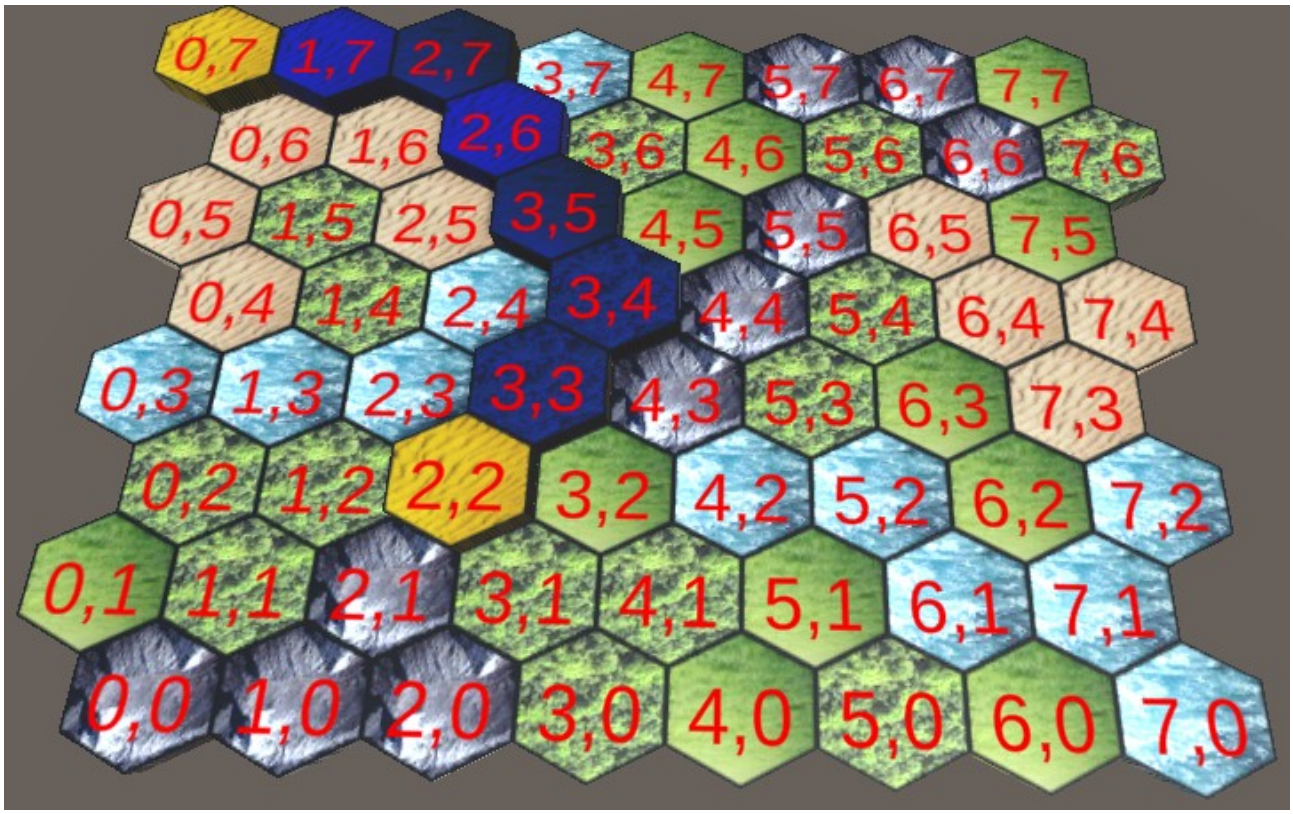
Results



Scripts

Tile.cs – a script which is attached to a hex tile. Contains basic data like X and Z coordinates (yes, I used Z instead of Y), movement cost and different materials for highlighting the path. The Tile class implements IAStarNode interface.

TileMap.cs – a script which builds the tile grid/map and performs a search inside the tile collection.

PathBuilder.cs – builds a shortest path between two points the player has chosen.

How do I build paths?

You can click on any tile that is not water to start experimenting. To pick a start of the path, do a left click on a tile of your choice. To pick a destination tile – do a right click on a tile of your choice. The tile that you hover your mouse over as well as tiles that belong to the start of finish of the path are highlighted with yellow color. All tiles that belong to the path, except first and last tiles of the path, are highlighted with a blue material. All path tiles are elevated so you could see them a bit better. The power of left and right mouse clicks allow you to build and reconfigure the path in

whatever way you want. For ease of debugging and explaining I displayed coordinates (not gameObject.transform.position) of each tile on top of it.

Reflection

That was an interesting and useful assignment as there are a lot of games that have grid-based system and it is essential to be able to work with it. My rough estimate on how long the assignment should take before I started implementing the solution was 8-9 hours. In reality it was way more and I would like to talk a bit about it. Fortunately, the assignment is fully completed from my perspective and please, correct me if I am wrong.

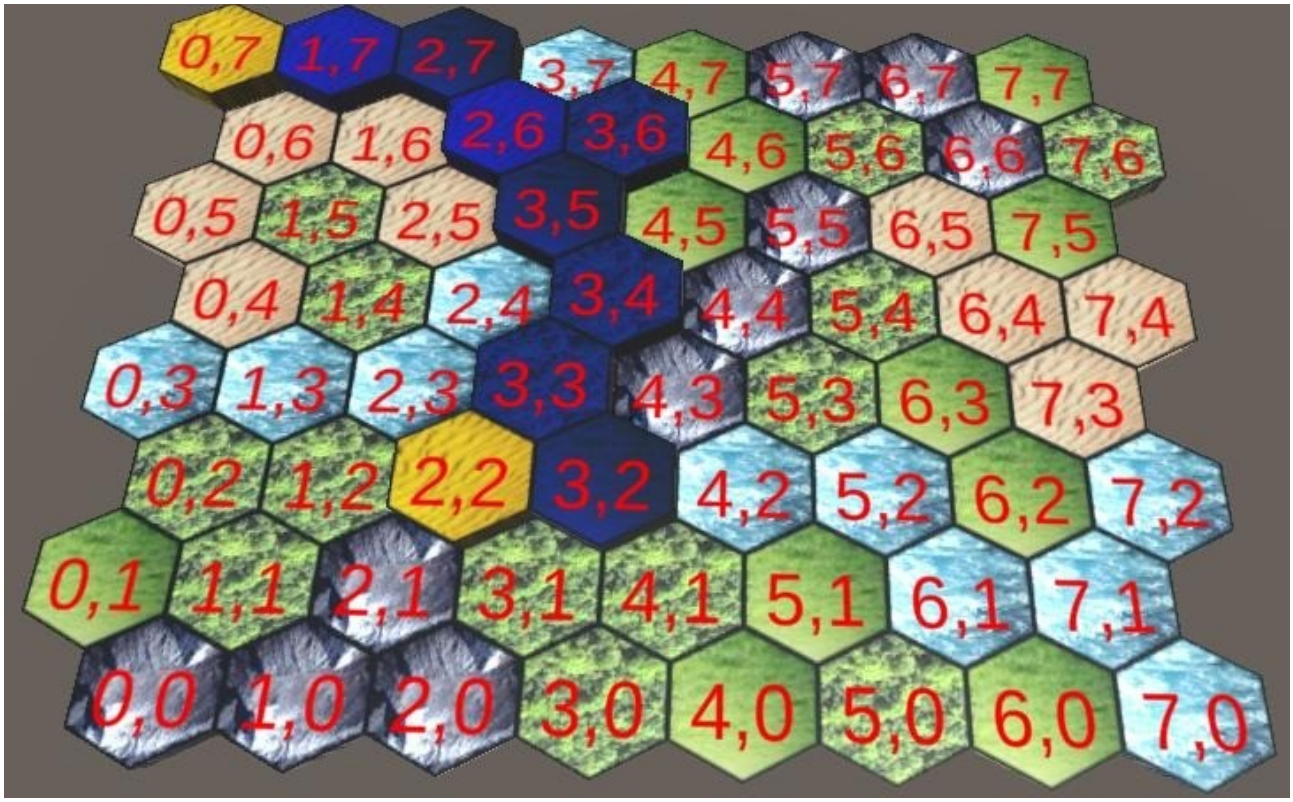
Challenges

VsCode intellisense stopped working

This happened to me before several times and reasons were different. Sometimes it is some library not being installed or unofficial VSCode client had troubles with extensions. This time it was VSCode generating several .sln file for the project and picking the wrong one by default which lead to Unity-related intellisense not working. I figured this out but it also took around 2 hours of my precious time.

Finding correct neighbours for the tile

For various reasons I could not make the path that is being built as short as possible.



First I assumed that the way how I implement EstimatedCostTo method as changes in this method directly impacted path finding results. Overall, the path was correct but with few extra tiles on the way. Then I understood that it could be because I was getting neighbours of the tile incorrectly. On the way of fixing it I noticed one more important thing: every second raw of the tile map is shifted either left or right a bit. The side where the row is shifted directly impacts which tiles are adjacent to which. Finally, when looked at it altogether, the application was able to build the shortest path as I intended to do. These are points that I did not put enough attention into at the beginning which cost me extra time.

Conclusion

The assignment is completed as far as I can see with more time needed than I initially anticipated. Time management skills is something where I need to improve a lot and take the human factor into consideration. I made this document to give you some idea of some processes and mistakes I went through. I hope you appreciate it.