Pokémon Showdown: A Pokémon Battle Simulator

We decided to make a small-scale version of the Pokémon battle simulator Pokémon Showdown for this project. In our version of the game, the Pokémon will only have access to attacking moves since the data files available online did not include any status-inducing or stat-changing moves. Our version of this battle simulator will randomly generate two teams of 6; one for the user and one for the AI. It will not be possible for one team to have more than one of any species of Pokemon. The team will be generated only from the fully-evolved Pokémon of the first generation of Pokémon games (with exceptions for Pikachu and Eevee, and excluding Ditto since it learns no attacking moves). When it generates these Pokémon, it will also give them certain moves; each Pokémon has their own list of moves associated with them. Each move has its own name, type (such as Ground or Fire), power, accuracy, and PP (power points, which is the amount of times the move can be used). Like moves, the Pokémon will also be given a typing, which will be either one or two types (such as Grass or Fire/Flying). The Pokémon are also given their own names, a randomly-generated level from 79 to 89, and various stats (HP, or hit points, which is the Pokémon’s health, attack, defense, and speed). By default, the Pokémon are declared healthy (they are not KO’d, as KO’d Pokémon cannot do anything).

Then the battling will begin. The battle system operates in turns, where the user and AI each make a decision of what to do before a new turn begins. In the game, the user has two options; either attack the AI or swap out into a new Pokémon. You cannot attack and swap in the same turn, you cannot attack if your Pokémon is KO’d (has no more health points), and you cannot swap into a KO’d Pokémon. It is not possible to swap to a Pokémon that is already out (by extension, you cannot choose to swap if you only have one healthy Pokémon left). If the user decides to attack, there are a variety of possible scenarios that could play out. The AI might decide to swap out because it’s in a disadvantageous state in regards to typing, HP comparison, and speed. If this occurs, the AI will swap out first into the Pokémon that has the best advantage against the user’s current Pokémon and the user will hit the AI’s new Pokémon. If the user one-hit KOs the AI’s new Pokémon, the AI has to swap again before a new turn can begin. Otherwise, the AI’s new Pokémon will simply take damage from the user’s hit (which is calculated based off of the effectiveness of the move’s type on the opponent’s typing, the user’s attack and the opponent’s defense, and a random chance at a critical hit). The AI might instead decide to attack the user because it’s in an advantageous state (or it wants to test its luck despite being in a disadvantageous state). If this occurs, the user will hit first if its Pokémon’s speed is higher than the AI’s. If the AI is KO’d, it must swap out before a new turn can begin. If not, it will hit the user back. Otherwise, the AI will simply take damage and then hit the user. If the AI KOs the user, the user is forced to swap out before a new turn can begin. Otherwise, the user will just take some damage. If the user’s Pokémon and the AI’s have the same speed, there is a 50/50 chance for either one to hit first, but if the user’s Pokémon has a lower speed than the AI’s, the AI will attack first. If the user’s Pokémon’s move runs out of PP, they cannot use that move anymore. If all of the moves run out of PP, they can only use Struggle, which will never run out of PP but has recoil damage (will damage the user as well as the AI). The user might decide to swap as their turn because the AI has an advantage. In this case, they will swap before the AI hits them, and if the AI one-hit KOs them, they will have to swap again before a new turn can begin. Otherwise, the user’s new Pokémon will take damage. If both the AI and user decide to swap, they will both swap and a new turn will begin. This continues until either the user KOs all of the AI’s Pokémon or vice versa.

**Nouns:**

Pokémon: object

Moves: object

Teams of 6: variable

User: object

AI: various methods (part of Battle object)

Name: variable

Type: variable

Power: variable

Accuracy: variable

PP: variable

Level: variable

Stats (HP, attack, defense, speed): variables

Healthy: variable

Battle: object

Decision: object

Advantage and disadvantage state (AI): variable

Critical hit: variable

Recoil damage: variable

**Verbs:**

Randomly generate: Pokémon and Battle

Battling: Battle

Attack (user and AI): Battle

Swap (user and AI): Battle

AI decides to swap/attack: Battle

KOs: Battle

Take damage: Pokémon

Hit: Battle

Move runs out of PP: Move

All moves run out of PP: Pokémon