Team FDR: Alpha Report

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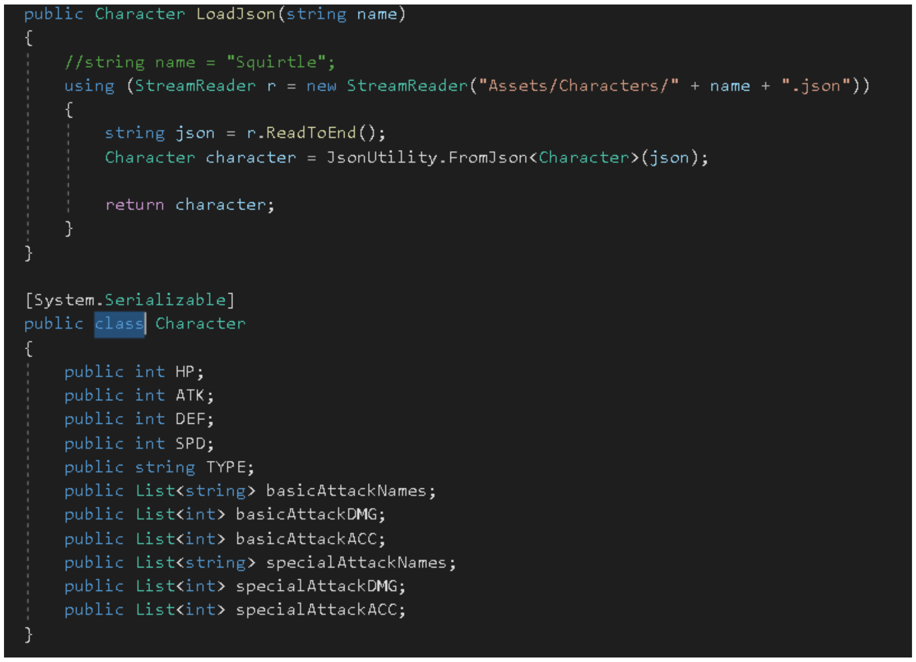
Features Built-Out;

- Stats Plugin: We store the statistics for each playable character in a json file, and using our plugin we are able to read in the statistics and display them in the UI. We utilize the built in json deserializer for Unity for the file parsing.
- Character Selection screen: We implemented a screen where the user can select a character and the statistics and picture of the character is displayed side by side, similar to the character select screen from Super Smash Bros.
- Transition from Character Selection screen to Battle Scene: We implemented a button that transitions the user from the character select screen to the battle scene once they are ready to battle.

Stat Plugin (loads character stats from each respective Json):

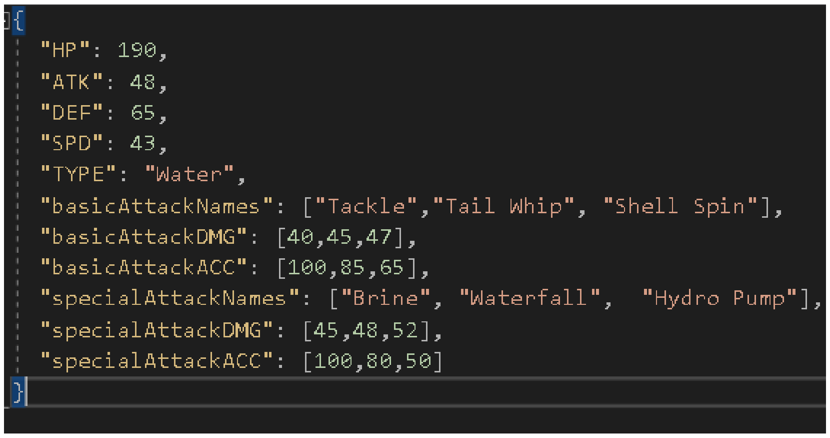


```
public Character LoadJson(string name)
{
    //string name = "Squirtle";
    using (StreamReader r = new StreamReader("Assets/Characters/" + name + ".json"))
    {
        string json = r.ReadToEnd();
        Character character = JsonUtility.FromJson<Character>(json);

        return character;
    }
}

[System.Serializable]
public class Character
{
    public int HP;
    public int ATK;
    public int DEF;
    public int SPD;
    public string TYPE;
    public List<string> basicAttackNames;
    public List<int> basicAttackDMG;
    public List<int> basicAttackACC;
    public List<string> specialAttackNames;
    public List<int> specialAttackDMG;
    public List<int> specialAttackACC;
}
```

Example Json File (we used pokemon as placeholders but plan to create our own characters):



```
{
  "HP": 190,
  "ATK": 48,
  "DEF": 65,
  "SPD": 43,
  "TYPE": "Water",
  "basicAttackNames": ["Tackle","Tail Whip", "Shell Spin"],
  "basicAttackDMG": [40,45,47],
  "basicAttackACC": [100,85,65],
  "specialAttackNames": ["Brine", "Waterfall",  "Hydro Pump"],
  "specialAttackDMG": [45,48,52],
  "specialAttackACC": [100,80,50]
}
```

Features Left to Complete:

- Player battle mechanics: we still need to write the logic for selecting moves from the attack list, applying damage to enemy if the attack hits, and taking damage if the enemy's attack lands (as well as the end condition for both winning/losing)
- Attack animations for both the player and enemy
- Enemy AI decision tree: we have not yet written out the enemy class and the decision tree for the AI to pick the best possible moves given its current state

Division of Labor:
We all did equal amounts of work since we planned out and wrote all the code together in person.

Setbacks:
We had a significant setback with trying to get the plugin to work. At first we tried to build a native plugin using C++, which involved creating DLL files and importing them into our Unity C# files. However, we tried for many days and for some reason we were never able to get Unity to find the entry point for our main function (it seemed to never be exported correctly). Eventually, we decided that trying to get the DLL file to work was not worth it as we were a bit behind schedule at that point, so we scrapped the C++ stats plugin and the DLL file approach and ended up rewriting the stats plugin in C# and using json files, since Unity contained a very useful JsonUtility library.

Demo Link:
https://youtu.be/32j1FD3yd4A