**24/01/2017**

At the start of the day we had a little gaming session with HTC Vive, to get a much clearer idea on how to develop good, comprehensive UI for Virtual Reality games.

Later in the day, we went to a client meeting at Disney Research office. We had a good bonding time as we walked to the building, talking about our personal issues. I believe that we are forming a good natural team atmosphere, where all of us respect each other.

I also went through personal development after the meeting ended, as I was able to talk 1 on 1 with one of the designers on our team, which surprised even me. I usually am not very good at conversing with new people so this was a really good first step towards beating my social anxiety.

**28/01/2017**

I have decided to work with Unity 2D physics to see how hard it will be to implement actual grid physics. This gives me a good example of drive for results.

S: Spent 4 hours trying to work with Unity to make a basic physics prototype

T: I haven’t used unity in a while and only used it for UI previously, had to relearn basic components of how Unity works.

A: Looked up multiple tutorials and through trial and error, I have made a somewhat working physics prototype and gained a few ideas on how to handle our physics system.

R: Got a very basic prototype made, with a single particle type.

L: I learned that using tutorials and looking a lot of stuff up is a good way to pick up the basics again, and that even if something doesn’t work that well at least you now understand how to improve it.

**29/01/2017**

Decided to work a bit more on the prototype by adding a new material to it.

It was much easier to implement this after yesterday’s crash course on unity. I got a new material to be spawned into the scene and it can interact with other materials in the scene. As I developed more I realised that implementing actual grid based physics might be a little bit harder than we first thought and we need to plan it a bit more on the next meeting we have.

I also now know that doing the physics system by myself will not be viable as it is really complicated and I will need help from my team mates.

**30/01/2017**

Our team decided on Mondays to be the group meeting we must talk about the progress we made towards the group project, so all members of the team shared their experiences and new ideas on how to progress further with our game. We decided on a Monday since our client meetings happen every Tuesday, so we also plan on what to say to the client, whether any new problems appeared during development or if we start to think that we cannot have a previously agreed upon feature implemented.

**31/01/2017**

This week’s client meeting started at 10am. We have discussed various design styles with the client as we still do not have a set idea on what the art style of the game will look like, however, we do have some good ideas and we wanted to eliminate a few of them with the client. We have also talked about future client meetings and we agreed to use Skype for meetings when the client cannot meet us face to face. Another thing we talked about was a technique I found on a game dev forum for creating quite nice looking grid based physics liquid simulation.

After the client meeting, we had a little team meeting to help our Project Manager with the PID. We gave more risks and a created a more concise task plan. Our PID is almost complete and we should be able to make it on time.

We decided to do a little bit of implementation and debugging over the few hours we had left before the supervisor meeting. Adam has improved on his laser pointer and UI. I have implemented the liquid water example and it worked nicely in 2D, however when we tried to implement it into a VR setting, the framerate dropped considerably and so we decided that Ruairi will try to make a new grid from scratch.

Finally, our supervisor meeting was mostly about the PID, since we are slowly crawling towards the deadline. Our supervisor gave us support and some ideas on how to handle the remaining part of the PID.

**02/02/2017**

Thursdays are our implementation days, however since it seemed that another group was using the Vive, we instead had a group meeting about the PID again. Our Project Manager needed some help with task scheduling and how long each task will take. We also split up the work during that time so we now have a much clearer idea on who does what and we can start getting into the work now.

After the meeting, we did some more research towards the grid physics that we are going to implement and our main physics developer, Ruairi, has played around with Powder Toy (one of the only grid based physics games out there) and figured out how we are going to implement people into our game.

I also have researched basic main menu creation in VR and interaction with 3D objects using Vive controllers. I created a basic scene element for the main menu and I am ready to implement all the functionality during the weekend.

**05/02/2017**

Today I worked on the main menu for our game. One member of our team proposed an idea of having an actual lever you can pull in VR to start the game, so I took it upon myself to deliver such a product. It took me a few hours to get used to how SteamVR (Good, simple framework for HTC Vive) operates, but when I did, I managed to create a real cool main menu prototype that I can show off to the group once we all meet on Monday.

Now that the working prototype is done, once I can get to debug this on the actual Vive, I can start to improve the main menu scene by adding a transition period between levels. I believe that this will make the overall experience much nicer to the user, since right now when you pull the lever, it instantly loads you to the actual game scene and that is very disorienting.

**07/02/2017**

No client meeting this week, instead we all got together and decided to mark off our progress towards the first working prototype, and it seems that we are ahead of schedule on some things and behind with some. The art assets are taking longer to be made since one of our designers had to be working on other coursework because he had a deadline that was coming up. The programming side of things was going along smoothly except we still had barely any access to the vr headset so it was rather hard to debug any code we wrote. After we agreed on the tasks that were completed, our artist Kieran showed us basic art styles we can go for. Him and Zak came up with ancient civilization styles such as Greek and roman. They made little characters in those styles and we really liked the simplicity of the roman style so we went with that.  
  
After the team meeting, we did manage to secure some time with the vive so that I could show others my Main menu scene and everyone seemed happy about it. I have also added a sound that plays whenever you touch the lever. We also tested the basic ui implementation that Adam wrote and it seemed to work fine.  
  
After all work was done, I was given the task of making an interaction between materials document and it must be done by Thursday.  
  
We had a meeting with a supervisor about our vr headset access problems and he said that this is a problem that is very hard to solve and that there is nothing we can do about it. We cannot use the headset for long periods of time for testing and this is a really big risk because our final product might not be up to scratch if we cannot test it properly. However, I believe we can come up with more flexible times so that we can program when we don’t have the vive and then quickly test our code when we get access to it. It will only require us to adapt our timetables to work with this issue

**08/02/2017**

 I have started to work on the material interaction document so I opened Powdertoy which is what we were given as a guide. The particle interactions are rather basic in the game when you exclude more advanced features like pressure and wind. With this tool in hand, I compiled a basic list of all possible interactions for our 5 initial materials (sand, stone, water, lava, seed). This document will serve as a guide for when we start implementing the material interactions.

**09/02/2017**

Our team had another meeting, this time the designer part of our team wanted to talk about what art direction we are going to take. They provided us with multiple colour schemes we can take for our little people we will have in the final product hopefully. We really liked the idea of just basic colour for the body and a bright colour for the hair just as a contrast. It will also be much easier to discern the characters from the particles that our game will have. After we picked the best colour scheme, I talked a little bit about my material interaction document which was shared on our google docs folder so that all of them can view it there if they ever want an idea of what we are going for.   
  
Now that our meeting was done, the programming team went to work on our parts, I was given the task of making ray casting work for the ui that Adam made. It was rather interesting to make it work, but since the ui was made in a very specific way, I could not make the ray casting work as I had to reference objects that are made at runtime and which are parented to the other controller. Ruairi who is our physics master made a breakthrough of being able to spawn particles into the grid. They did not have physics working but we can finally spawn particles in so it’s a huge step.   
  
After setting up the vive to test the ray casting, we were informed that we are not allowed to use the vive in the games lab on Thursday afternoons anymore because it’s when Advanced Game Design students have access to the vive. So now our working times with the headset have been sliced again.  
  
When we finished working, all of us decided that ray casting with ui is not going to work well so instead we are going to implement a touch based ui, so when you press a button to open ui, you can use the other controller to press the buttons. This will be much easier to implement with our framework and so I decided to look for ways of implementing that.

**14/02/2017**

I came in 2 hours before our client meeting so I decided to quickly make a basic ui that we can talk about with our client. I managed to make a button that you can interact with vive controllers that allows you to quit the game or quit to main menu. It is a real basic ui but now that we have a basic frame working, we can expand on it much more.   
  
During our client meeting, we mostly talked about the art style we decided to go with and the client seemed happy with our choice so now we can just implement that into all scenes. I have also talked about the main menu scene that I made last week just to give our client the idea of how the game will be started. Adam also talked about how we can make our Ui and that we ultimately went with touch based interaction and maybe we can have different controller button combinations to launch different menus so let’s say one button opens the main ui that gives access to material menu, options menu and the quit button and if you hold 2 buttons together you can open up just the material menu to swap between materials you can use.  
  
After the client meeting, I showed my Ui to our programmer team and they were happy with the basic frame that I made. Adam also informed us that he has gotten into contact with some people that are in control of the computing schools room booking and that he managed to book a room for us for next Tuesday for 3 hours so that we can use the vive next week without interruptions. This is a huge step for us and now we can totally debug our code without worrying about the headset being taken away from us.   
  
During our supervisor meeting, we mentioned our actions towards getting a room booked and the vive booked so that we can use it without worry and it seems that we are taking all the right steps towards it but now since University does not have the facilities to make the use of vr much nicer, it is super hard on our project but if we speak up about this then maybe people who have vr projects after us will have a much easier time than us. We also mentioned that we did book a room for next week so we should be fine for now.

**16/02/2017**

Me and Ruairi came in early to do our share of the work, I expanded our UI to now have an options menu and materials menu and corresponding button to make them all work. All we need now is a vr headset to allow us to attach these menus to the controllers and then we will be golden on the ui front. Adam has informed us that he has some landlord issues so he might now come in at all. However, he did manage to come in later to help me with attaching ui to the controllers which worked rather nicely. But before that, after I have finished making the ui, I decided to help Ruairi with his physics collisions, since he already made working physics on Tuesday after me and Adam left. After putting our heads together, we saw what was the issue and we managed to get collisions working, so now we had actual sand that piled up into towers. It was super buggy but after a few hours of debugging, we perfected the collisions.  
  
Now that Adam was here, we fixed the ui and finally we had a working prototype of our game. We can spawn in different materials and they all interact with each other, for now it’s just that they can touch each other but that is already a monumental step for us because we have a working framework and now us 3 can work on implementing various interactions the materials will have (e.g. water turns lava into stone).   
  
During our coding session, Ruairi received an email that tomorrow his own personal vive will arrive. This is yet again another monumental step for us since Ruairi is our physics guy, he now needs the headset for debugging the most and so this is simply perfect an ensures that our physics will now work for sure. Today was the most productive day we ever had and I am so glad I am in this team. We are just so organised and we all help each other. We all communicate all issues to each other and if any of us cones up with a hurdle, all of us understand that and we help them. This has changed my view on group work.   
  
Next week task, finally merge our progress together and have a basic prototype that we can show to our client.

**21/02/2017**

The first meeting of the day was with our supervisor. We talked more about the difficulties of getting a vive on our hands and we also mentioned that Ruairi did indeed receive his personal vive already and so he can do a lot of testing and polishing at home now. This is all good, but Adam and I still have no reliable way of testing our stuff except for the 2 to 3 hours we get with the vive when we book the visual effects room. Our supervisor did tell us that it is completely the universities fault for not having the facilities but Virtual reality is also a new type of technology so it is too late for us to receive support, however the people who will be working on it after us will have a much easier time.

After our meeting with Peter, we had to rush to Disney Research to have a meeting with Kenny to update him on our progress. Kenny was happy with our progress but he also mentioned having more ways to solve puzzles with our little characters, for example using an explosion to make the character jump over obstacles. I feel like we were promising a bit too much with our project but we will deliver the bare minimum that Kenny wants.

We finally get access to the virtual effects room to set up our vive and can test everything that we worked on. I am the main user today as my user interface stuff relies the most on the vive. I worked on the UI a bit more, adding actual VR functionality to it so that the UI can be moved around alongside controllers.

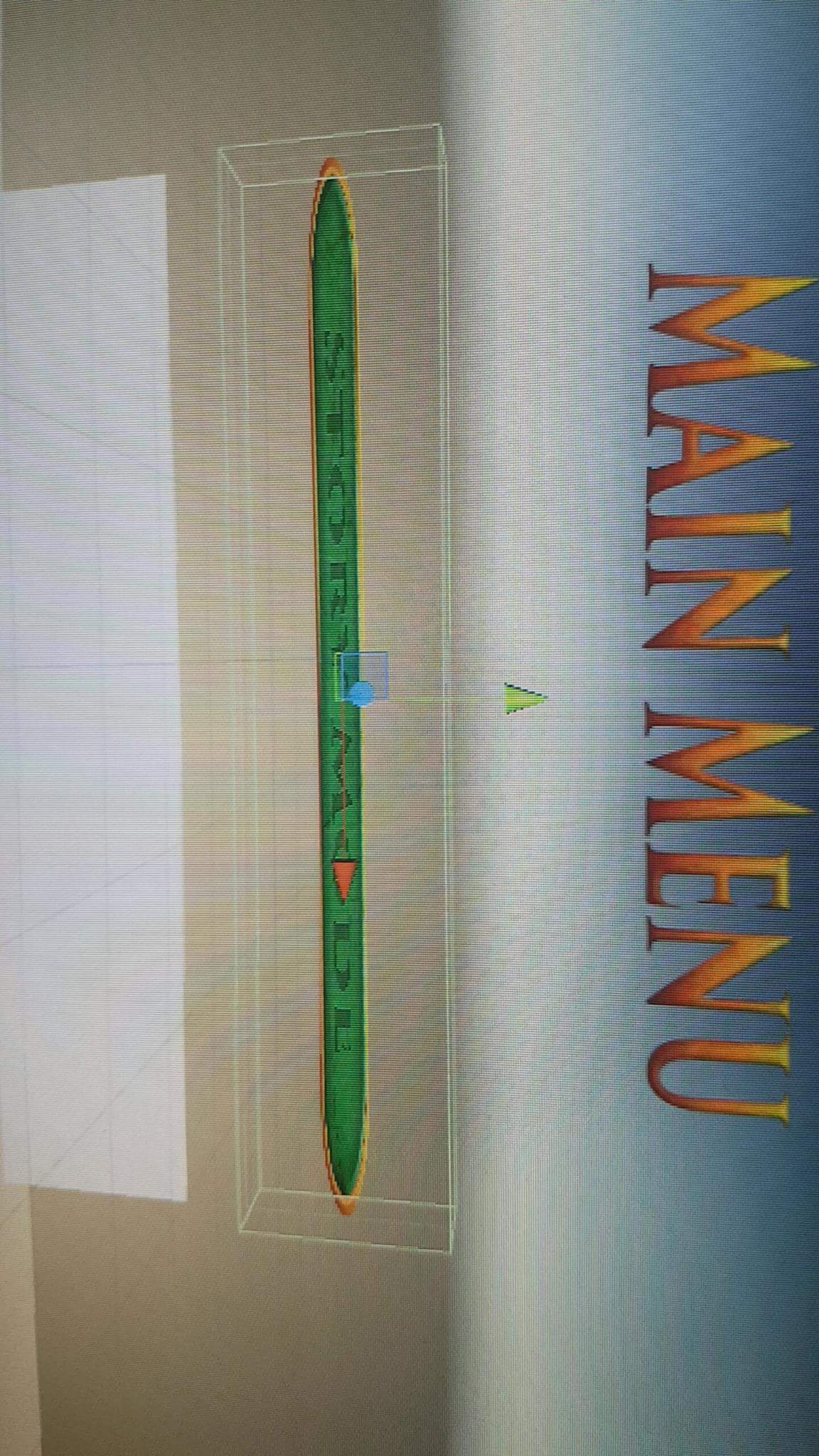
**23/02/2017**

I have caught a cold and cannot work on the project this day. It seems Kieran has been working on the main menu graphics and they are coming along well.

**28/02/2017**

We had another client meeting with Kenny. We talked about our progress towards the prototype. Ruairi has optimised the game, now we can have thousands of particles on screen without any issues. Adam has worked on water lava interactions. I worked on finalising the UI. Kieran has worked on developing a 3d model of the controller. Zak has worked on finalising our character design.

After the meeting, I went home as I still had my cold and wasn’t able to think properly. The rest of the team worked on the particles.

**02/03/2017**

Today I finally got access to Kieran’s main menu button images so I could implement them into the game. During the implementation I noticed that the buttons are not cropped correctly so they will look really squished when added to the game.

Due to this I couldn’t continue working on this part of the UI so I moved on to working on the UI used in the actual game.

Adam has also finalised his water to lava collisions which now work.

I helped Ruairi with his code a bit then finished for the day.

**07/03/2017**

Today I came in to add the cropped buttons to the main menu as Kieran has finally fixed them. Our main menu now looks presentable and it functions rather well so this part of the project is finished until we decide to add more functionality to the project. Kieran has also finished the 3d model of the controller and of a book that we will use as our UI in game.

**08/03/2017**

Today I have fixed a lot of minor bugs, such as some stuff that Adams code had that was unnecessary. I have also worked on the UI a bit more so that the functionality is perfect for the prototype. There was also some bug with the camera rig for VR so I have fixed that. Now our touch based interaction code should work.

**09/03/2017**

Today is the deadline of our project and so we came in early to finalise everything. We merged our code together so we have everything we worked on ready. As I was testing if everything works before sending the prototype away, I noticed that our main menu does not work. You couldn’t interact with it at all, and since our deadline was right here, we had to cut it out from this prototype. The weird thing is that the main menu worked in the actual unity project, but when it was built into an executable it was broken. We have never tested the actual executable before so this was a mistake on our part. Many other bugs appeared but they were not as minor as this.

With the prototype sent away, we can relax for a few days before we start working on this more, however many other deadlines are also approaching so this will be the toughest time of this semester.

Our project manager has also sent us his final draft of the midpoint report and it seemed fine so we authorized him to send it off alongside the prototype. Our project is coming along nicely.

**14/03/2017**

Today we had a team meeting about what we will work on further and what we have achieved so far. We have also prepared for the upcoming client meeting that we had right after the team meeting. This time it was a skype call with Kenny and I have taken notes from this meeting. Kenny couldn’t play our prototype yet as he was very busy. The next things we must do are:

* Backgrounds for scenes
* Playable mission
* Advanced physics
* Controller customisation
* Characters must be added
* UI must be refined

We spent a lot of our time optimising the actual physics engine so now we have to work on the gameplay elements of our game. We also mentioned how the final report will mention a lot more technical data on our engine.

After the client meeting, we had our supervisor meeting. Our supervisor gave us feedback on our midpoint report. It seems that the contents page has some bugs. We did not proofread our report enough. He also advised that we should write our final report while looking at the marking scheme so that marking the report will be easier. We need to have testing in final report. Also make sure the references point to the right stuff.

After this we had a little bit of work time. I helped Ruairi with his background and it seems that the actual background we decided to implement was too big for VR so Ruairi made a new background from scratch. It also has actual interactive clouds that move around so this looks good.

**21/03/2017**

We had a client meeting with Kenny. He still has not played our prototype so we gave up on the idea that he ever will and instead decided that he should just play the final version of the game as that will be much simpler for him. We talked about our progress and how we will work from now on. I must finish the in game Ui and add in the actual 3d models that Kieran has worked on. Ruairi is working on particle interactions and finalising our engine more, while Adam is there to help him. It seems that Kenny is happy with our progress, so we are gaining confidence in finishing this project. However, we also think that we might not be able to add the scenarios that we wanted to.

After the meeting, we spent a few hours working on our individual things. I have decided to add in an Audio slider to our audio options. It was a real pain to actually get it working with VR touch based interactivity but it definitely works. Afterwards I have added the 3d models that Kieran has made, however there are a few problems with them. For example, the scaling is bad, as in the controllers are huge in VR, so I had to make them a tiny bit smaller. Ruairi has added shadows to our clouds in the background. Looks really pretty in my opinion.

**23/03/2017**

Today I came in to work on making the little tip of the controller spin whenever we spawn particles, however I lost all motivation and had a panic attack because of the stress. I was able to calm down by working alongside Ruairi on his new inactive particles system that optimised the game even more. I helped him with the more tedious code as he was a bit tired. We then went on to add the clouds that Zak has given us, however they also were a bit too big so Ruairi made some final touches on the clouds and on the colour of the background so that it now looks like something out of Toy Story. We all really like this development and we decided to keep this background as final.

**24/03/2017**

We never really work on the group project on Fridays, but today was an exception as I was a mess yesterday so I decided to work hard today and finish what I wanted to do yesterday. I have gotten the fork to spin on a model in game. This framework should allow me to easily put it in when the actual controllers appear in game. Ruairi was supposed to come in today but he decided to work at home since he has his personal vive and it’ll be much easier on him to do it that way.

I have also added the 3d model of the book that Kieran has made, it will serve was the base of the in-game UI. After that I put the canvas of the in-game UI onto the book, so that the buttons are on the books pages. It looks really cool.

**27/03/2017**

All my other modules are finished so I have more time to dedicate to finish off the project. Today Kieran has finished the textures for the controllers and the book, so I have applied those to the models already present in our game. Then I have also added the textures for all the buttons for the in-game UI so now they look a lot more professional. We also told Kieran to be ready to make more buttons in case we add more particles.

Unity 5.6 has also come out so we decided to update and use this new version. This caused some issues as now our controllers were simply not appearing. Even the generic models that come with the SteamVR framework were not working. Apparently, Unity 5.6 broke SteamVR controller visibility. Thankfully, many other users of SteamVR have also encountered the same issue and the solution for this was to just add 1 single script to the camera.

I was also allowed to finally update the main level scene, so I added all these new fixes to the controllers and the UI. Our game is close to being what we wanted it to be from start.

**28/03/2017**

Today I helped Ruairi with his code a bit, by looking at some of the mistakes he had. I then tinkered a bit with the scaling of the controllers and the book a bit more since I had the vive to see how it all looks in game. Today was more of a polishing day so the rest of the stuff I did was just tiny changes to make the game better.

**02/04/2017**

More UI work was done today since Kieran has made the images for the new particle buttons we have in game. I supplied the functionality in Unity by adding new buttons to the canvas. Now that our UI is more or less finalised, I now have to wait for Ruairi to let me update the main level scene.

**03/04/2017**

Today I finally fixed the controllers having really weird collisions. The issue was that the new models were mapped incorrectly, so to press a button you had to push the controller really far in to even be able to detect a button. The solution was really simple, I just had to move the actual model a bit in the scene and that seemed to work. I have also rotated the controller so that the actual laser comes out from the tip of the controller rather than the bottom. I also was tasked with cleaning the assets folder from unnecessary stuff so I worked on that for a few minutes.

After the controllers were fixed, I was able to update the main level scene to also include these fixes. Our game is looking more and more finalised. Ruairi has worked a bit on a new method to spawn particles, which is a massive spray that spawns many more particles around the area. This gave me another task of adding UI buttons that will switch between these spawning types.

**06/04/2017**

Today I came in for a few hours to add the textures to the buttons that switch between different spray types. I was also given a new task, create a laser pointer at the end of the actual laser. This laser pointer will help the player know where he is about to spawn the particles. It took a bit of time to get the colour of the laser pointer down as it was really hard to make it super visible in our game that has bright colours everywhere.

Tomorrow is the last day of work before we have to hand it in, so I will be coming in early to finish everything off.

**07/04/2017**

Ruairi told me that he has finished all of his things so it was up to me to finalise the game and build the game into an executable. I set up the vive and started to test everything that we worked on. I have also added a new function to the in-game UI, a current particle display. This will help the player as it shows what particle is being currently used. Then I tested all the buttons to see if they work. They mostly worked, I fixed all the buttons that did not work and then moved on to remove some of the things we definitely did not need anymore, for example the in-game UI functionality in the main menu scene. The user does not need to see the UI in the main menu so I removed it. I then was allowed to build the game by Ruairi and so our game was finished.

Overall I have to say I am happy with what he have accomplished but I believe I could have put way more effort into this project to make the UI super polished and then helped Ruairi and Adam way more.