

Assumptions

I defined Type advantage according to <https://bulbapedia.bulbagarden.net/wiki/Type>. A pokemon can have 1 or 2 types. An attacking type has one of four effects on a defending type, as shown in the table. If the defending pokemon has two types, then the damage is the product of the two damage effects. This is deduced from the rules in the webpage. For example, if one is super effective, the other is ineffective, then the damage is normal damage (1*).

effect	damage effect
not specified	1*
ineffective	0.5*
super effective	2*
no effect	0

Favorable type advantage: one pokemon's damage effect is larger than the other. For example, Pokemon A has type $[a1, a2]$, B has type $[b1, b2]$. A has advantage over B if:

$$\max(\text{Effect}(a1, B), \text{Effect}(a2, B)) > \max(\text{Effect}(b1, A), \text{Effect}(b2, A))$$

No type advantage if the two quantities are equal. In this case, output the pokemon with a larger *base_stat*. If the base_stats are the same, output the first input.

Implementation Notes

I used version 1(v1) of the API for type advantage data. When querying a pokemon to get its types, v1's URL is problematic ("More than one resource is found at this URL."), therefore I used v2. This is Ok because the type id's of the two versions are the same.

Testing

The program satisfies all the requirements according to my assumptions.

Case 1: ./program bulbasaur charmander

Testing output

super_effective: 10/ 12/ (type 10 is super effective over type 12)

damage: 1 2 (each damage effect)

stat: 45 65 (each stat)

charmander (this line is the output as required)

Case 2: ./program cloyster magneton

Testing output

ineffective: 15/ 9/

ineffective: 9/ 11/

super_effective: 9/ 15/

super_effective: 13/ 11/

damage: 1 2

stat: 70 70

magneton