The Steps of OOAD - Part 1

- identify objects
- identify structures
  - generalisation - specialisation ("IS-A")
  - whole - parts ("PART-OF")
  - association (relationship)
- define attributes
  --> complete Static Object Diagram
  --> incomplete Object Dictionary

OOAD - Association

- provides free mapping between objects
- complements the two predefined structural types
- forms a network of objects by using binary relationship types
- cannot carry attributes
- supports access to partner-object (via "foreign key")

OOAD - Attributes

- exist only as elements of an object
- attributes model
  - the data portion of the object
  - state information
  - foreign keys (implement association)
- no separate graphical representation (part of the object symbol)
- specified in the object dictionary

Manages which department? Follow association. Since when? Attribute of manager.
Scope of Attributes

- the data capsule principle
  - attributes are local to each object
  - attributes are global to all services in the object

An Attribute's "Life-Cycle"

- During analysis and design we specify the attribute's type and constraints.
- The initial value of an attribute is assigned during the creation of an object instance.
- Attribute values can be manipulated only by the object's local services.
- Attributes keep their value until the object instance is explicitly deleted.

Attributes and Inheritance

- are inherited in a classification hierarchy
- inheritance is mandatory
- multiple inheritance is possible

==> position attributes as high in the classification hierarchy as possible

Attributes in the Object Dictionary

- specify for each attribute (= data dictionary)
  - name
  - informal description
  - purpose
  - range of values
  - related data items
  - formal data structure specification (e.g. BNF)
The OBJECT DICTIONARY

OBJECT SPECIFICATION object-name
STRUCTURES ...
EXTERNAL INPUTS / OUTPUTS ...
ATTRIBUTES ...
STATE-DIAGRAM ...
SERVICES ...
END SPECIFICATION.

OBJECT SPECIFICATION manager <analysis>
STRUCTURES
  manager is-a employee
  manager manages (1,1) departments
EXTERNAL INPUTS / OUTPUTS ...
ATTRIBUTES
  experience = # of years in mgmt
  courses = list of relevant seminars, etc.
  appointed date
STATE-DIAGRAM ...
SERVICES ...
END SPECIFICATION.

End of Section 11c

coming up:
more about
OOAD