**Programming Project Report**

Student Name

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**Problem Statement:**

The goal of this programming assignment was to develop a “Minecraft”-like world where you go around the environment and add or delete cubes at your current location. You can move around the environment by pressing f to enter FLY mode and press the xyz keys to move in the negative direction and XYZ to move in the positive directions and you can also press F to be able to move using the WASD keys like a normal computer game. Pressing r allows the user the enter ROTATE mode where you can rotate the entire environment and pressing + will add a block at your current location and pressing – will remove the block at your current location.

**Design:**

Some data structures that I used were classes to be able to store the cubes inside arrays. One thing I did do was I made separate functions to create the player and world cube because I have the variables used to store the XYZ location of the world cube separate from the variables used to store the XYZ location of the player cube. Some pros to this approach was I had no idea how to do it any other way and some of the cons are that I didn’t fully understand it.

**Implementation:**

The source code I used was the hw3.cpp file inside the src folder provided to us. Some changes I made to it was I got rid of a lot of the functions that had to deal with the surface normal and scaling the shapes. I also took the variables used to keep track of the angles and turned them into global variables because I ran into issues when they were private variables inside the class. Development time took the entire two weeks because I had another assignment in my Cloud Computing class at the same time as this.

**Testing:**

Testing was handled by incrementally building on everything, such as first building the world cube, then building the player cube, then getting that player to move, etc. Normal inputs for the program are the f, r, and F keys to change what mode you are in and then the xyz or XYZ keys to move to player or world, and in the case you are in F mode you can use the WASD and z/Z keys to move like a normal computer program. Some things I was not able to implement properly were how to delete the cubes from the environment or how to keep the player inside the bounds.

**Conclusions:**

Overall, I’d say this program was successful. Some things I’d do differently next time is get more help and not try and push this off too much if I can help it. It took me the full two weeks to finish because I had another assignment in my Cloud Computing class.