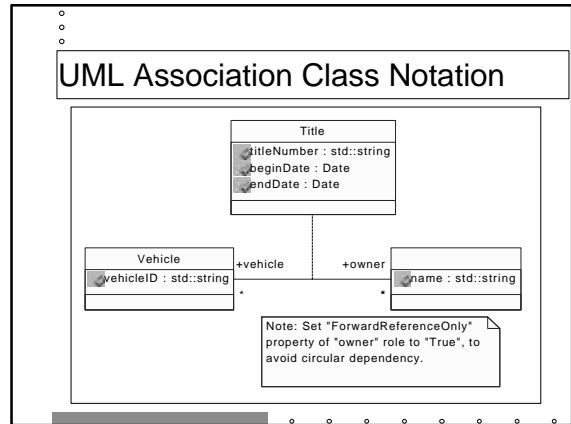


Association Classes

- **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).

```

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

private:
    string vehicleID;
    list<Title*> titles;
};
    
```

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

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**

UML Qualified Association

Qualifying value selects (one?) object.

Types of Aggregation

Composite (containment by value?)

Shared (containment by reference?)

Derived Attributes

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

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?

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