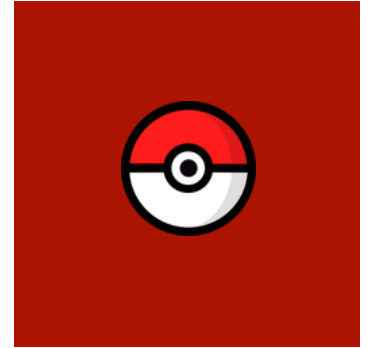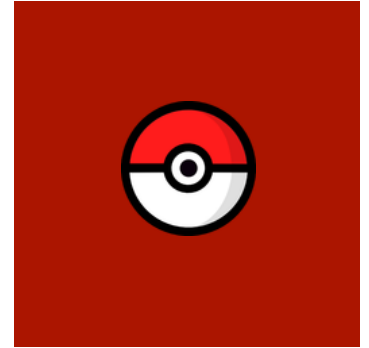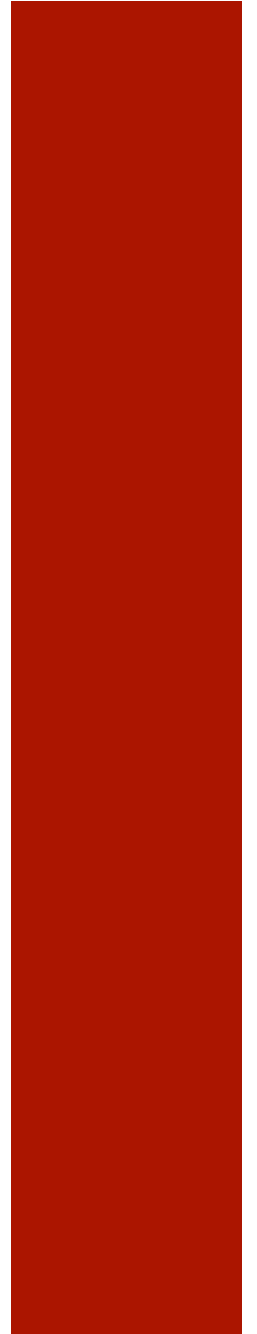# Pokédex+

By: Tanner Smith

Overview

- This is a functioning Pokédex, like any young trainer might have if Pokémon were real.

- Written completely in Java, it takes as user input two valid Pokémon names, prints graphical output comparing their stats, and simulates the outcome of a battle between the two.

- I thought this would be useful to have for any person who continues to play the games. Instead of having to browse the internet, they can simply run this program and get the information they need to win just about any battle.

Algorithm

- Take user input for two Pokémon names.

- Search file and get pertinent information about said Pokémon.

- Print general information about first given Pokémon (i.e. the users chosen Pokémon.)

- Outputs graphical interpretation of given Pokémons' base stats.

- Runs battle simulation between the two given Pokémon.

Implementations

General Console Output

```
Welcome, Pokemon Master!

I may look like just a Pokedex, but I am much more than that.
I do things like find stats, types, and other information...
but I will also simulate a battle for you.
Don't believe me?  Just try for yourself!

Choose your Pokemon!
I CHOOSE YOU... Bulbasaur

Choose it's opponent!
I CHOOSE YOU... Charmander

Bulbasaur is a Grass and Poison type Pokemon.
It utilizes Overgrow as its ability.
```
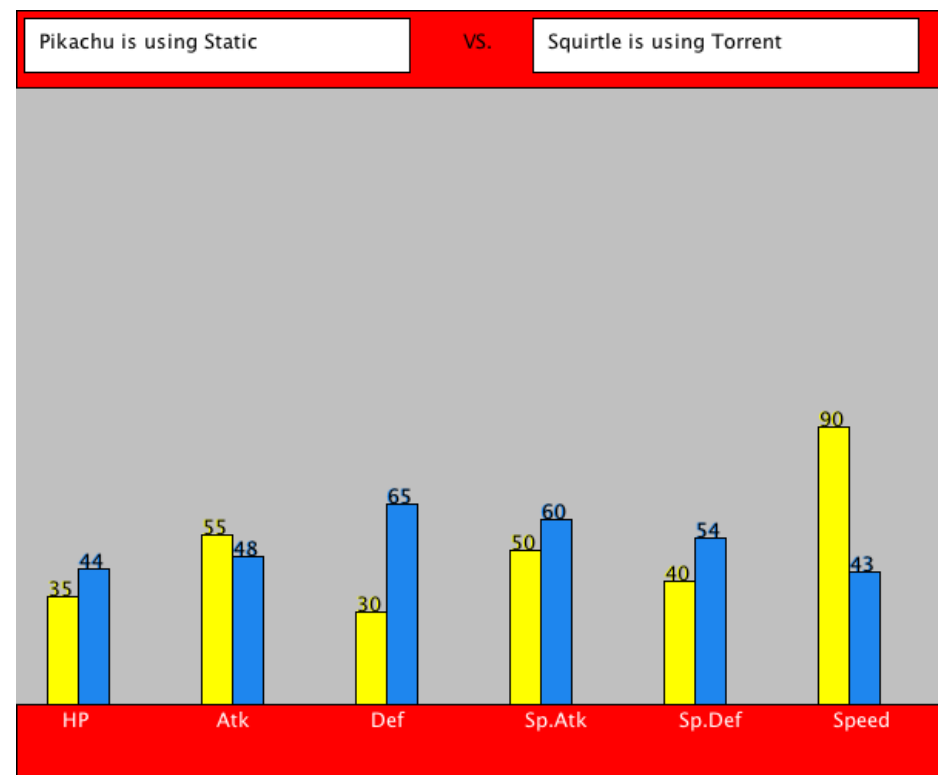
Graphical Output

- Prints name of each Pokémon and their ability.

- Graphs the Pokémon's base stats in the color that is dictated by it's typing.

- Allows for quick comparisons between any two Pokémon, allowing a trainer to decide which Pokémon to raise or use in battle.

Battle Simulator

```
Now...let the Pokemon battle commence!
**Imagine the 8 bit Pokemon battle music now!**

Gengar will strike first! Way to go Gengar!

Physical Attacks:
Using only physical attacks, Gengar will hit for 51 damage points.
Meanwhile, Nidorino will hit for 36 damage points.
Looks like Gengar will win this round! Way to go!

Special Attacks:
Using only special attacks, Gengar will hit for 103 damage points.
Meanwhile, Nidorino will hit for 11 damage points.
Looks like Gengar is a bit more "special"! Hyuh hyuh hyuh hyuh

Gengar won 3 of the three possible categories!
Looks like you chose wisely with Gengar.
Together, you two will be unstoppable!
```
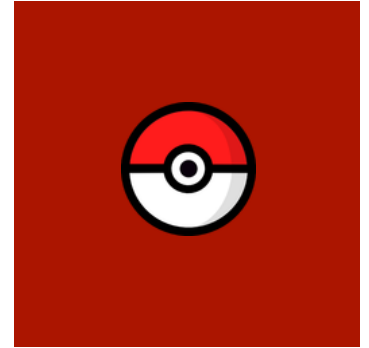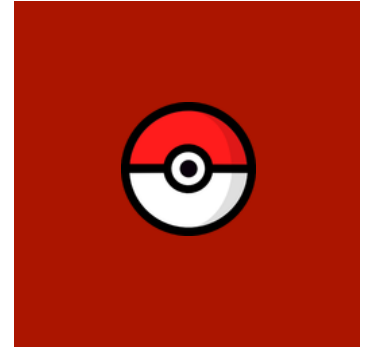
Math behind the Battle Simulator

- The equation used to calculate damage is this:
  - (((((2 * Level / 5 + 2) * AttackStat * AttackPower / DefenseStat) / 50) + 2) * WeaknessOrResistance * Random / 100
  - Random is an integer between 85 and 100.
  - Attack Power is the average of attacking Pokémon's Attack and Special Attack stats.

- Assumption made for this is that all Levels are 50, which changes the first bit to just (22)

- Also, certain types are resistant to others, making the expected damage 0 in some battles.

Example Calculation

- Imagine Mewtwo is going to battle Machamp

- Mewtwo's Special Attack Damage will be:

- (((22 * 154 * 132 / 85) / 50) + 2) * 2.0 * ([85, 100] / 100]

- So, this attack would vary from 182 to 214 damage points, since damage is rounded to the nearest integer.