

Association Classes

• Association between classes

- Binary relationship

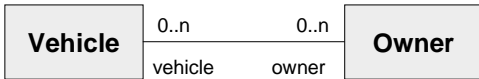
• What if added information?

- Linked to association
- Not an attribute of either class

• Add a class to the relationship

- To hold attributes of relationship

An Example



One vehicle can have a number of owners (simultaneously?).

One owner can own a number of vehicles (simultaneously and/or serially, even more than once for each vehicle).

Ownership often represented by a title document (information distinct from vehicle and owner).

What Do We Do?



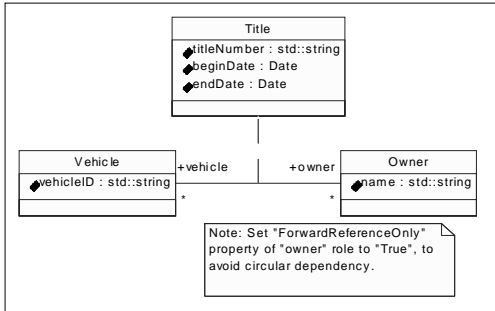
• Problem

- Multiple association instances
- Related information
 - Title number, period of ownership

• Solution

- Create a new object with information
- Link to association between objects

UML Association Class Notation



Typical Implementation (1)

```

class Vehicle
{
public:
  Vehicle();
  ...
private:
  string vehicleID;
  list<Title*> titles;
};

class Owner
{
public:
  Owner();
  ...
private:
  string name;
  list<Title*> titles;
};
  
```

Typical Implementation (2)

```

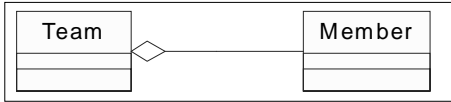
class Title // Association class
{
public:
  Title();
  ...
  const Owner * GetOwner () const;
  void SetOwner (Owner * value);
  ...
private:
  Owner *owner;
  Vehicle *vehicle;
};
  
```

Turn off "const" on GetOwner() return value?

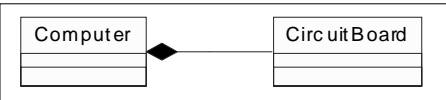
Links to associated objects

Aggregation

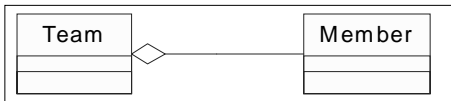
- Characteristic of an association role
- Indicates “whole-part” relationship



Types of Aggregation



Composite (containment by value?)



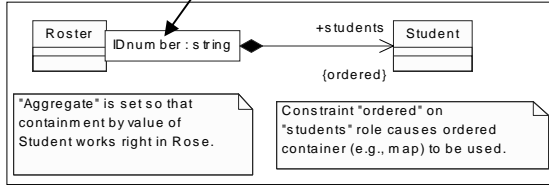
Shared (containment by reference?)

Qualified Associations

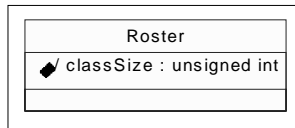
- Association
 - Client - user of associated object
 - Supplier - associated object used
- What if multiple suppliers?
 - Association cardinality > 1
 - Can we tell the associated objects (suppliers) apart?
 - Perhaps by a qualifying value?

UML Qualified Association

Qualifying value selects (one?) object.



Derived Attributes



Name preceded by slash ("/")
 Indicates value derived when needed,
 not stored.
 Set "derived" checkbox in Rose.

Derived Attribute Notes (Rose)

- **Still generates data member**
 - Turn off "GenerateDataMember"?
- **Also accessor/mutator**
 - Even if data member disabled
 - Turn them off as well?
 - Watch out: "preserve=no" in body
 - Manually create accessor? [mutator??]
 - Calculates value as needed
