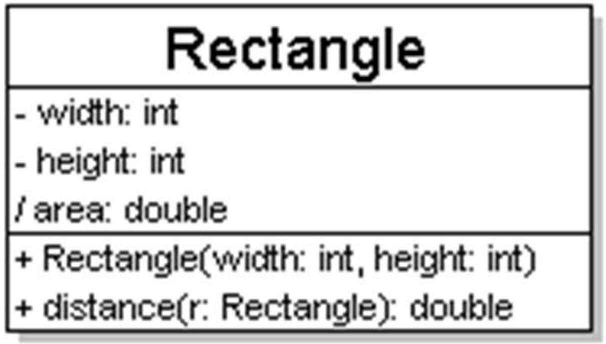
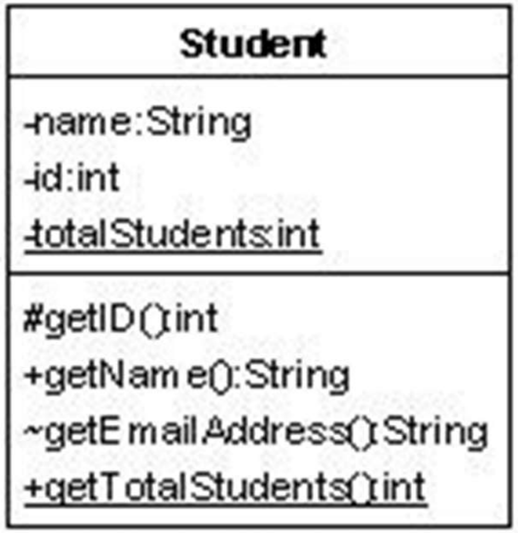
UML class diagrams

- **UML class diagram**: a picture of
  - – the classes in an OO system
  - – their fields and methods
  - – connections between the classes
    - that interact or inherit from each other
- <u>Not</u> represented in a UML class diagram:
  - – details of how the classes interact with each other
  - – algorithmic details; how a particular behavior is implemented

Diagram of one class

- class name in top of box
  - write <<interface>> on top of interfaces' names
  - use *italics* for an *abstract class* name
- attributes (optional)
  - should include all fields of the object
- operations / methods (optional)
  - may omit trivial (get/set) methods
    - but don't omit any methods from an interface!
  - should not include inherited methods


Rectangle
- width: int
- height: int
/ area: double
+ Rectangle(width: int, height: int)
+ distance(r: Rectangle): double

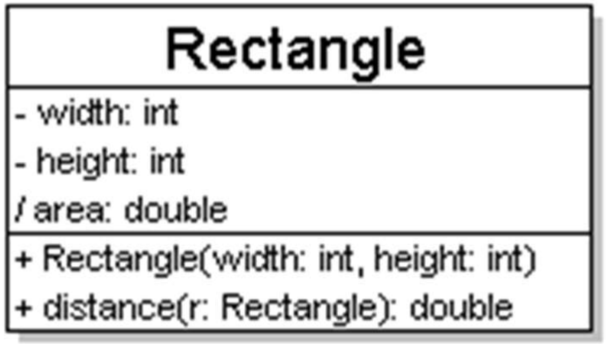


Class attributes (= fields)

- attributes (fields, instance variables)
  - *visibility name* : *type* [*count*] = *default_value*
  - visibility:

+	public
#	protected
-	private
~	package (default)
/	derived

  - underline static attributes
  - **derived attribute**: not stored, but can be computed from other attribute values
    - "specification fields " from CSE 331
  - attribute example:
    - balance : double = 0.00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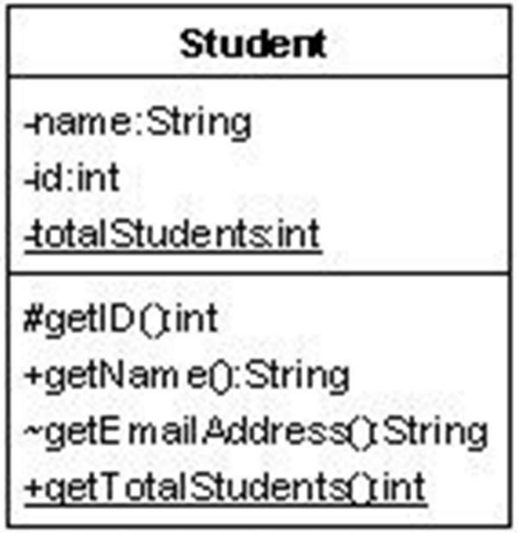
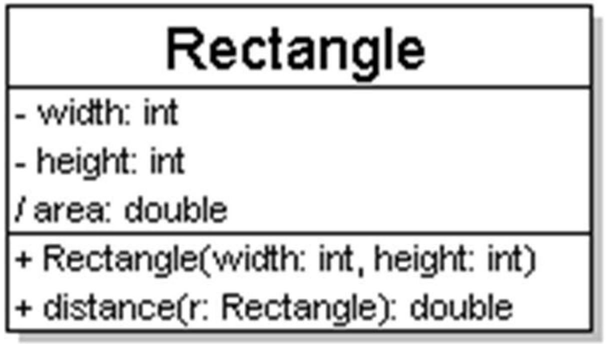


Class operations / methods

- operations / methods
  - *visibility name* (*parameters*) : *return_type*
  - visibility:

+	public
#	protected
-	private
~	package (default)

  - underline static methods
  - parameter types listed as (name: type)
  - omit *return_type* on constructors and when return type is void
  - method example:
    + distance(p1: Point, p2: Point): double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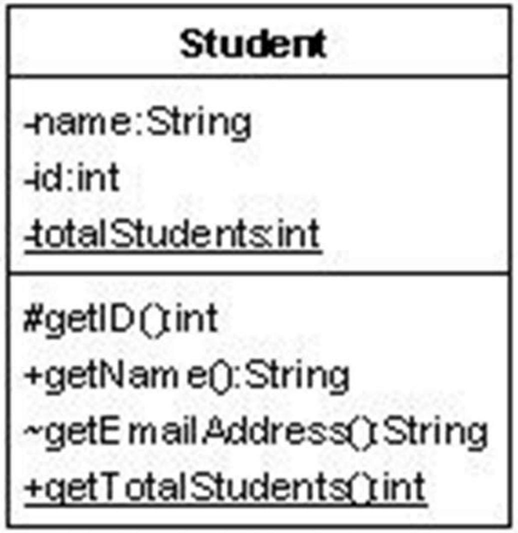
Student
-name:String
-id:int
-totalStudents:int
#getID():int
+getName():String
~getEmailAddress():String
+getTotalStudents():int