Review: Inheritance

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CS151: Computational Thinking: Visual Media

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Is-a relationship

Inheritance works well when the thing that one class models is a thing that a second class models.

- Example: A CS Student (child) is a Colby Student (parent)
- Example: A gas car (child) is a vehicle (parent)
- Example: Earth (child) is a planet (parent)

- The more specific thing is usually the child, the more general thing is usually the parent.
<table>
<thead>
<tr>
<th>Parent class</th>
<th>Child class</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base class</td>
<td>Derived class</td>
</tr>
<tr>
<td>Superclass</td>
<td>Subclass</td>
</tr>
</tbody>
</table>

Pairs of terms tend to go together, but mean the same thing.
Project 9 Overview

• Make 3 more subclasses of Shape. Shapes should be defined by L-system string, distance, angle.

  • Code should be short for each (e.g. just constructor, but could be more if you like).

• Make a more elaborate Tree subclass of Shape (a tree is a shape) to handle L-system stuff (e.g. handle iterations, reading L-system from file).

• Make home scene: scene of your favorite place that isn't Colby. Should use your shape classes and trees. Draw everything using L-system strings.
What is inherited by the child class?

Child class and objects you make out of it get a **copy** of all the **methods** in the parent.

- Method actually stored in the parent class, but the child class and its object have a connection ("arrow") to it.

- Methods defined in child class, but not in parent class, only useable in child class (not parent).

- Example: lecture31_veggie_inherits.py then let's draw the symbol table.
Overriding a method

The child class can **override** any of the methods of the parent (create a method with the same name as method in parent, but have it do different things).

- The overridden method gets called when called on a child object.
- The parent method gets called when called on the parent object.
- Example: define in **both** parent and child.
  - `printGrades(self)` called on `ColbyStudent` prints grades out on 100.
  - `printGrades(self)` called on `CSStudent` prints grades out on 30.
- Example: `lecture_31_veggie_override.py` then let's draw the symbol table.