

Computer Programing Final Project

Coded in Python 3.6.5 using PyGame version 1.9.3
Using Atom 1.23 on LinuxMint 18.2 Cinnamon
Done by Anik Patel - Student ID: 1630206

Mini-Manual

This program is a basic turn-based battle simulator, inspired by the way Pokemon's battle mechanics work. To run the game, you must launch **game.py**. It uses a default window size of 1024x576p.

Once the game has been launched, there is a [music](#) that plays during the battle that comes from YouTube user [Pokeli](#).

After launching, the character assigned to you and the enemy is chosen at random between Charizard, Sceptile and Feraligatr. After the characters are assigned, you can see each character's health bars above their sprites with the specific amount of health remaining in the bars. There is a white bar on the bottom of the window that displays whatever action you and the opponent uses, it displays which move each player uses. There are 3 other bars that are buttons which activates the "Physical", "Special" and "Heal" moves. These detect mouse clicks that are done on them and makes your character use the move you selected.

The enemy's move is based on a random roll.

The win condition is to make the enemy's health reach a value of 0 using your attacks. This will open up a win screen to congratulate you. The lose condition is when your health reaches 0. A loss screen will open up if this state is reached.

Design Document

The background image is just a picture of a generic battle arena that has been resized to fit the window. The sprites are also resized since the default size used in the games are too small for the window my program is using (the GameBoy Advanced uses a 240x160p resolution).

The enemy's move is based on getting a random number, using the python random module, and based on the number that was generated, it chooses a move. If the enemy health is lower than half, there is a higher chance for them to try and heal.

The font used for all the text is the font that is used in both 1st and 2nd generation of games. This file is included in submission.

Character sprites consists of actual Pokemon sprites used in their 3rd Generation games (Pokemon Ruby, Sapphire, Emerald, FireRed and LeafGreen). They were obtained from [here](#), thanks to the community stripping them from the game files. These sprites are flipped in order to face the correct way, if the sprite is facing to the right, it belongs to the player, and if it is facing to the left, it belongs to the enemy.

Damage formula used for attacks was based on the formula used in Pokemon games and has been found by the community of Bulbapedia:

<https://bulbapedia.bulbagarden.net/wiki/Damage>

For this formula, I simplified it a bit by setting base level to 50 (since most Pokemon battles are done at that level) and by setting the power of all moves to 1 (to simplify code). There was also some modification done since without the "Move Power" parameter, the damage would be very minimal, so it was changed to do more damage (so that the game does not take too long to finish).

For the modifiers, there was only 2 of them that were taken into account:

- Accuracy

Adding a random 10% chance of missing every attacking move, because if not, the player would have a big advantage if the enemy is not a stronger type (since speed has not been implemented)

- Type Effectiveness

Implements a basic type effectiveness that is present in Pokemon where if a type is stronger, the attack does double damage(x2) and if a type is weaker than the target, the attack will do half the damage (x1/2). Type effectiveness was only implemented for the special attack.

- Fire beats Grass
- Grass beats Water
- Water beats Fire

Here are the characters that are used with relevant information about them (Speed was not implemented in this iteration of the game). The Physical moves are simple attacks that are not affected with the situation of the game (Only the stats affect the damage). The Special moves have type effectiveness built in. The Healing moves heal for half of your character's current health:

- Charizard - Fire Type

Stats:

- Physical Attack - 84
- Special Attack - 109
- Defense - 82

- Speed - 100

Moves:

- Slash
- Flamethrower
- Roost

- Feraligatr - Water Type

Stats:

- Physical Attack - 105
- Special Attack - 79
- Defense - 92
- Speed - 78

Moves:

- Crunch
- Surf
- Eat Berry (Feraligatr did not have any healing moves in the official games so I added this for balance reasons)

- Sceptile - Grass Type

Stats:

- Physical Attack - 85
- Special Attack - 105
- Defense - 75
- Speed - 120

Moves:

- Dragon Claw
- Energy Ball
- Synthesis