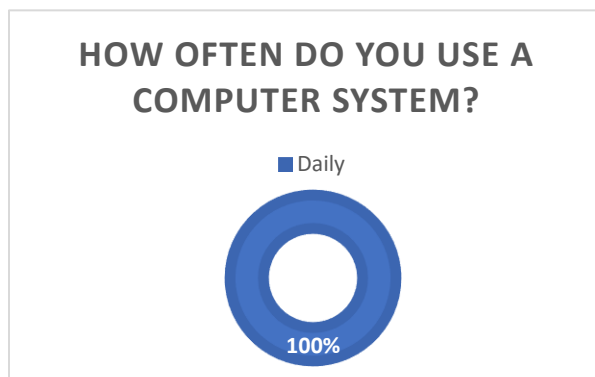
(Fig. 2)

The three participants involved in the study were all of varying ages as well, one being 19 years old, the other being 52 years old and the final participant being 61 years old. The participants were a mix of both genders too where two of the participants were male and the other being female. I was also rather lucky in the fact that the two participants that had claimed to play video games daily (either on pc or console or on mobile or tablet) were male and female. So it was especially ideal to receive some feedback from a male with daily gaming experience and a female with daily gaming experience, which would hopefully generate some differing feedback from two users that both have daily video game experience. Because of the details documented in this page I'm very happy with the participants I worked with in the user feedback study.

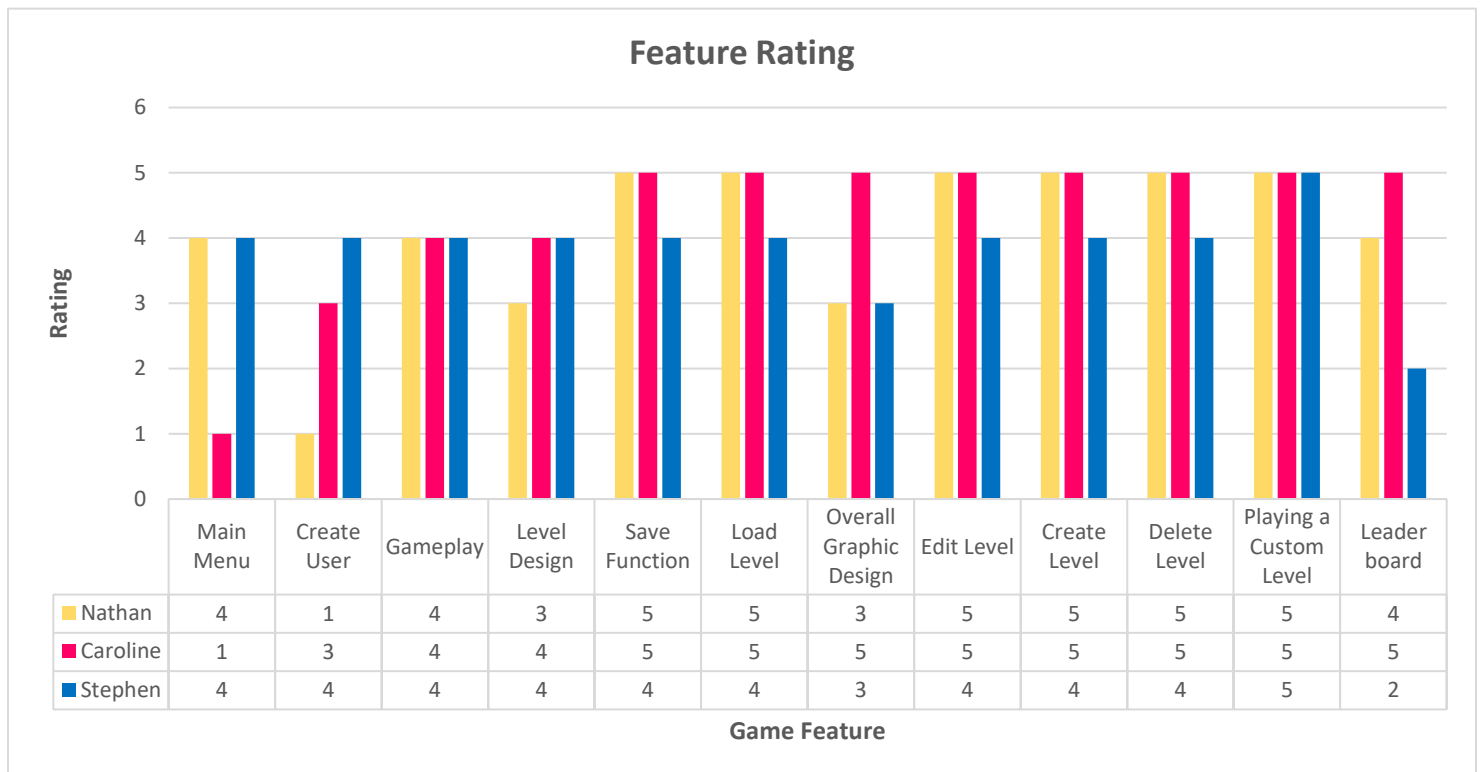**Quantitative Data Analysis – Game Feature Feedback**

      After receiving the participant's personal details such as age, gender and name and then asking the participant some quantitative questions regarding their experience with video games and computer systems, I then moved the questionnaire onto asking the participants what they thought about different aspects of the game. To do this I used a Likert scale question where the participants needed to rank the game feature from 1 to 5, 1 representing a 'poor' rating and 5 representing an 'excellent' rating (**Fig. 3**).

From this style of question, I could easily gauge the general consensus of how impressive or how intuitive each feature of the game was. With a limited time scale, it really helped in terms of prioritising updating, changing or adding to certain features and aspects of the game. For example, in the graph below which represents the participants' ranking for each feature (**Fig. 4**), it shows two

5 – Excellent	4 – Good	3 – Okay	2 – Underwhelming	1 – Poor

Feature	5	4	3	2	1
Main Menu					
Create User Function					
The Gameplay					
Level Design					
Save Level					
Load Level					
Overall Graphic Design					
Edit Level					
Create Level					
Delete Level					
Playing a Custom Level					
Leader board					

(Fig. 3)

particularly low ranking features in 'Create User' and 'Overall Graphic Design'. Therefore, these graphics and rankings definitely played a role in which features were chosen to be added and which changes were made to the game. Of course, some feature recommendations by the participants were not added to the game due to difficulty level and the time scale to complete these features. Despite this, I can assure that all recommended features were analysed and researched before deciding on whether it would make the 'final cut' or not.

Feature Rating

	Main Menu	Create User	Gameplay	Level Design	Save Function	Load Level	Overall Graphic Design	Edit Level	Create Level	Delete Level	Playing a Custom Level	Leader board
Nathan	4	1	4	3	5	5	3	5	5	5	5	4
Caroline	1	3	4	4	5	5	5	5	5	5	5	5
Stephen	4	4	4	4	4	4	3	4	4	4	5	2

Game Feature

(Fig. 4)

Qualitative Data Analysis

After now receiving quantitative information from the participants I included some qualitative style questions in the questionnaire for the participants to answer. The first question being, "If you answered 3 or below for any of these, please offer some feedback on how they can be improved". This question was designed to extract more information from the Likert style question previously. This meant that I could then specifically target improvements for feature areas and know exactly what the user didn't like about that feature and how it could be improved. I then proceeded to ask three more qualitative style questions to gauge which parts of the game the participants liked and what they didn't like, I also asked the participants what they'd specifically like to see added to the game. This would help to build a possible feature list for consideration before deciding on final features to add to the game.

After the participants had completed the questionnaire and were happy they'd had enough time to experience the different features of the game and fill out the survey as well as they liked, I interviewed them in an unstructured and open manner. I based my questions around their response to the questionnaire and mainly used the interview to try and get the participants to expand on the comments and suggestions they had made. My reason for holding an unstructured interview was to allow the participant to feel as comfortable as possible and to try to assure them that any criticism and suggestions no matter how harsh were accepted during this research study. However, I did include a planned question in each interview which would allow me to gauge responses and opinions for an additional feature I had been planning to add to the game for a while. That question was "Would a game feature which allowed a user to tweet their username and time when they get a new best time for a level be something that would interest you?". The feedback to that question was a resounding yes, with one participant in particular claiming the feature would make the game more competitive. Another participant suggested also that the user should be able to choose whether that tweet was posted or not. This was a change to the feature that I hadn't considered before then and promptly became a part of the whole design for that feature.

Alongside the questionnaire, I ran a diary study where the users could write out any of their opinions and feelings as they played the game. Unfortunately, no participants took part in the diary study. Upon re-evaluation of the diary study idea I do think that maybe the diary study was unnecessary, firstly because the game is small in terms of features so the user didn't need to take a lot of time to explore all of the game's features and secondly because they could potentially write their feelings into the questionnaire as they were going along. At the time, I did think it was a good idea adding a diary study alongside the game play as I thought it may help users in remembering suggestions and opinions and I thought that it might have helped me in creating a feature list in the long run.

Example Transcript of Interview

Please see below an example transcript taken from an interview with a participant of the user study. This is to reference the kind of questions asked and how the users responded in general. Please bear in mind that the interview was unstructured and the questions asked were designed to receive some more detail from the user regarding some feedback they offered in the questionnaire.

What kind of character variations would you like to see and how many?

- *I'd personally like to see 4 variations, 2 males and 2 females and all designed to follow the theme of the game, but they obviously need to look different.*

Could you expand on which levels you thought were too basic and why?

- *The first level only requires 2 moves to complete it. Level 2 had a similar problem where you could walk in one vertical line and complete the game. Level 3 had an exploit in it where all you needed were flippers and fire boots to be able to go around doors and complete the level easily.*

For the window that describes the tiles, would you like this feature to be designed in a similar way to the create level window? Where you click on an image on the left and it'll give you details on that tile?

- *Yes. Or maybe it could work so that when you hover over the item it'll show you a description for that item then. I also think it could be a good idea to add a general description telling the user what the game is about and how to play it.*

How would you like the description for the size on create level to be shown?

- *I'd like to see the description inside the text box and when a user clicks the text box, the text clears for the user to add their size.*

Is having a twitter feature in the game that tweets a username and their new best time for a level something you'd be interested in?

- *Yes, as long as it's a choice for the user to choose if it's tweeted or not.*

Feature Suggestions

Below is a list of suggested features from the participants. Following the list, I will analyse each feature and then decide on some features to be added to the game. Rest assured, every feature suggested to me was taken into careful consideration before deciding which features would be added to the game.

- Add background music.
- Link passwords to users (Login function).
- Change background images in menus.
- Protect created maps with login function.
- Twitter feature to share best times for users.
- An instruction window describing what each tile does.
- Offer users the chance to play as different characters.

- Redesign levels.
- Change the appearance of the lava tile.
- Describe what the size textbox means in create level.
- Main menu button in game to take users back to menu.
- Add full screen function.
- Fix the leaderboard feature to display times in correct order.
- Add game controller functionality.
- Change the point scoring system.
- Add sound effects for walking onto certain tiles.

Add Background Music:

On analysing this feature suggestion, I think that this would add extra fun factor to the game. I'm intending on adding this feature, but I think it will be very important to make sure that the background music suits the feel of the visual of the game, that being of a fantasy nature.

Login Function:

I'm definitely intending to implement this feature as I had worked on the game in assignment 2 and experienced areas where it should be implemented and also because there was more than one suggestion by the participants for this feature to be added. I don't think that implementing a single login function would be too difficult but there would be some considerable work to complete it. This would include a create account screen before playing, then saving those accounts. Additionally, the users should then have to login to continue their progress and to create, edit and delete maps where they can only delete their own maps. With the delete maps functionality it will probably mean having to restructure the directory of where custom maps are saved so that they are saved under their creator's username.

Change Background Images:

Along with the background music above, I intend to add this feature to the game to try and change the feel of the game. I agree with the comments a participant made that the background image currently doesn't match the overall visual design of the game and I feel it should be changed to something with more of a fantasy look. Here is the old background image:

5
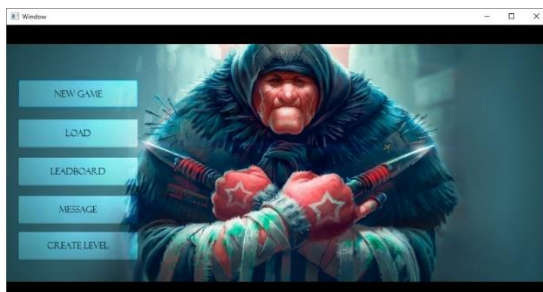
Protect created maps with login function:

As discussed above, I'm intending to implement this feature coinciding with the login and create account feature. This will allow users to protect their custom maps from being deleted by other users.

Twitter feature to share best times for users:

This feature was pre planned by myself as a possible feature to add and seemed to get a positive response from the participants. I'm intending to add this feature also, it will mean that I will need to apply for a Twitter Developer account to allow me to send tweets to the game's Twitter account using the Twitter API for Java.

Instruction window describing what each tile does:

After running my user research study, I feel this feature is a necessity. I started to think this when I felt that I needed to include some instructions on how to play the game in my study plan. Then when a couple of participants suggested this feature, I decided that it needed to be implemented and so this will be very high in my priority list. I'm intending to make it so that the description text area changes it's text when a user hovers over a tile's image and think this would look nice and make the menu a little more intuitive.

Offer users chance to play as different characters:

At this point in time I'm not intending to add this feature to the game. Even though I think it would be a nice feature to add and could enhance the depth of the game, I feel that with time constraints that this feature would be too large to add. It would mean having to design multiple other characters and design a new way for players to play to unlock and select new characters.

Redesign levels:

I'm not intending to implement this feature either as I don't really consider it to be a feature and only involves the changing of text files. Therefore, I shall be concentrating on implementing features that have a bigger impact on the game.

Change the appearance of the lava tile:

This feature had a similar issue to the multiple character feature in that I'd have had to redesign a lava file potentially and felt this feature didn't have a high enough priority level to it to add it to the game. I also think that a tile design like this can be quite subjective and therefore I feel there could be more important features to add.

Describe what the size textbox means in create level:

Having taken this feature into consideration, I decided that it did not rank highly enough on a priority list to be included in this assignment. I thought this especially as only one participant mentioned this feature and I personally felt that the size textbox was quite self-explanatory.

Main menu button in game to take users back to menu:

This feature will be implemented into the game. Having played the game myself and extensively testing it during assignment 2 of this module, I felt that this was a very important and frustration easing feature to add.

Add full screen functionality:

Again, this feature had an issue of being low down on my priority list. I didn't personally feel this would change the game and felt that it could also become complicated with things such as resizing tiles and then adjusting player movements after resizing. This would have been a very nice feature to add to the game with a longer timescale and some time to work on resizing features, but for the sake of this assignment and timescale I felt it was too bigger a feature to be added.

Fix the leaderboard feature to display times in correct order:

This feature will be added to the game as an imperative feature needed for the twitter feature to work correctly. I found that players times were not being saved properly and sometimes the faster players were knocked off the leader board by a player with a slower time.

Add game controller functionality:

I decided not to implement this feature due to me feeling that my skill level would have been too low to implement this feature on time and implement other features with it. It would have meant including new libraries in the java project and having to learn how that library works. I also would've had to implement a functionality so that the user could navigate through the menu with the controller. However, I do think that given more time that this feature would be an excellent addition to the game.

Change the point scoring system:

This was a feature suggested to change the point scoring system of the game so that a player's points would be based on the time taken to complete the level and the items they had picked up during the level. I won't be implementing this feature since it would involve redesigning the leaderboard feature, the way times are saved and loaded and would be a large amount of work and time. It may also involve

designing new point scoring tiles and feel that such a large feature would be unachievable in the timescale given.

Add sound effects for walking onto certain tiles:

This final feature will be added to the game also as I think it will make the game feel more appealing and give the game more fun value. I think it would also work well with the background music and it can help to notify users of when they pick up an item or use a certain tile.

Features Added

Having decided on what features I would and would not be adding to the game, I then went ahead and planned out which features needed to be added first and which features needed the addition or fixing of certain features before they could be implemented correctly. Below is a list of features added and following on from that list is descriptions of how each feature was added with examples of the end product for some of those features:

- Add background music.
- Link passwords to users (Login function).
- Change background images in menus.
- Protect created maps with login function.
- Twitter feature to share best times for users.
- An instruction window describing what each tile does.
- Main menu button in game to take users back to menu.
- Fix the leaderboard feature to display times in correct order.
- Add sound effects for walking onto certain tiles.
- Add victory music.
- Add victory screen.
- Add audio settings menu.

Add Background Music:

I decided to implement this feature as it was easy to design and code. Having downloaded a royalty free fantasy song, I then coded the Main class to add a MediaPlayer which plays this song in the background and loops it. That song can be listened to here, https://www.youtube.com/watch?v=IrgXAFt1yJA. I then took this background music feature a bit further. Being an avid video game player myself, I know how important it is to be able to adjust volume settings. Therefore, I implemented an additional feature when a user could open an audio settings window where they could change master, music or sound effects volume levels. Those volume levels are then saved in file so that the game's volume stays the same even after the game is closed. The audio settings feature was then extended even further where the user could change the audio settings in game. This needed additional code to make sure the timer was paused and restarted again properly after entering the audio settings menu.
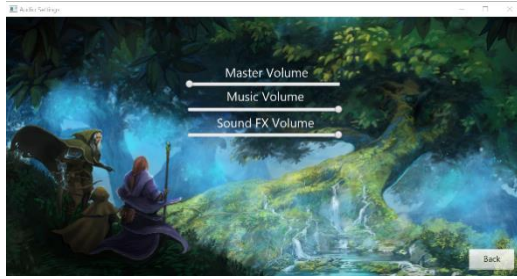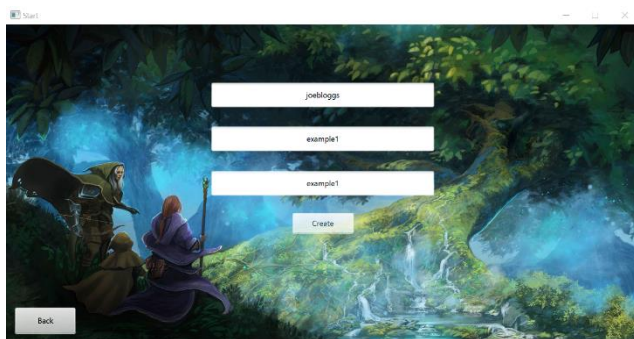
Login Function:

This was a feature I had planned on adding myself before it was suggested. It was a larger feature to add but I was confident of being able to implement it. Now users can create an account and login to that account to continue playing the game or to create/edit/delete levels.
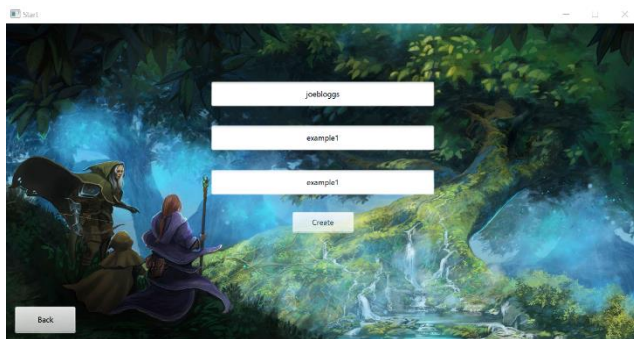
Change Background Images:

This feature was already in my mind as a possible additional feature as I didn't like the old design either. I decided to go for a mystical/fantasy looking background to suit the design of the game itself.


Protect created maps with login function:

Once the create account and login functions were made, I then modified them and the file structure to create a login feature for the create maps function. This means that a user can now only delete their own maps. They can still edit another player's map though.

Twitter feature to share best times for users:

This feature was predesigned by me before the user study took place. I made sure to gauge the opinions of the participants on this feature before I went ahead and implemented it. The feature involved being accepted as a Twitter API developer first after applying, then I needed to include Twitter's API in the java project. A player can only share a tweet if they managed to achieve a top 3 time when they complete a level. I also added a new window for when they do this which shows the word "Victory!" and a treasure chest background image. This window then plays a victory song and offers the user the option to proceed to the next level or to share their time on twitter.
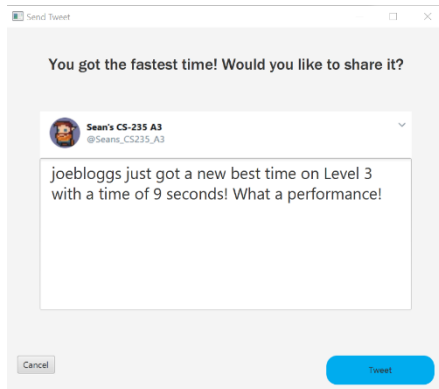

Instruction window describing what each tile does:

This feature was quite a big feature to add. I created a text file which contained the descriptions for each tile first. Then the code would read that file and create a hash map linking tile objects to a description. Then when the user hovers over a tile a description for that tile is shown in the window's text file.


Main menu button in game to take users back to menu:

This feature was a small and easy feature to add but for user experience I felt it was necessary. Therefore, the in-game screen now includes a "Back" button which takes the player back to the main menu.
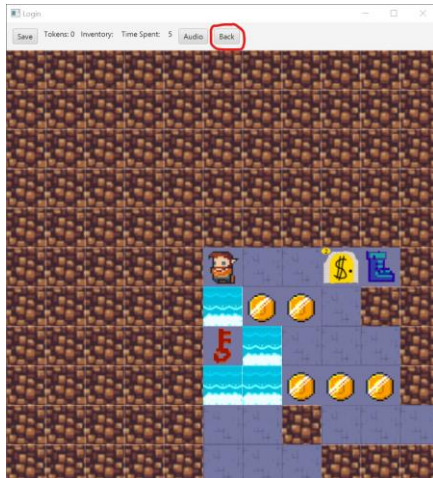
Fix the leaderboard feature to display times in correct order:

This feature was added to the game as an imperative feature needed for the twitter feature to work correctly. Player times are now saved and loaded correctly and displayed in time order in the leader board.
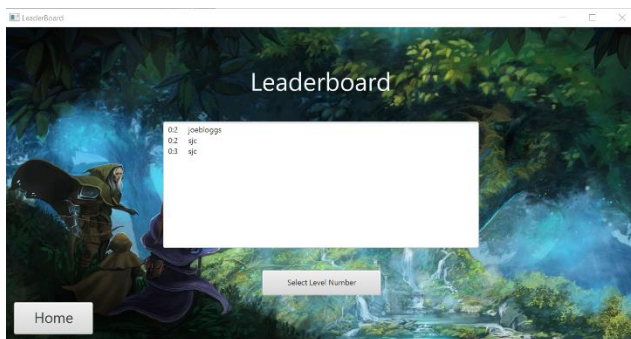
Add sound effects for walking onto certain tiles:

In the end I added sound effects for when a player picks up coins, opens doors, walks on lava or water when they don't have the correct footwear in their inventory and for when they teleport. I also added some music for when a player gets a top 3 time after completing a level. The sounds' volumes could also be controlled in the audio settings menu feature that I had added.
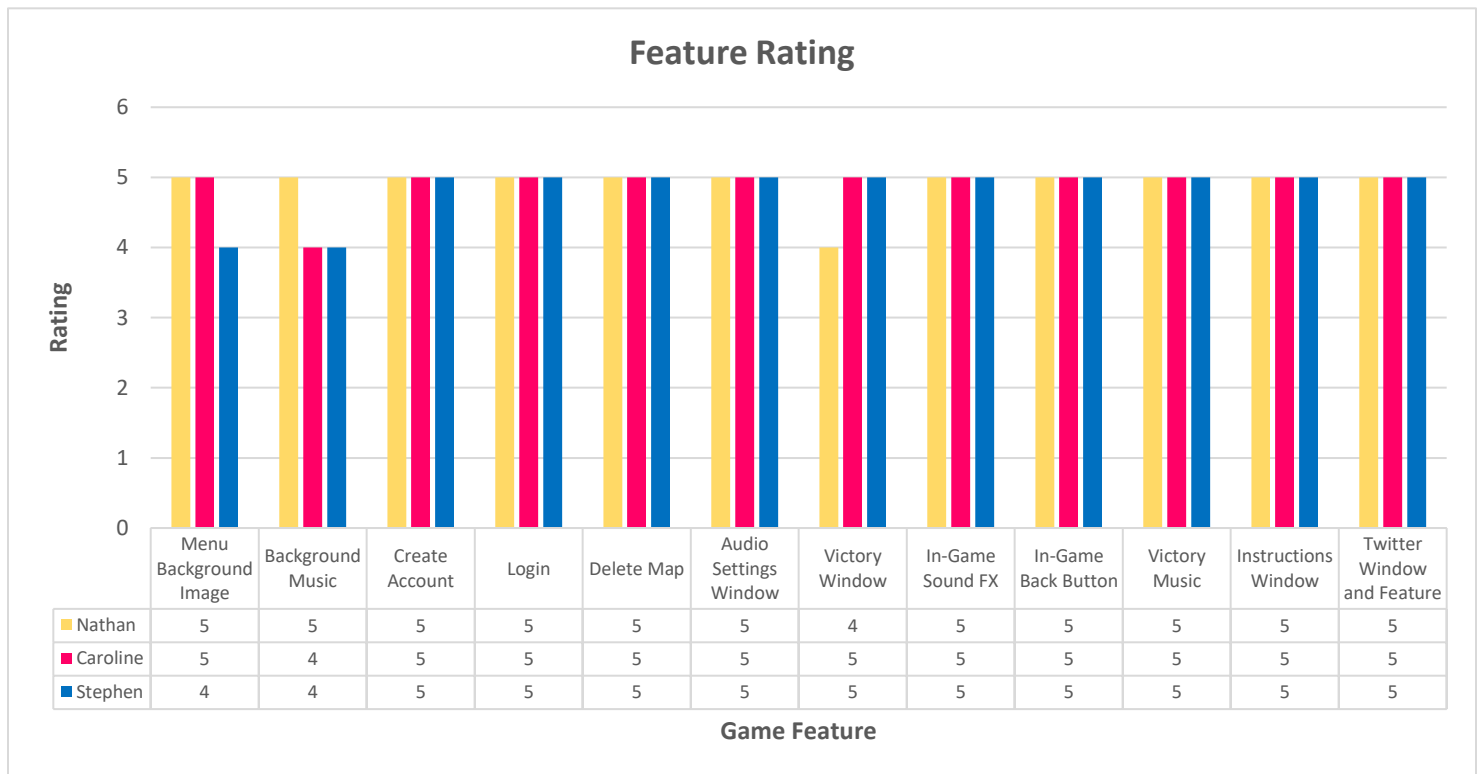
Feedback of completed features

Despite this section not being in the coursework brief, I thought it would still be useful to include this section within this report to show how the newly implemented features were perceived by the participants. Therefore, I designed another Likert scale question where the participants could rate

each new feature on a scale of 1 to 5, with 1 representing a 'poor' rating and 5 representing an 'excellent' rating (**Fig. 5**). We can then see in (**Fig. 6**) a visual representation of how well each feature scored in the Likert style question. Thankfully, each feature scored very highly. Some features did lose some rating points, but this could well be caused by personal preference, for example the background image and background music scored both scored 4 in the feedback for one participant. I feel very positive about the outcome of this user feedback study and how well the new features have been perceived by the same participants.

5 – Excellent	4 – Good	3 – Okay	2 – Underwhelming			1 – Poor	
Feature				**5**	**4**	**3**	**2**	**1**
Menu Background Image								
Background Music								
Create Account								
Login								
Delete Map								
Audio Settings Window								
Victory Window								
In-Game Sound FX								
In-Game Back Button								
Victory Music								
Instructions Window								
Twitter Window and Feature								

(Fig. 5)

Feature Rating

	Menu Background Image	Background Music	Create Account	Login	Delete Map	Audio Settings Window	Victory Window	In-Game Sound FX	In-Game Back Button	Victory Music	Instructions Window	Twitter Window and Feature
Nathan	5	5	5	5	5	5	4	5	5	5	5	5
Caroline	5	4	5	5	5	5	5	5	5	5	5	5
Stephen	4	4	5	5	5	5	5	5	5	5	5	5

Rating / Game Feature

(Fig. 6)