Project 3 — Final Project

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Project Brainstorm

Expanding on Project 2 but with a different theme?:

1. Creating a new environment — starting from scratch
    a. Either going to use p5.js or phaser.js for the game development

Phaser Project: Build Your First JavaScript Game with the Phaser Library | BUILD 003

Learn to build games in JavaScript with this easy Phaser Project. Mark will take you step-by-step through building a game using HTML, JavaScipt, and the Phas...

https://www.youtube.com/watch?v=P1b1J-QvP5M

2. Completely new concept — Music store where a 3d space is created to be able to interact with the instruments and get a real feel and understanding, as if you were in the actual store.

Final Project Idea

This project started out as a 3D music store concept. I have been playing the guitar since I was 12, and shopping for instruments is not something I ever imagined to be an online experience. There are too many factors that you cannot control in a regular website. The main thing is that you don't know what the instrument sounds like when being played, and that is the issue that I tried to tackle when creating this space. While that was the original plan, it proved to be more difficult than it appeared at the start, that is why the project is currently only a 3D music store that you can navigate and move around. There are no "shopping" elements per se, but there is still a sense of connectivity in the way you can hear the music being produced by other users on the website.

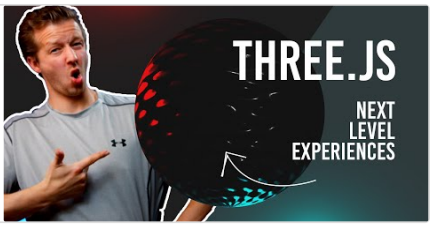
Project Progress

1. Began by working on three.js since that was the part I was most uncomfortable with. I created a three.js test folder and started messing around with it. There were a few tutorials that I found to be quite helpful.

Getting Started with THREE.JS in 2021!

https://bit.ly/3vveoV6 - Become a frontend developer (50% off limited time!)-- Want to learn UI/UX? https://designcourse.com-- Check out Bruno's Three.js Co...

https://www.youtube.com/watch?v=pUgWfqWZWmM



My Room In 3D

Share your videos with friends, family, and the world

https://www.youtube.com/playlist?list=PL5nApUt6Z8sS9XcXJmjgfFOz38DF8acIv

This is a twitch replay of Bruno Simon replicating his room — consists of over 19 videos that approximate to 2 -3 hours each. Useful to see the process of creating something from scratch.

https://s3-us-west-2.amazonaws.com/secure.notion-static.com/18d49787-074d-4a8a-bc3d-ab548113821a/Screen_Recording_2022-05-05_at_12.08.43_PM.mov

2. To experiment, I began with simply creating a cube that would rotate on my screen
3. This was just a way for me to be able to familiarize myself with the main concepts of three js. I was able to understand the fundamental things needed to create a 3d platform.

4. Next, I wanted to see if i could load in a character, so that is what I began working on. The concepts were still the same in the sense of needing a scene, camera, lights, etc... The only thing is I would be dealing with a different sort of file, which is the fbx file. Everything remained somewhat similar to what I had originally created, only this time I had to use a loader method. Based off my understanding, the loader method created a mesh out of my fbx, so that it could be intiliazed on the screen. Using the object, I was able to have it be animated on the screen.
    a. I also used an orbit control library that allowed you to use your mouse to orbit around the character and view it from all angles.
5. My next step is quite similar to the one I discussed previously, the only difference was adding details to my characters. Rather than it simply being a white mesh, I was able to load texture into it.
6. Next, I needed to work on getting the character to move → decided to use a joystick using the toon3d library:
    a. this was extremely complicated because I had to figure out how to move the camera with the character and also how to make the light move with the character.
7. Now came the struggle of figuring out a scene. First I tried using blender, which would have allowed me to create a 3d scene. I tried to follow a timelapse of somebody working on a scene, but after a few hours, I realized it would have been too time consuming to learn yet another thing that I had no prior experience with. I had to be realistic with myself as I had other things to focus on, and learning how to use blender could not be one of them.
    a. That being said, for simply $7, I found that the tutorial I was following had a Patreon page that had all sorts of different 3D scenes, I would highly recommend you check out the link as their work is just amazing! I was able to download the scene (after many many hours of failed recreation attempts), and after making some changes to it, I implemented it into my window the same way I had initially loaded in my character.

Polygon Runway is creating 3D illustrations | Patreon

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https://www.patreon.com/polygonrunway

Guitar Store in Blender 2.9 - 3D Modeling Process | Polygon Runway

Welcome to boutique guitar store. The place, where you come to have a coffee and try the 70's gold top Les Paul without any rush while the rain on the window...

https://www.youtube.com/watch?v=0GfRu3jqR_o

8. Speaking of the character, after some very long consideration, I decided that I would get rid of that idea.
    a. While it was something really cool that I was able to do, I feel like I was getting carried away with all the different features I could add with threejs. After putting some thought into its relevance in my project, I felt like it did not fit the experience I wanted the user to have.
    b. I wanted the focus to be on the music in the scene, and I wanted to the interaction to be through that medium, not with the interaction of other “people” or characters in the shop.
9. After the loading the scene, and being able to rotate and navigate it on the screen, it was time to implement sockets.
10. Since three.js was the concept I was most unfamiliar, I decided that I would dedicate and commit to it more that I did with the sockets. Socket.io was something that I was able to implement the week of the project deadline. There are two main things that I implemented:
    a. Again, going with the simplicity idea in my music space, I simple decided to add a live counter at the top of the screen. This allowed for me to focus on connectivity through audio, but while still keeping the users aware that there are other people experiencing this with them.
    b. Second, To add the musical interactivity aspect of it, I made it so when a user click on the music room, a guitar picking pattern is emitted to the users
11. In order to do that, I needed to create the sounds that I would use:
    a. My plan all along was to record myself playing the guitar and use that as the audio files in my project. I have attached an example of an old audio file I had.

        https://s3-us-west-2.amazonaws.com/secure.notion-static.com/d0719e46-a0e0-471e-a425-d7bc7a4eac50/742C671C-7EE1-4950-9D3D-6BFC2B1EB152.mp3

    b. I tried to record a new sound, but unfortunately the audio quality did not turn out the way I had wanted, and the deadline was coming up and I had other things (explored under the “Problems & Issues” header below), that I needed to focus on. There was too much background noise and I did not have the right equipment to properly record. That is when I decided to look for some sounds on the internet, and I found ones that fit the vision of what I myself wanted to record, so it all worked out in the end.
12. Next, I needed to add interaction to my scene. This took a bit more research but I found this to be a useful resource

   a. Now, it was just a matter of implementing it into my code, while also implementing the sockets that work along side of it. This took some trial and error to figure out, but overall, I did not run into too many issues with it.

13. Once interaction was implemented the website (both on the backend and frontend), I just needed to cycle through the different mp3 files that I had.

   a. I made sure that whenever the music room is clicked, a random audio (out of the 5 files I had) was randomly selected. That was every-time a user clicks, a new sound is emitted, and they may even receive a unique sound from another user.

Problems & Difficulties

1. Overexposed three.js scene — This was the main issue that I had run into.

   a. For some reason, every time I would try to change the lighting's settings, position, intensity, etc... nothing would happen and the scene would just be completely white and overexposed.

   b. The console kept logging an issue with the FBX loader js file that I had loaded, so I had a feeling that was the cause of the issue.

   c. After meeting with my Professor, we found out that the issue came from the file itself → it was an outdated file, and after a few changes to the file, the issue was fixed.

2. Socket.io counter was not updating in real time — This was a silly mistake that I had made.

   a. I had implemented the user counter, but the issue was that the counter would only update once the page was refreshed, which defeated the whole purpose for me. This was because of an error that I made when implementing my sockets.

```
// Mistake
  io.emit("counter", socket.adapter.sids.size)

// How it was corrected
  io.sockets.emit("counter", socket.adapter.sids.size)

// This wau the counter is emitted to all sockets and not just ones who newly join.
```

🎶 There were many other little issue that I ran into when working on the code explained in the “Project Progress” above, but these were the only ones that remained a longer period of time without me being able to figure out the solution. Everything else was figured out within a few hours of starting the code!

Future Changes / Next Steps

1. The way that I load my scene would be different. Instead of exporting the blender file into one fbx files, I would break it down into different scenes and export it as such. This way I would be able to load it onto the screen as different objects.
    a. If I had implemented it that way, I would have been able to implement the features that I I had initially wanted to:
        i. I would have been able to actually turn the music experience into a music store.
        ii. I would have been able to have individual guitar elements → This would then allow me to have:
            1. individual sound from each guitar — The user experience would be more complete that way.
            2. Details & information on each guitar would be able to be displayed on the screen.
            3. I would keep track of people’s interest in specific instruments as well as how many people bought a certain item. That way you could factor other people’s choices into your final decision.
        iii. I would have made it so that a guitar sound would only be emitted to other users once a purchase is made. This way a user can test out the guitar sounds between themselves, without being interrupted by other shoppers. I also would have added some effect around the guitar that was purchased, maybe then another user would show interest in it.
2. I would have cleaned up the aesthetic of the scene a bit more.
    a. Since a lot of my time went to figuring out the three.js code, I had less time to work on the aesthetic of the code, or rather I did not put it that high on my list of priorities.
    b. I would want to add text on the screen that displays some very simple instructions, but not too much as to not take away from the explorative experience of the user.

Conclusion & Final Thoughts

As much as this project was challenging, and at times it felt that there would be no chance of completing it on time, I am glad that I pushed myself out of my comfort zone and did something that I was unfamiliar with. It allowed me to realize what I am capable of, even if I sometimes doubted myself. I am also extremely happy with the way that the project turned out. I do wish that I had been able to execute my project that way I had envisioned

it, but I am still excited about the result nonetheless. All of it were lessons learned, and now I know what to do in the future and what steps I would take to approach things differently.