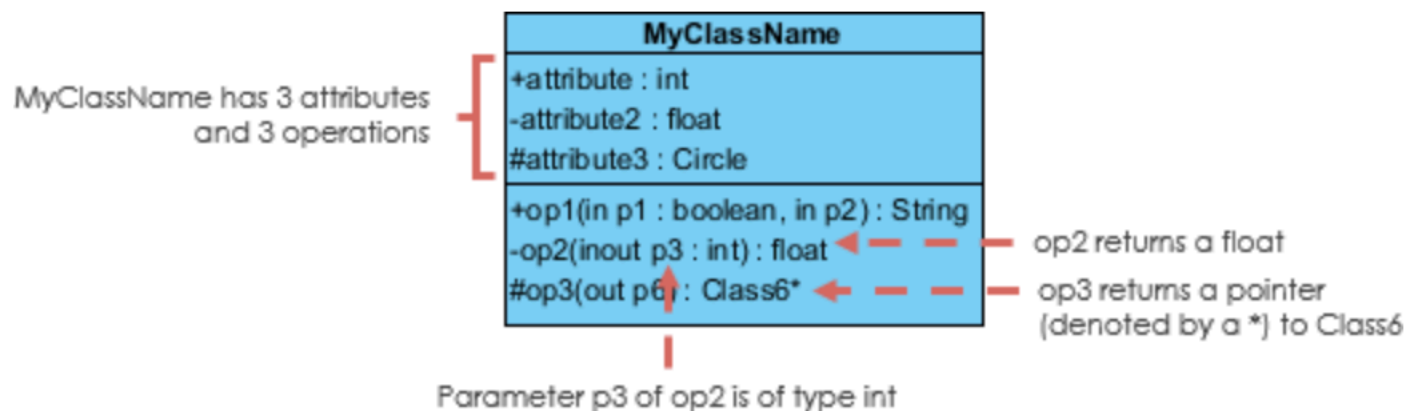# Additional Lecture

Class Diagram

More explanation for class diagram
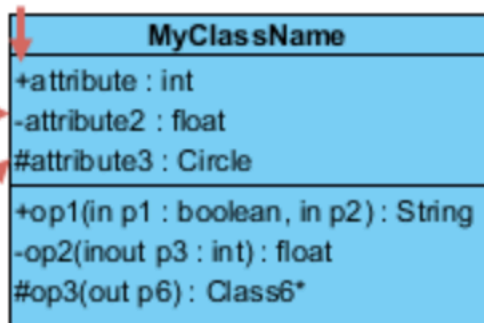
- Pictures from https://www.visual-paradigm.com/guide/uml-unified-modeling-language/uml-class-diagram-tutorial/

Name

Shape
-length
+getLength() +setLength()

Attribute(s) ⤏ -length

Operation(s) ⤏ +setLength()

Shape
-length : int
+getLength() : int +setLength(n : int) : void

Class without signature

Class with signature

MyClassName has 3 attributes and 3 operations

MyClassName
+attribute : int -attribute2 : float #attribute3 : Circle
+op1(in p1 : boolean, in p2) : String -op2(inout p3 : int) : float #op3(out p6) : Class6*

op2 returns a float

op3 returns a pointer (denoted by a *) to Class6

Parameter p3 of op2 is of type int

Public Attribute

Private Attribute – –▸

Protected Attributes

MyClassName
+attribute : int
-attribute2 : float
#attribute3 : Circle
+op1(in p1 : boolean, in p2) : String
-op2(inout p3 : int) : float
#op3(out p6) : Class6*

Passed to op1 by the caller
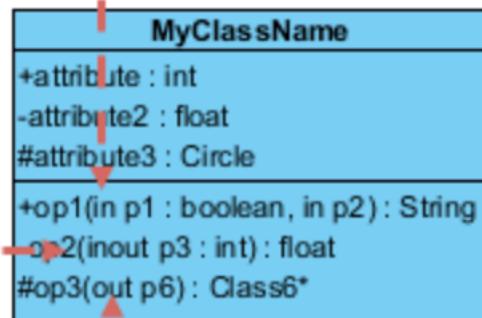
Passed to op2 by the caller, and possibly
modified by op2 and is passed back

MyClassName
+attribute : int
-attribute2 : float
#attribute3 : Circle
+op1(in p1 : boolean, in p2) : String
op2(inout p3 : int) : float
#op3(out p6) : Class6*

Not set by the caller but is modified by op3, and
is passed back out

Conceptual

Cell

Cell

Cell
-expression
-value
+evaluate the expr()

Conceptual

Specification

Cell
-expression : Expression
-value : Value
+evaluate(Spreadsheet)

Specification

Implementation

Cell
-expression : Expression = null
-value : Value = null
+evaluate(Spreadsheet)
+getFormula() : Expression
+setFormula(Expression)
+getValue() : Value

Implementation

	Association		Exactly one
		1	
	Inheritance		Zero or one
		0..1	
	Realization		Zero or more
		*	
	Dependency		1 or more
		1..*	
	Aggregation		Ordered
		{ordered}	
	Composition		

Shape

Polygon **Ellipse** **Spline**
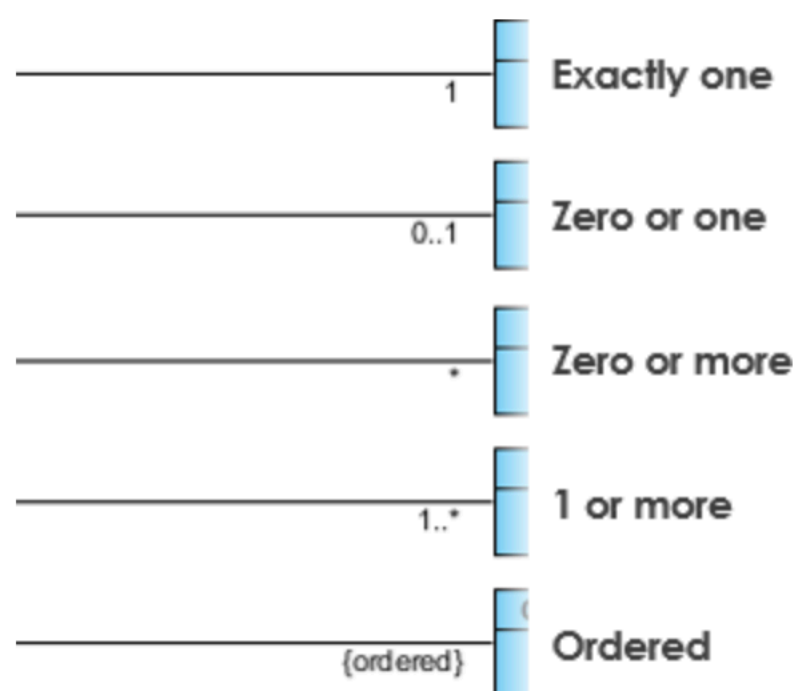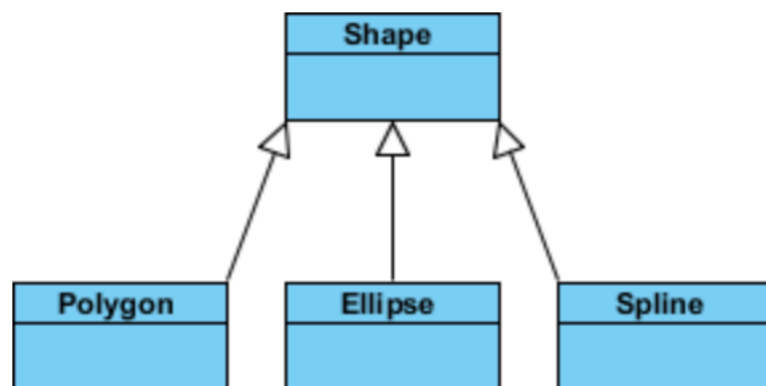
Style 1: Separate target

Shape

Polygon **Ellipse** **Spline**

Style 2: Shared target

<<Interface>>
Owner

+acquire(property)
+dispose(property)

Person

-real
-tangible
-intengible

Corporation

-current
-fixed
-longTerm
-intangible

Class1 ◇————|———— Class2

Class1 ◆————|———— Class2

Class1 - - - - ->|———— Class2

Person
+hasRead(book) : boolean

- - - - ->

Book

UML Class Diagram showing the following classes and annotations:

Customer
- -name : String
- -address

Order
- -date : date
- -status : String
- +calcSubTotal()
- +calcTax()
- +calcTotal()
- +calcTotalWeight()

OrderDetail
- -quantity
- -taxStatus : String
- +calcSubTotal()
- +calcWeight()
- +calcTax()

Item
- -shippingWeight
- -description : String
- +getPriceForQuantity()
- +getTax()
- +inStock()

Payment (Abstract Class)
- -amount : float

Cash
- -cashTendered : float

Check
- -name : String
- -bankID : String
- +authorized()

Credit
- -number : String
- -type : String
- -expDate
- +authorized()

Annotations/Labels: Class, Multiplicity, Aggregation, Role, Attribute, Association, Operation, Abstract Class, Generalization

Multiplicities shown: Customer 1 — 0..* Order; Order 1 — line item 1..* OrderDetail; OrderDetail 0..* — 1 Item; Order 1 — 1..* Payment