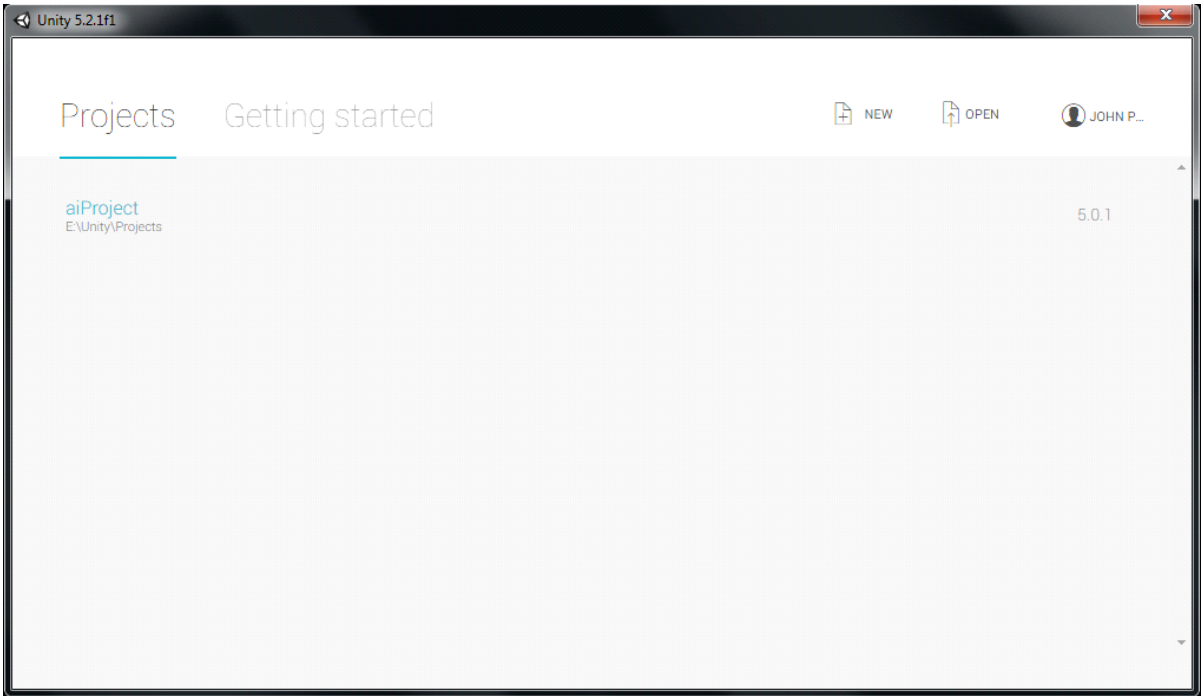
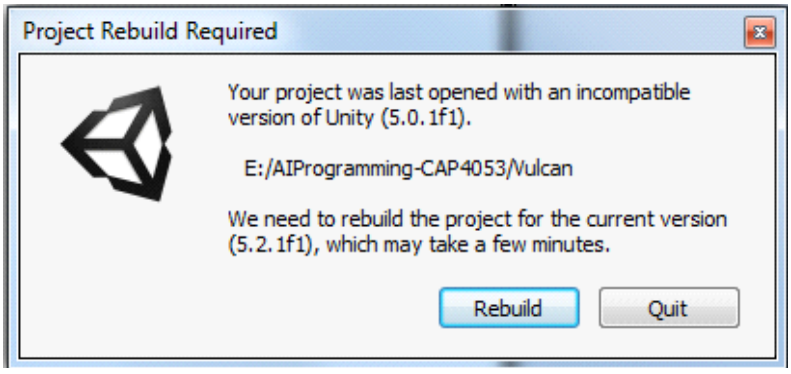
ReadMe:

How to Run the Program:

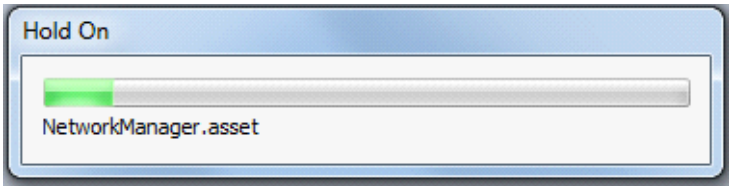
This project is ran using the game engine Unity 5. Setting up can be tricky but this will be a detailed instruction on getting it started and running the program. First and foremost you must be on a computer that has Unity 5 installed on it. Once Unity has been installed take the project folder and put the folder in a significant place you can easily find. Open Unity and it will bring up a screen that looks like the one below



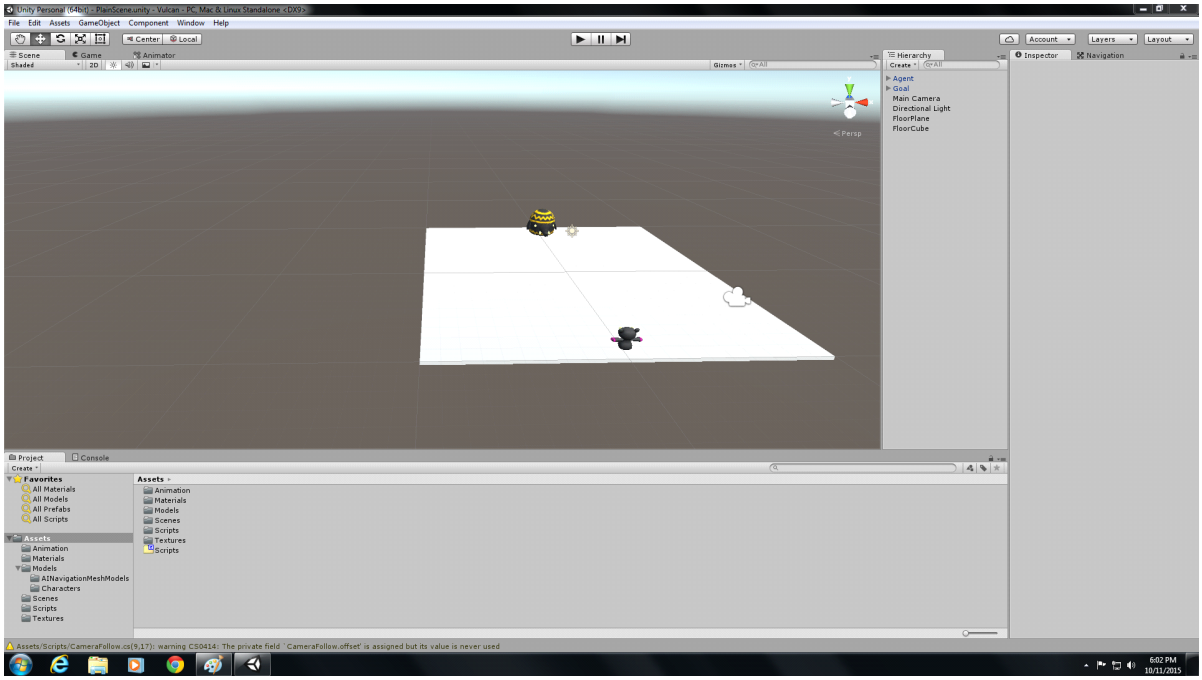
Here you can click the button that says open and find the folder that is holding this project. Most likely unity will have to rebuild the project since the project was made on a different machine. The screen will look like this



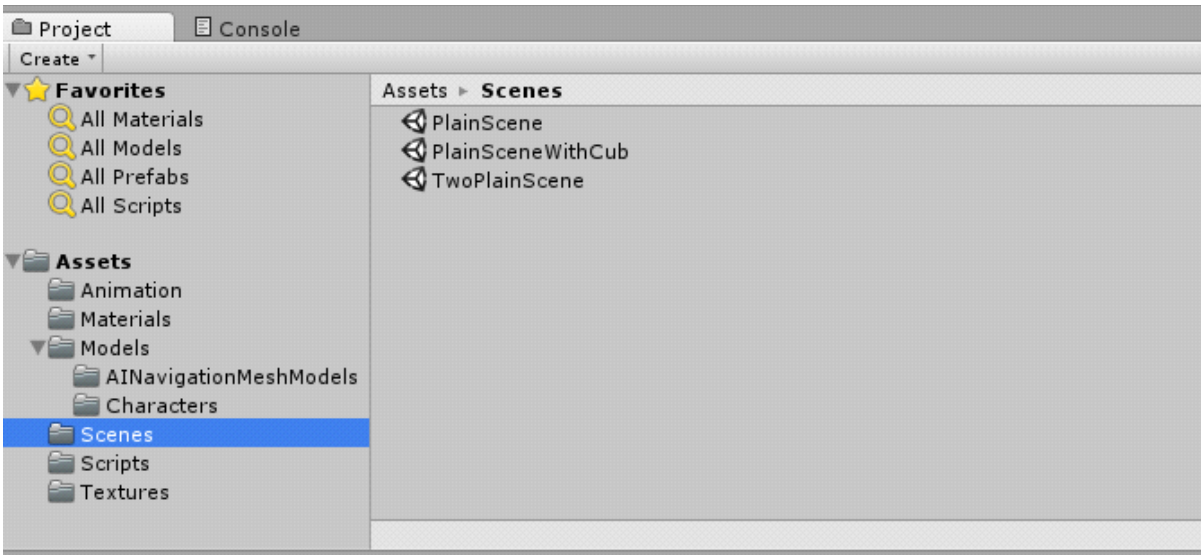
Once this window shows up click Rebuild to allow unity to start rebuilding the project. A screen that says hold on will appear, but do not be alarmed. It will take a couple of minutes at most for the project to rebuild



Once the project has finished rebuilding the unity 5 editor will open up allowing you to choose the scene you would like to run and run the project.

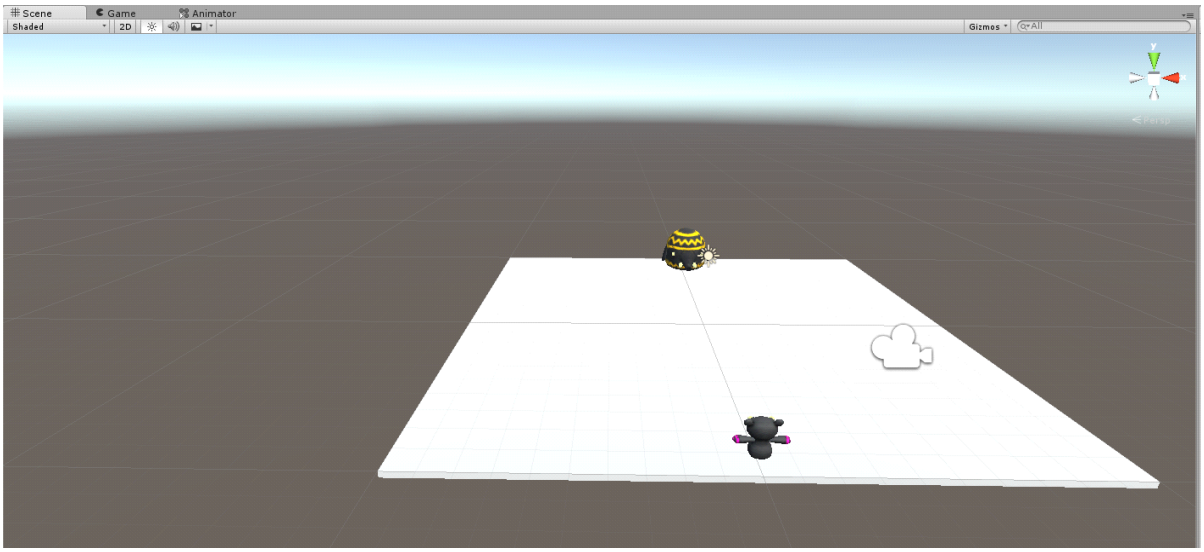


The bottom segment of the screen has a place called Project. The project segment on the side has a folder called “Assets”. This folder if you open it up will have multiple folders. You can open the one called “Scenes” to change the scene you are on. You can double click on a scene name to open it up.

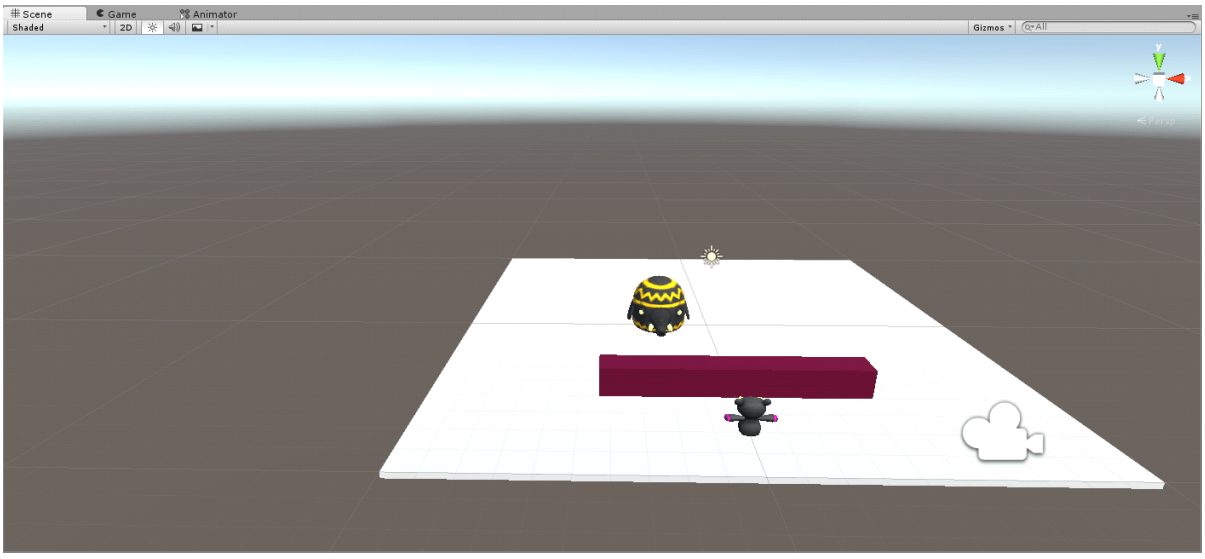


The six scenes included with this project are called “PlainScene”, “PlainSceneWithCube”, “TwoPlainScene”, "PlainScenewithTwoCubes2", "MultiPlaneSceneWithRandomCubes", "MultiPlaneSceneWithCubes". Each one of these has something different about it that shows a different aspect of this prototype. Double click on one of the scenes and it will open in the editor

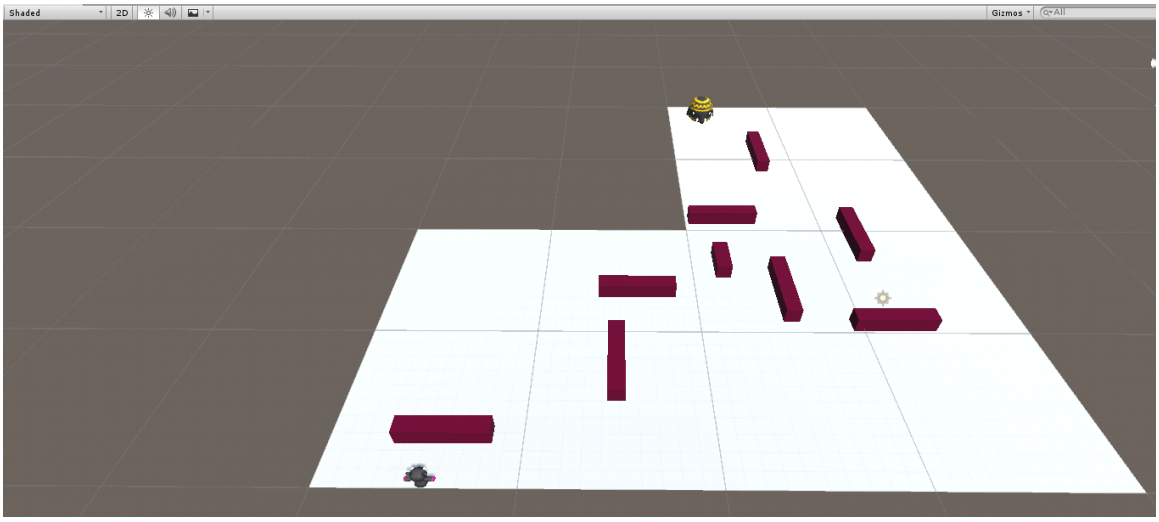
PlainScene



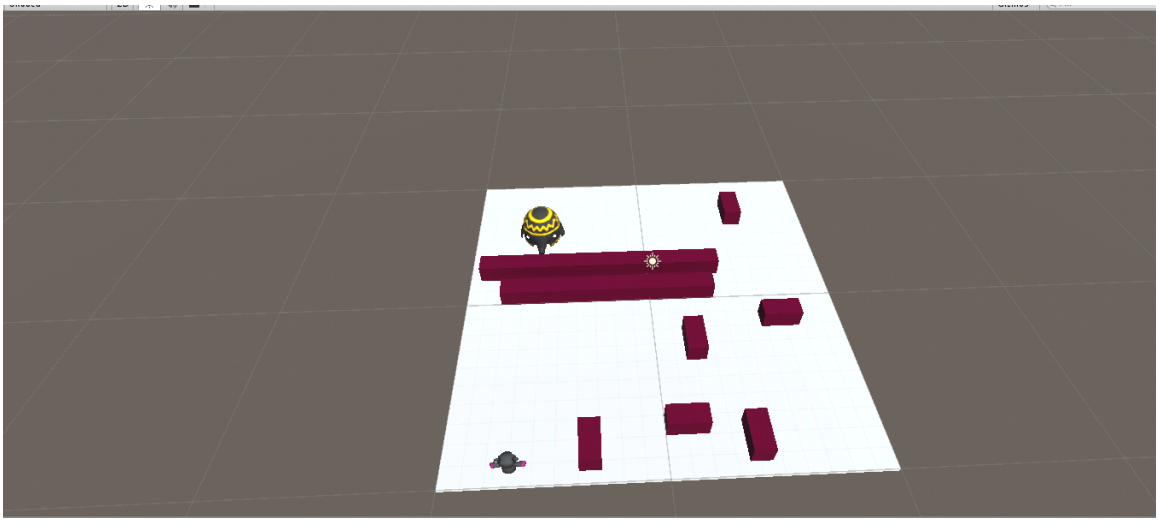
PlainSceneWithCube



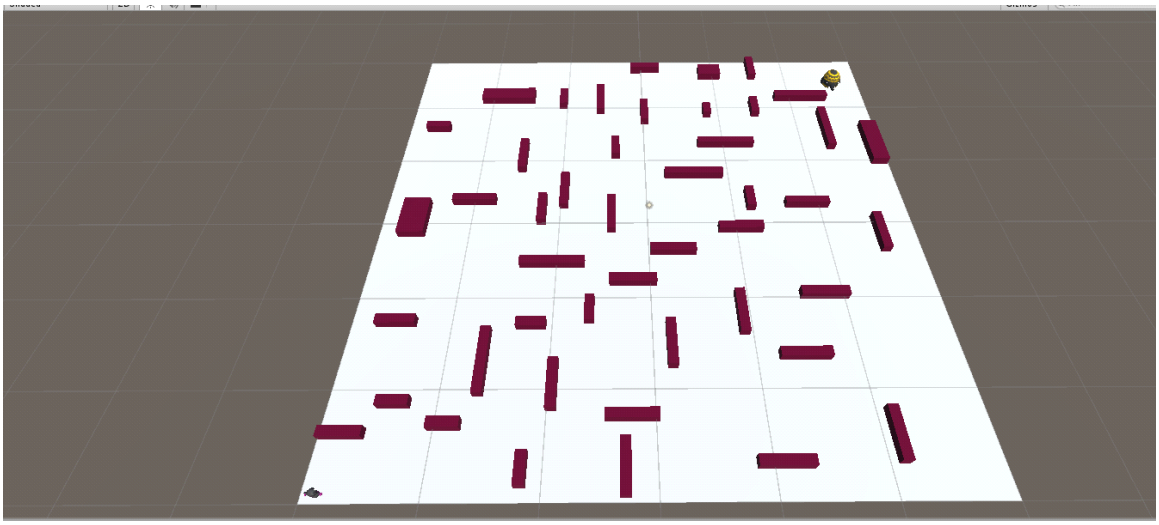
TwoPlainScene



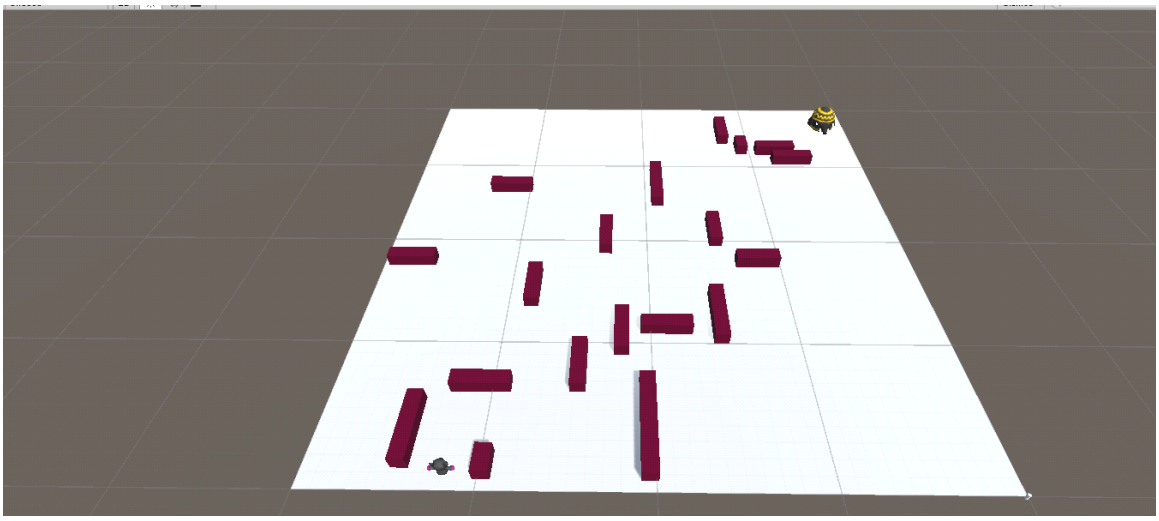
PlainSceneWithtwoCubes2



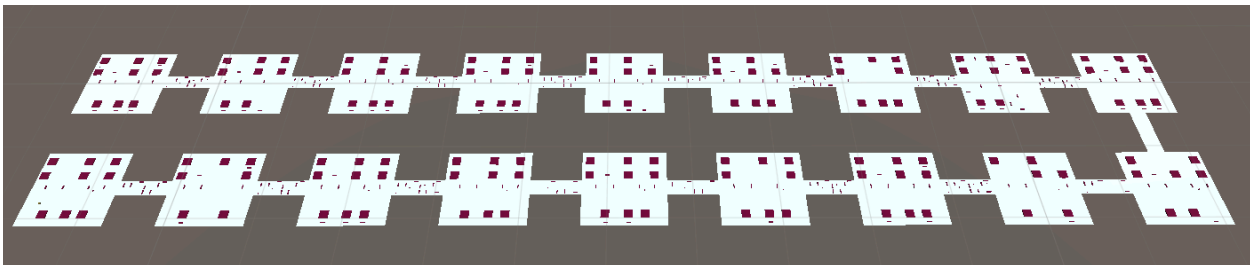
MultiPlaneSceneWithRandomCubes



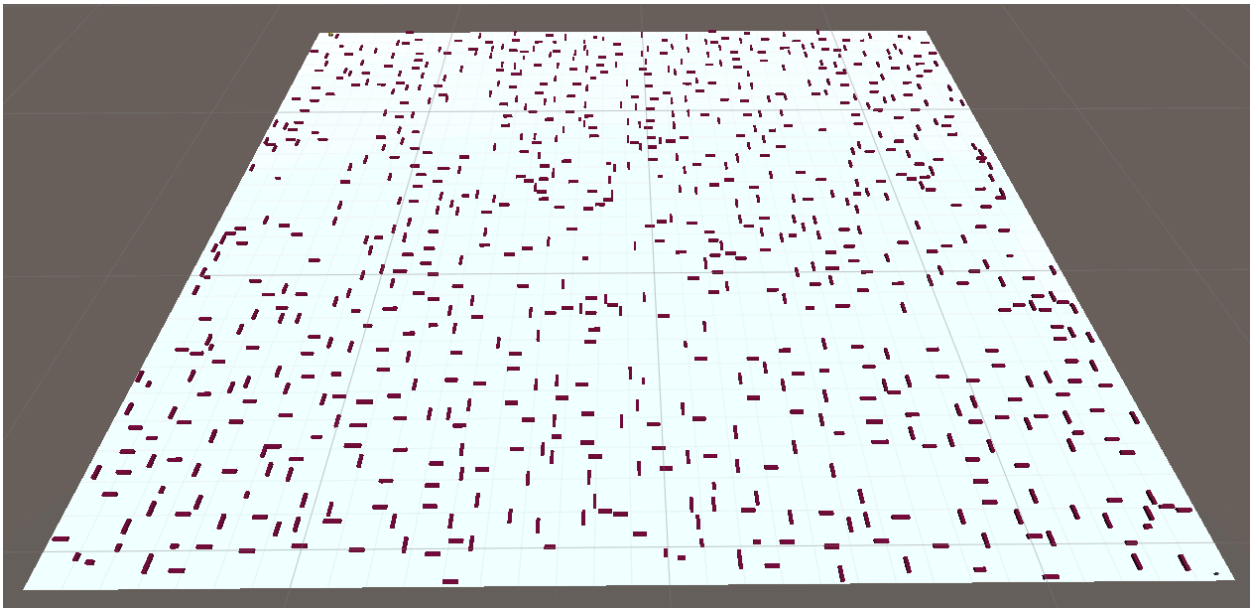
MultiPlaneSceneWithCubes



Xanadu

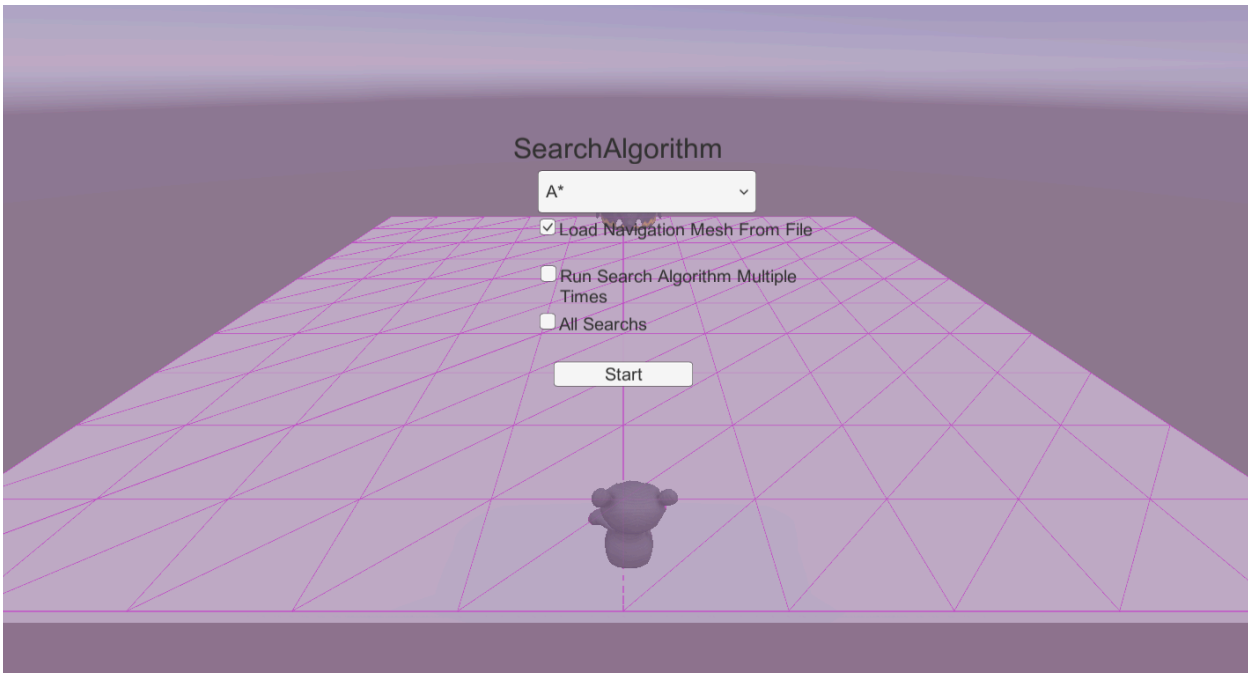


HugePlaneWithRandCubes1

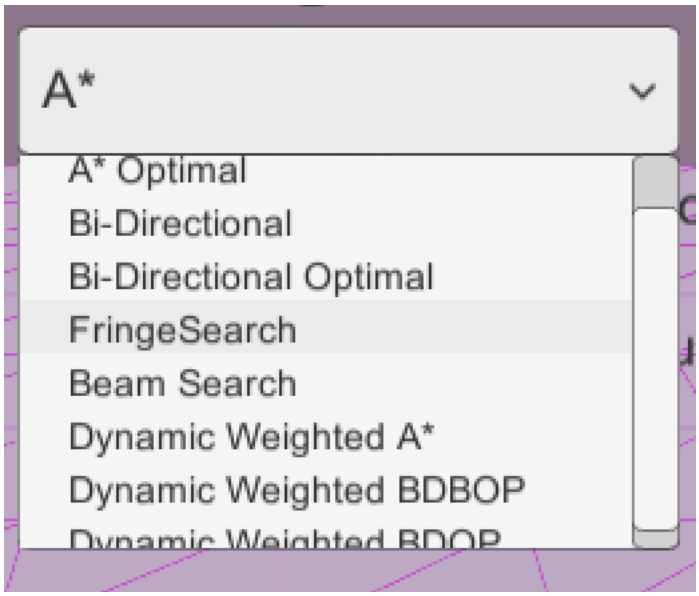


Once you have a scene all you have to do to run the program is press the play button at the top of the editor

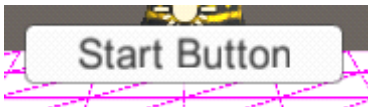
The program will load up and you will see this



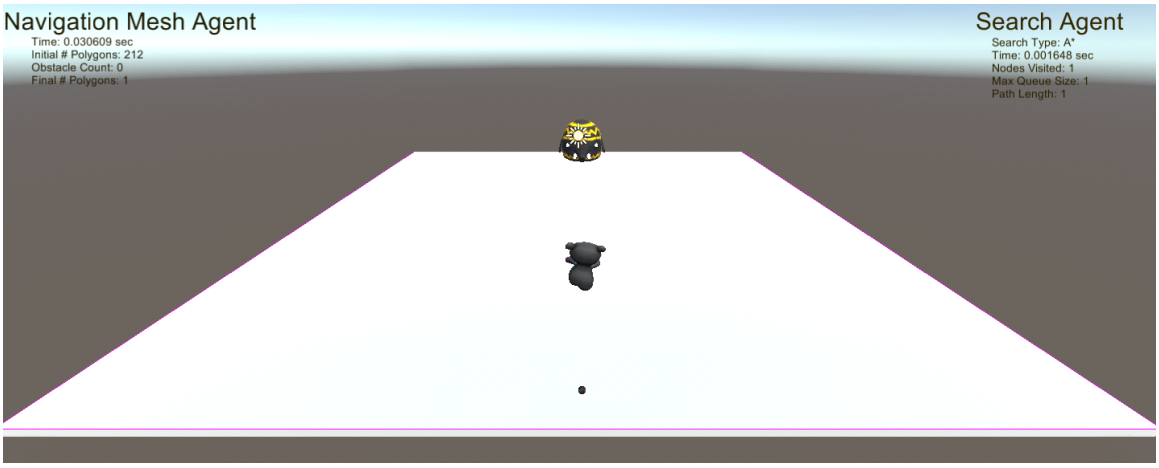
Here you can use the dropdown menu to select which search algorithm you would like to see run.



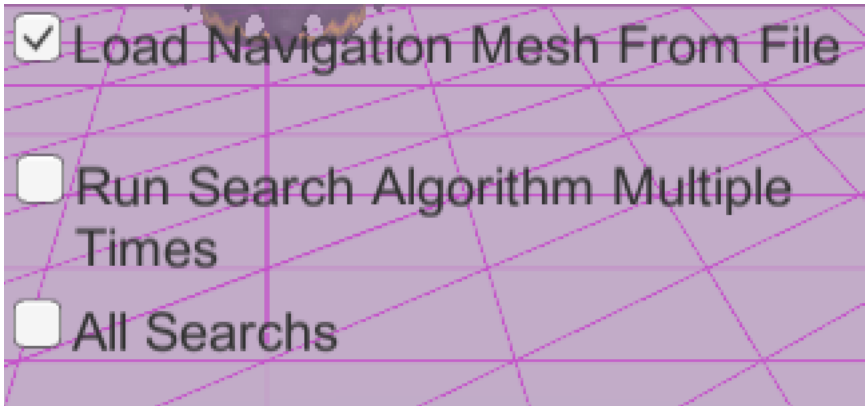
once you click a search algorithm you can click the button that is labeled "Start Button"



This will start running the program on the scene that you have selected. The project running will look like this picture below



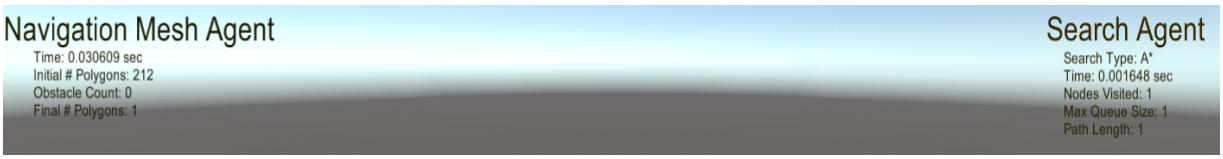
The program also offers more options for how to run the program. The program can load the navigation mesh from a file to speed up the time the program takes. The program can run the selected search algorithm 1000 times before stopping. The program can also run all the algorithms on the environment before stopping. Also any combination of the three. To turn on or off any of these options you can select or unselect the check box next to them.



If you select to run the search algorithm multiple times it will not show the agent moving for each time. This was added to simply get the data needed to compare the algorithms. The all searches check box will also not show the agent moving. It was added to get the data faster for an environment.

In magenta will be the polygons that make up the navigation mesh. The small spheres on the ground will be each way point given to the movement agent from the search. And the other objects in the scene are labeled as below

After scene starts running a navigation mesh will be built. Once the navigation mesh finishes building the search algorithm you chose will start running. After both these things are done the agent will start moving towards the goal. Also the data about the navigation mesh and the search algorithm will show up on the screen like this



This will show you all you need to know about the navigation mesh and the search. Once the movement agent reaches the goal it will play an animation of it falling and dying. The data from the navigation mesh and the search agent will also be sent to a file called “data.txt”. Each entry is separated by a tab so it can be easily transported into a spreadsheet.