Inheritance

- Provides a way to extend an existing class by adding more attributes (additional data members) or behaviors (additional function members)

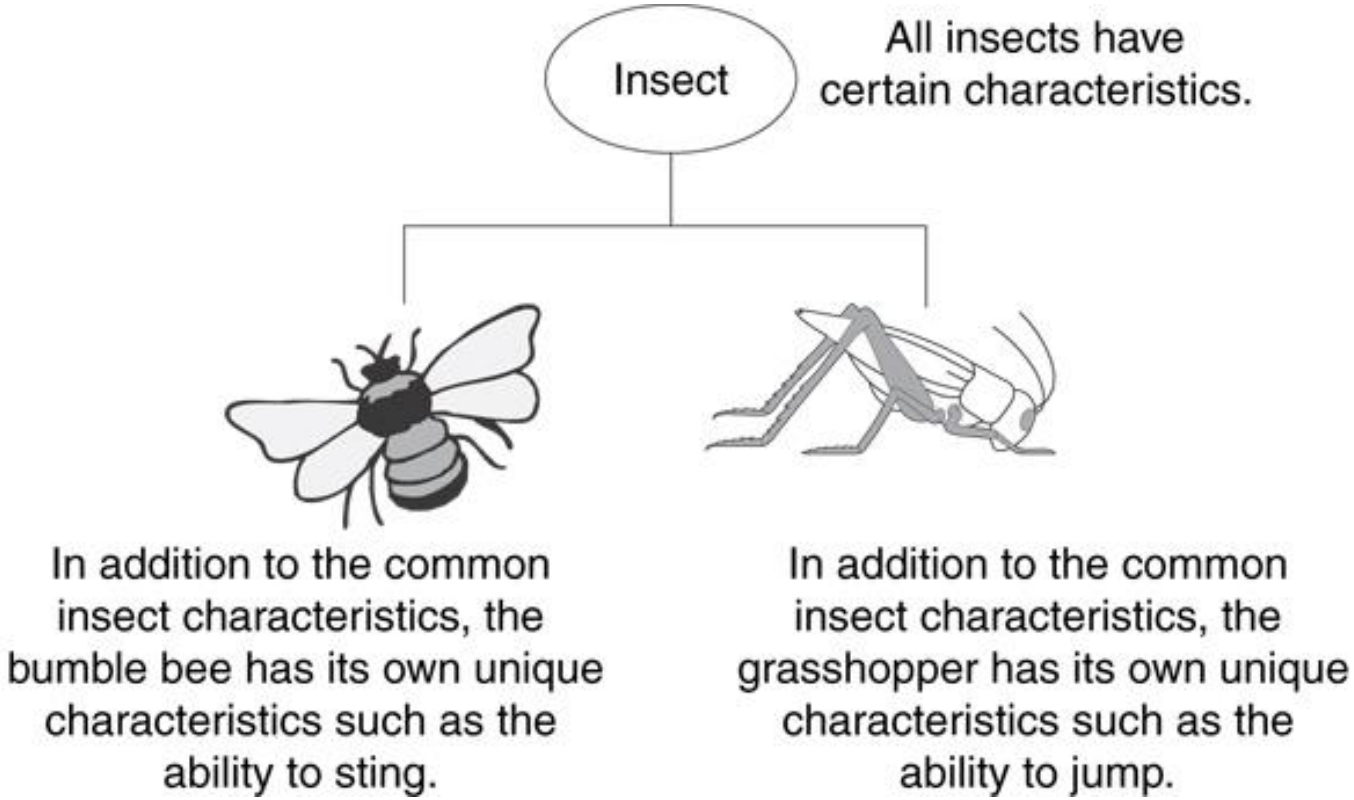
- The new class (having more features) is a specialized version of the existing class

Inheritance – Terminology and Notation

- Base class (or parent) – inherited from
- Derived class (or child) – inherits from the base class
- Notation:

```
class Student                    // base class
{
  . . .
};
class UnderGrad : public Student
{                                // derived class
  . . .
};
```

Inheritance: Insects example



Inheritance: The "is a" Relationship

- Inheritance establishes an "**is a(n)**" relationship between classes.
  - An UnderGrad is a Student
  - A Cat is a Pet
  - A poodle is a dog
  - A car is a vehicle
  - A flower is a plant
  - A football player is an athlete

Inheritance: What Does a Child Have?

An object of the derived class has:

- All members (methods/attributes) definedin parent class

AND some more:

- Additional members defined in child class