UML Diagrams

Thursday, October 7, 2021 9:53 AM

Lec6_UML diagrams

Object Oriented Programming:
UML
Modeling with Classes

UML diagrams

Use case diagrams

- Describe user tasks and points of contact with the system

Class diagrams

- describe classes and their relationships

Sequence diagrams

- show the behaviour of systems as interactions between objects

State diagrams and activity diagrams

- show how systems behave internally

Component and deployment diagrams

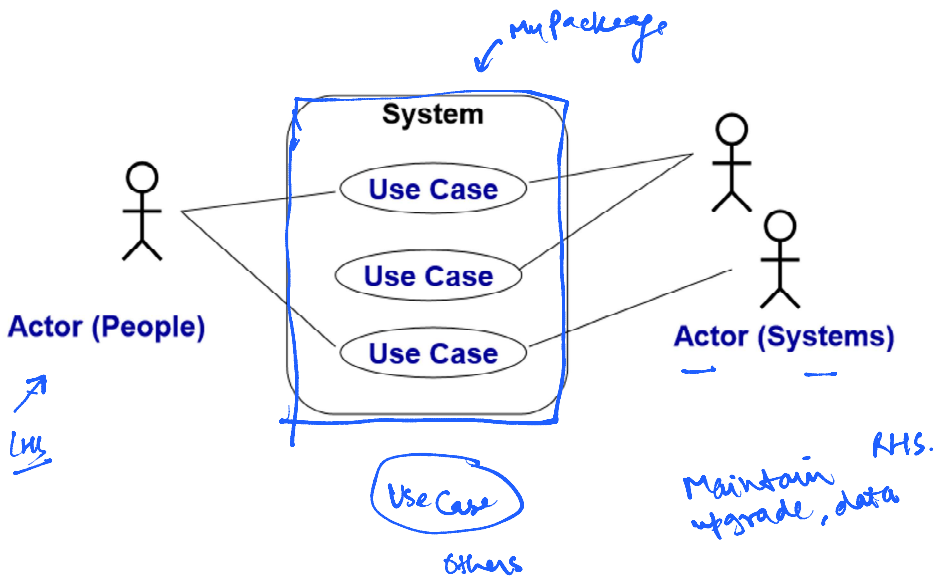
- "big picture" of how the components of a system are related

- "big picture" of how the components of a system are related

Usecase diagram

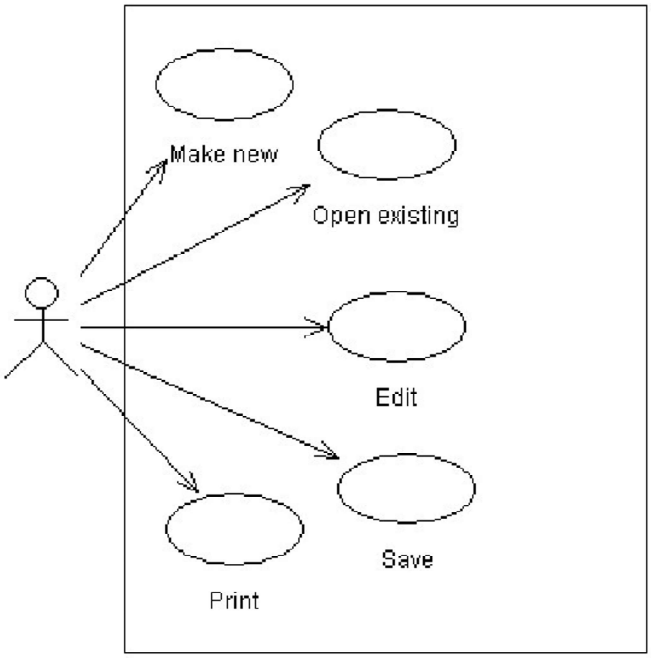
Use Cases

- Two types of Actors: Users and System administrators



Use case examples

(use cases for powerpoint.)



Menu
↓
all softwares

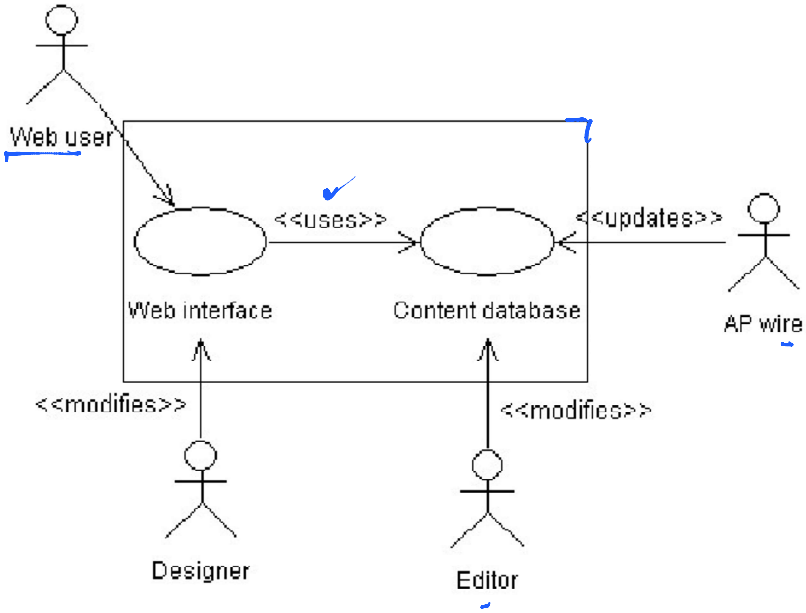
About the last example...

- Gives a view of powerpoint.
- focusses your attention to the key features

levels
details

Use case examples

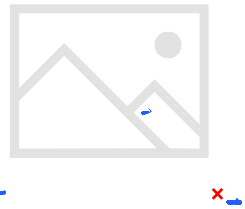
(Relationships in a news web site.)



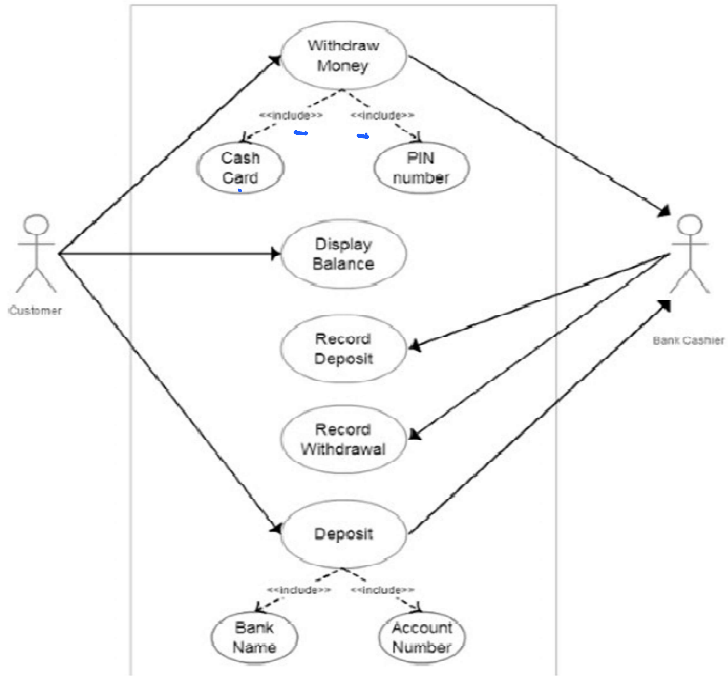
Multiple type of Actors
↳ softwares

<< >>
Stereotypes

bank
outside



Usecase diagram for an ATM machine



<< uses >>

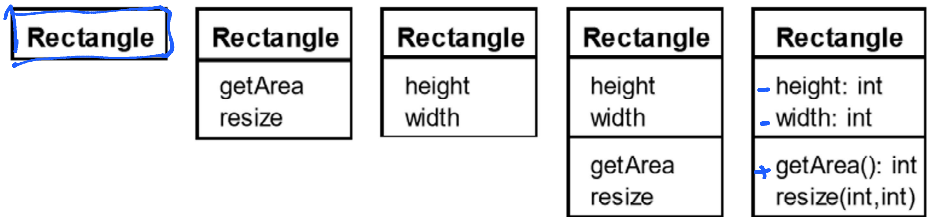
<<includes>>

Essentials of UML Class Diagrams

- *The main symbols shown on class diagrams are:*
  - *Classes*
    - represent the types of data themselves
  - *Attributes*
    - are simple data found in classes and their instances
  - *Operations* methods
    - the functions performed by classes and their instances
  - *Associations*
    - represent linkages between instances of classes
  - *Generalizations*
    - group classes into inheritance hierarchies

Classes

- A class is simply represented as a box with the name of the class inside
  - The diagram may also show the attributes and operations
  - The *UML signature* of an operation is:
    operationName(parameterName: parameterType …): returnType



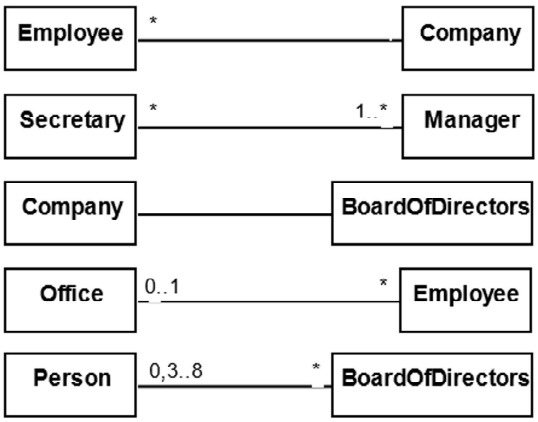
HW

details

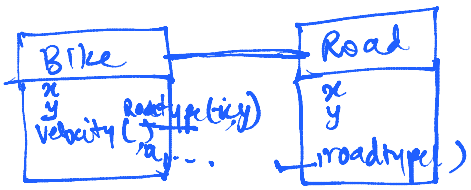
Access	species (symbols)	2
public	+	
private	−	
package		
protected		

Associations and Multiplicity

- An *association* is a line that relates two classes
- Symbols indicating *multiplicity* are shown at each end

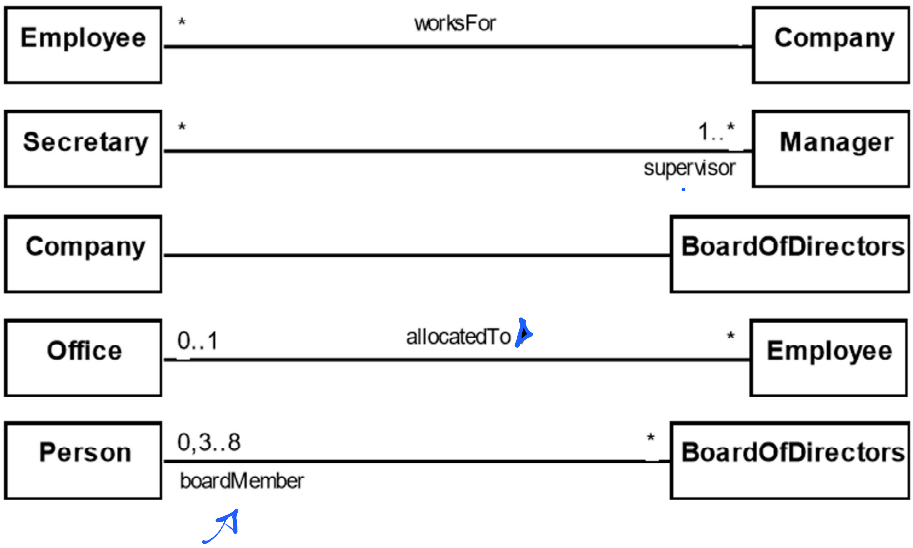


1..*
at least

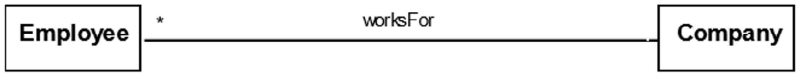


Labelling associations

An association can be *labeled*, to clarify its nature



Interpreting associations

Many-to-one

- A company has many employees,
- An employee can only work for one company.
  - No moonlighting!
- A company can have zero employees
  - E.g. a 'shell' company
- Every employee must work for some company