Pokemon - Survival of the Fittest

For this competition, I wanted to go all out. I wanted to make my project something unique, creative and engaging. And then I figured, what better thing that fits this description than Pokemon!

My web application concept simulates the concept of "survival of the fittest" through Pokémon battles, where only the strongest species survive. If you do not know what Pokemon is do not worry, just think of them as animals with traits that make them strong against other Pokemon when fighting and weak against others.

My application simulates an environment that is inhabited by a certain amount of Pokemon, each with their own population. For example, an environment can consist of a population of 3 Bulbasaurs, 4 Squirtles and 7 Charmanders (these are the names of different Pokemon). When the simulation starts, the Pokemon in the environment fight each other. The winner increases their population by 1, and the loser decreases their population by 1. Each Pokemon also has a random chance to increase (reproduce) or decrease (pass away) their population by 1. This means, statistically, the weakest Pokemon will go extinct and the strongest Pokemon will survive.

Each Pokemon has an associated number, called Total Stats, and the more stats a Pokemon has, the stronger it is. However, certain Pokemon are better at fighting certain other Pokemon due to their types! Each Pokemon has associated types, such as fire, water, and grass, and each Pokemon can have a maximum of 2 types. Pokemon with certain types will be strong against Pokemon with other types. For example a water Pokemon is very strong against fire Pokemon. So if an environment has a bunch of strong fire Pokemon but a weak water Pokemon, there is a good chance the water Pokemon will survive!

Let me demonstrate an example. Let's say I make a population with 8 Charmanders, 5 Squirtles and 2 Pikachus. These are some things that can happen in this environment:
- Pikachu and Charmander fight, both similar in strength but Charmander ends up winning, So there is now 9 Charmanders and 1 Pikachu in the environment
- Pikachu and Squirtle fight right after, Pikachu has the electric type which is strong against Squirtle's water type, and results in Pikachu winning. So now the Pikachu population goes up to 2 and Squirtle goes down to 4.
- A Squirtle passes away, decreasing it's population to 3
- The Pikachu's reproduce, increasing their population by 1, for a total of 3

Since Pokemon is a relatively popular franchise, I figured a lot of people will have fun using my application and can produce their own environments and see if their favorite Pokemon can survive!