

# 6.170 Assignment 2: Object Models

Dina Betser

February 27, 2012

## 1 Background

1. Entity Relationship Model  
ER modeling is used to describe the type of information that is to be stored in a database. Objects are represented as “entities”.
2. Object Modeling Technique  
This was developed as a method to develop object-oriented systems and to support OOP. Objects and their relationships are expressed using multiplicities.
3. Software Analysis Patterns  
This modeling technique aims to represent ideas that have been useful in one practical context and will probably be useful in others.
4. Unified Modeling Language  
The most sophisticated of the languages listed, UML is a standard modeling language that has a lot of the same characteristics as the object modeling notation used in this class, including inheritance.

One feature that is present in all modeling formats except for ER modeling is inheritance/generalization.

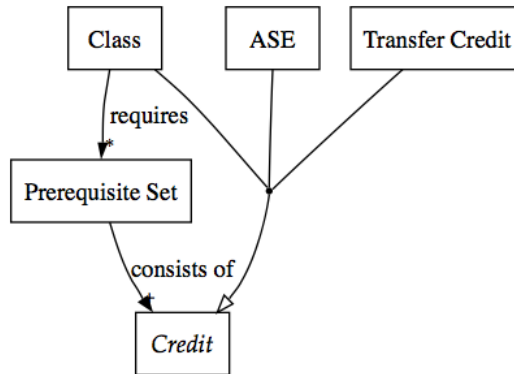
## 2 Conceptual modeling problems

- Prerequisites. Model the relationships between classes and their prerequisites. Note that there may be different ways in which the prerequisites of a class can be satisfied; for example, two prerequisite classes may be interchangeable.
  1. Ambiguities Resolved  
The fact that multiple combinations of prerequisites can satisfy the prerequisites of a given class was disambiguated by
  2. Complexities Ignored  
Assumed that

### 3. Designations

A **Credit** is defined as some form of knowledge that satisfies a given prerequisite. This could be in the form of transfer credit from another school, a

### 4. Object Model



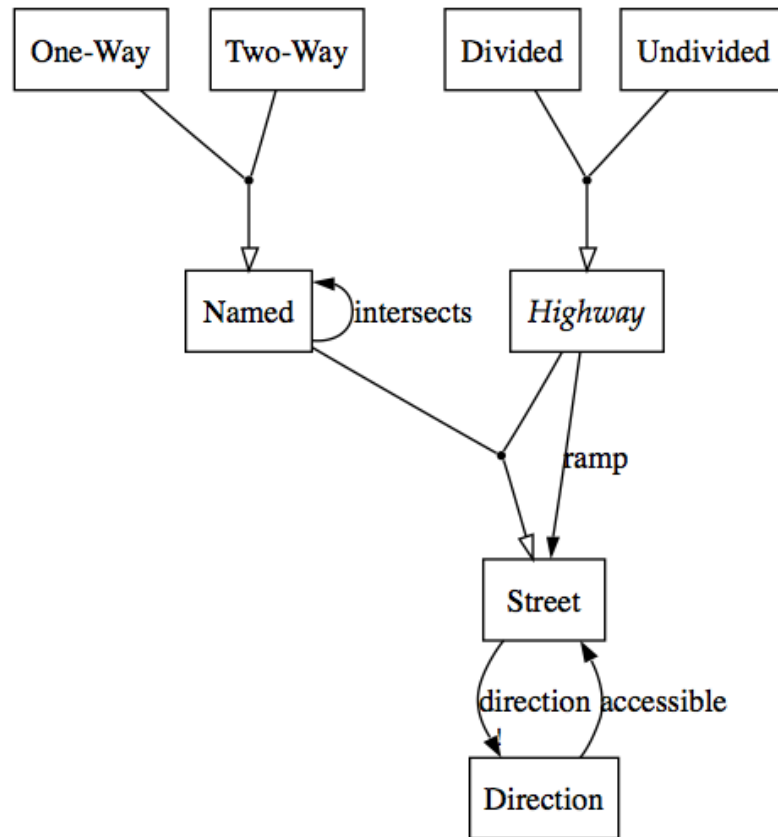
- Street map. Model a street map that includes named streets and their intersections, and the notion of one-way streets and divided highways. Note in particular that one street may be accessible from an intersecting street only for traffic moving in a particular direction.

### 1. Ambiguities Resolved

### 2. Complexities Ignored

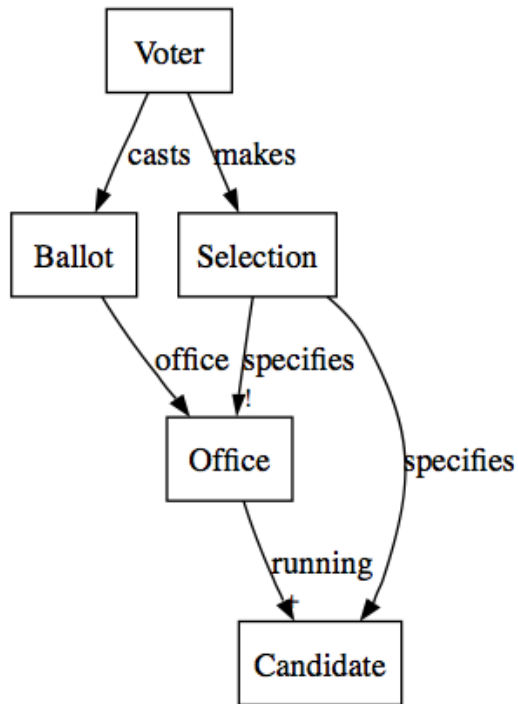
### 3. Designations

### 4. Object Model



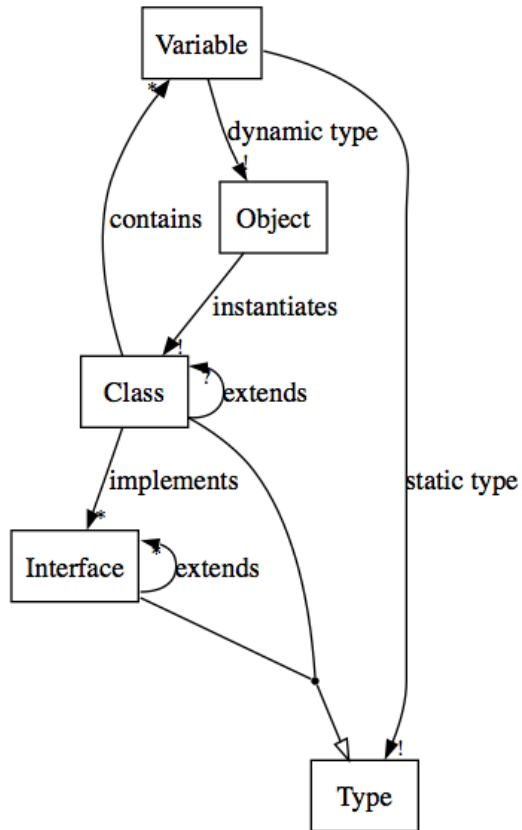
- Voting ballots. Model the ballots cast in a voting scheme, in which on each ballot the voter makes choices of candidates for a variety of offices.

1. Ambiguities Resolved
2. Complexities Ignored
3. Designations
4. Object Model



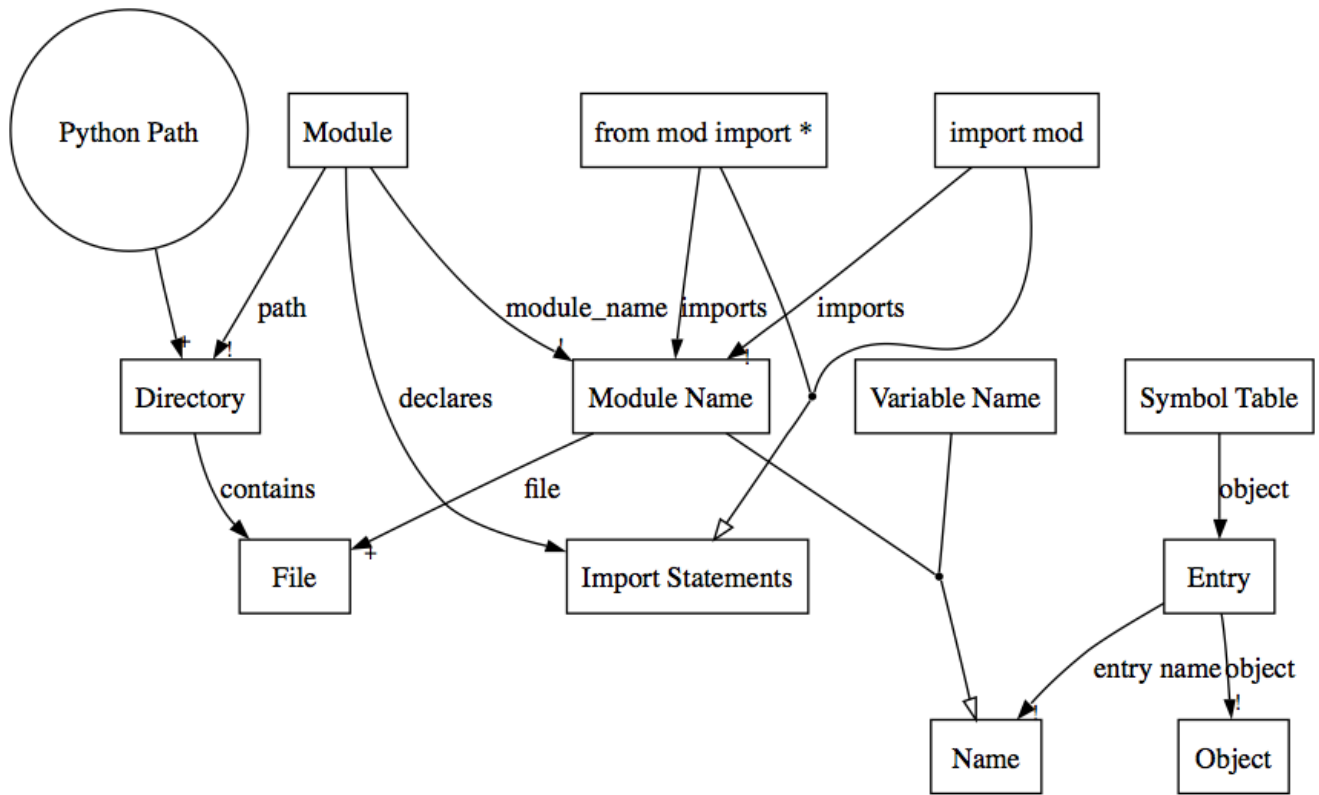
- Java types. Model the type structure of objects in a Java program, in which there are two kinds of types, class types and interfaces, related by implements and extends. Include in your model a notion of variables, each with a declared type and containing an object of a given type. What is the relationship between the two types?

1. Ambiguities Resolved
2. Complexities Ignored
3. Designations
4. Object Model



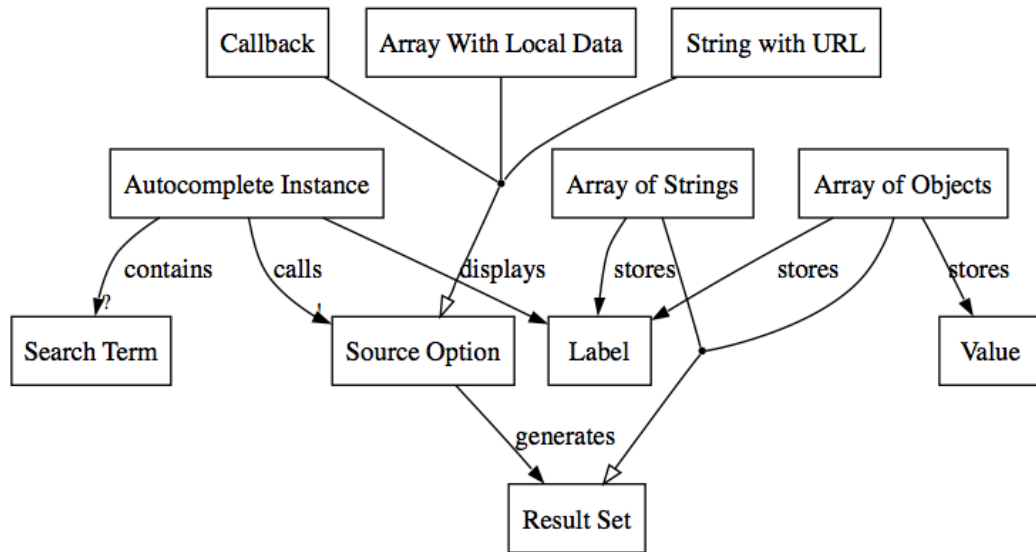
### 3 Modeling Python Modules

1. Ambiguities Resolved
2. Complexities Ignored
3. Designations
4. Object Model



## 4 Extracting an OM from an API

1. Ambiguities Resolved
2. Complexities Ignored
3. Designations
4. Object Model



## 5 Metamodeling

### 1. Ambiguities Resolved

It was ambiguous whether the “disjoint set” relationship referred to the parent-child subset relationship, or among children in a parent-child subset relationship. I chose to assume the latter, so Sets are described as disjoint with respect to other sets.

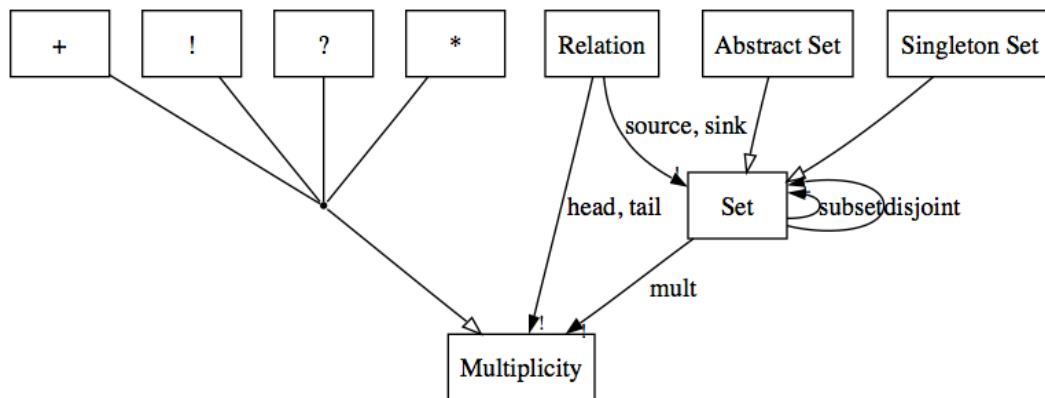
### 2. Complexities Ignored

In the modified version of the metamodeling object model, I’ve created a “disjoint set”

### 3. Designations

### 4. Object Models

Part 1:



Part 2:

