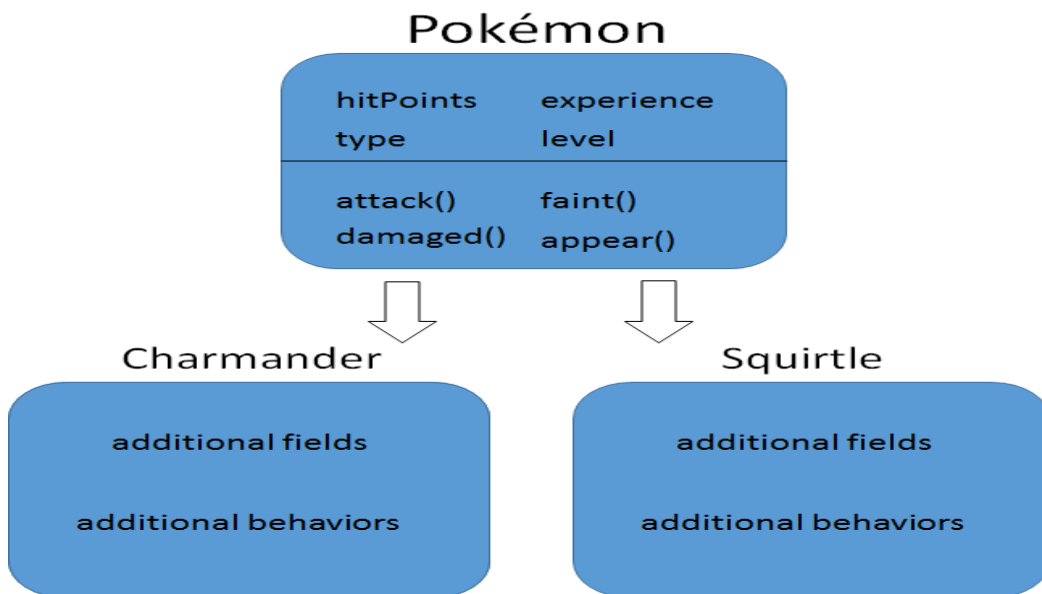


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### Polymorphism

- Dictionary Definition (From Oracle):
  - Subclasses of a class can define their own unique behaviors and yet share some of the same functionality of the parent class.
- Implementation of Inheritance.
  - Two programming structures that utilize polymorphism heavily are classes and interfaces.
  - A subclass can be sent as an argument for a method requiring its super class.
  - The subclass has the fields of the superclass and can be accessed in the same way the superclass's are (directly or getter/setter methods)



- In the above chart, we can see that both Charmander and Squirtle are subclasses of the Pokemon class. When a Pokemon argument is required, either a Charmander object or Squirtle object may be supplied. When a Squirtle or Charmander object is created, all the fields of the Pokemon parent class are supplied along with those specific to the subclass.
- A subclass can access its parent's methods and either override them or keep them. When the method is called from the subclass object, the subclass's version of the method is used. It is worth noting that a subclass can only access or override its parent's non-private methods
- For instance, the default attack for a pokemon might be "tackle". When the Squirtle subclass is created, the attack() method might be overridden to make the

default attack “surf” rather than tackle. When a Squirtle object uses the attack() method, it will use “surf” instead of its parent class’s “tackle”.

- Ex: Two objects are created (Pokemon A and Squirtle B). Squirtle B overrides the default attack in the Pokemon superclass. Instead of “tackle” being used, “surf” will be used. Therefore, whenever the program calls B.attack(), B will use “surf” whereas A will only use “tackle” when it calls A.attack().