



# Unified Modeling Language (UML) 2110215 - Programming Methodology











#### What is UML?

- UML is a modeling language that was created to standardize ways to visualize the design of the system
- UML has many diagrams to represent various things in the system.
- Class diagram is a UML model that describes the structure of a system by showing the classes attributes and relation between classes or objects.

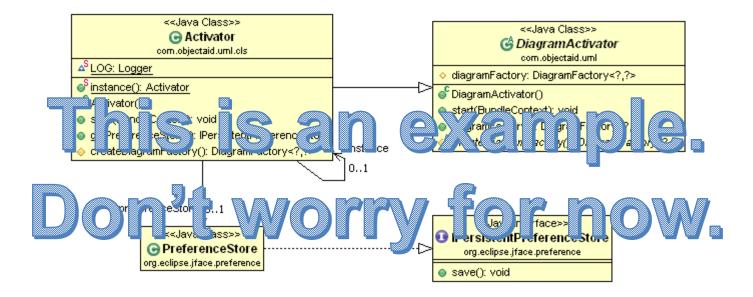






# Class Diagram

 UML provides mechanic to represent class members, such as attributes and methods, and additional information about them







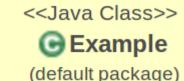




# Class Diagram

 Visibility - To specify the visibility of a class member (i.e. any attribute or method), these notations must be place before the member's name

Visibility\Can be access by	Same Class	Same Package	Subclass	Different Package
public	Y	Y	Υ	Υ
protected 🔷	Υ	Υ	Υ	N
private <b></b>	Y	N	N	N
package 🛕	Υ	Υ	N	N



- publicVariable: int
- protectedVariable: int
- privated Variable: int
- △ packagedVariable: int
- **S**Example()
- publicMethod():void
- oprotectedMethod():void
- privatedMethod():void
- packagedMethod():void

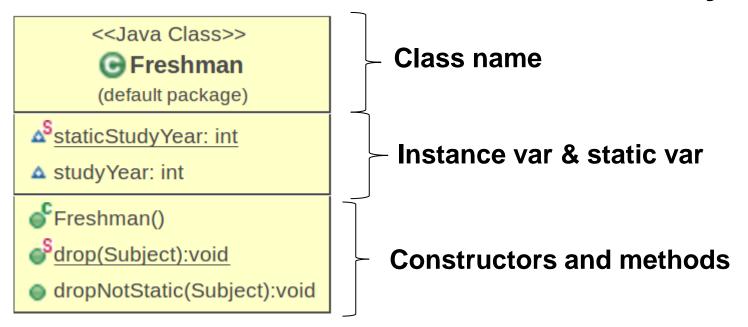






# Class Diagram

• Static is a keyword for variable or method. A static variable value will be shared through out all instance of the class. Static method can only access statics variable and call to other static methods only.





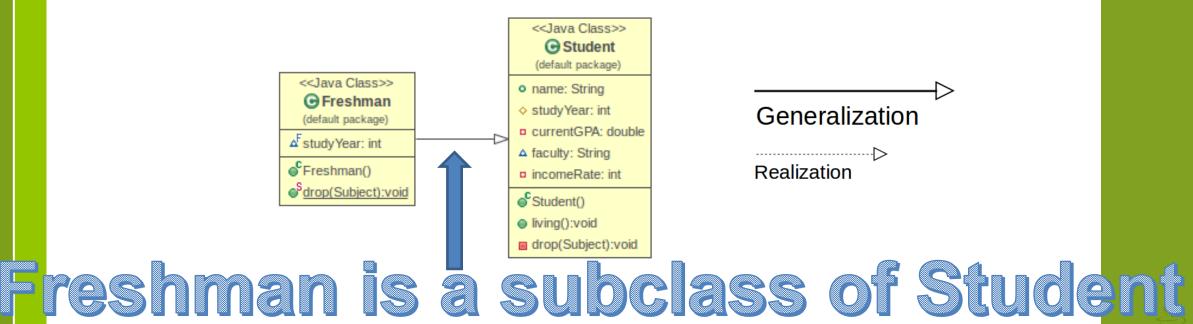






#### Generalization (Lecture 2)

 Generalization is a class relationship that has specialized forms or subclass. It is also known as inheritance relationship

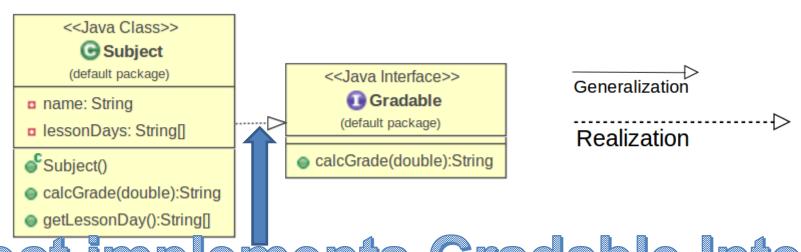






#### Realization (Lecture 3)

 Realization is a relationship between models or classes which has one class realized or implemented another class's behaviors or methods



Subject implements Gradable Interface.

We will study this dater on. 7

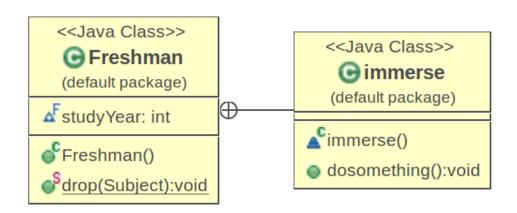






# Nesting (Lecture 3)

 Nesting is a relationship where one class is created inside another class (Inner class)



```
public class Freshman extends Student{
    final int studyYear = 1;

    class immerse{
        public void dosomething(){}
    }

    public static void drop(Subject a){
    }
}
```



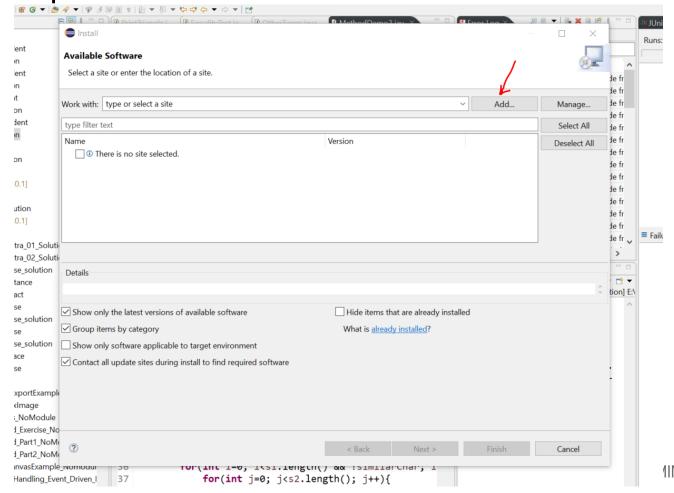






#### How to install PlantUML

Help -> Install new software





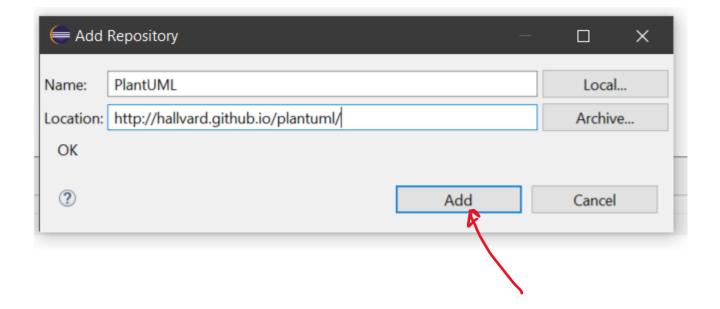








#### http://hallvard.github.io/plantuml/













<b>─</b> Install				×
Available Software				
Check the items that you wish to install.				
Work with: PlantUML - http://hallvard.github.io/plantuml/	<u> </u>	Add	Manag	e
type filter text			Select	All
Name  > ☑ □ PlantUML Eclipse support	Version		Deselec	t All
> ✓ □ PlantUML Eclipse support > ✓ □ PlantUML Library > ✓ □ Source	. <i>I</i> 1			
> 🗸 💷 Source	\b			
7 items selected				
Details				
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✓ Show only the latest versions of available software	Hide items that are already installed			
Group items by category	What is already installed?			
Show only software applicable to target environment				
Contact all update sites during install to find required software	100			
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<b>②</b>	< Back Next >	Finish	Cancel	
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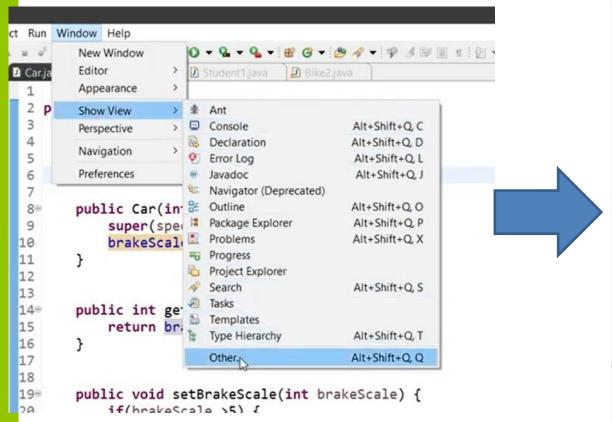
Accept everything and restart Eclipse when prompted.

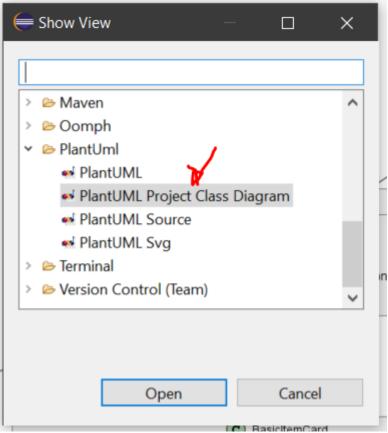




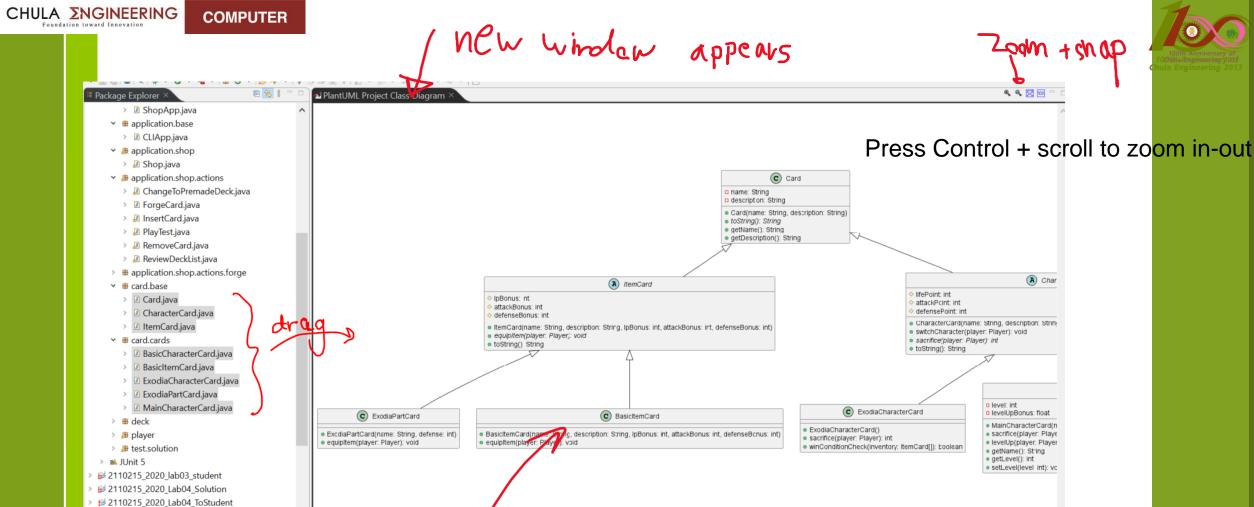


#### How to create UML Class diagram









■ MethodDemo3.java :

Right click in window to open picture export menu. In Linux, you can use print and print as a pdf file.

1 public class MethodDemo3

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2110215 2020 Lect01 ExSolution

In Linux, you can use print and print as a pdf file.

Edit pdf file with LibreOffice. (some Linux cannot export as picture, so must print as pdf) Select A3 paper In page setup if the uml does not come out right.





UML Printing.						
General Page Seto	ир					
Layout	ayout Paper					
Two-sided:	Not available ▼	Paper type:	Not available ▼			
Pages per side:	1	Paper source:	Not available ▼			
Page ordering:	Not available ▼	Output tray:	Not available ▼			
Only print:	All sheets ▼	Paper size:	A3 <b>A</b> ▼			
Scale:	100.0 - + %	Orientation:	Landscape ▼			
297.0 mm 1 420.0 mm						
		4	Cancel Print			

Printing UML out in Linux (may need to try different settings)



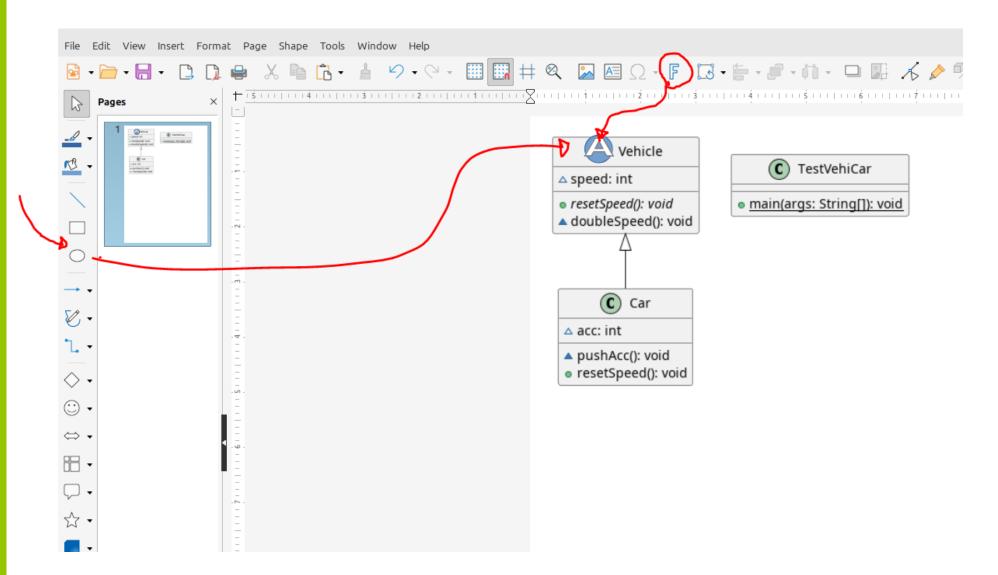








#### LibreOffice Example



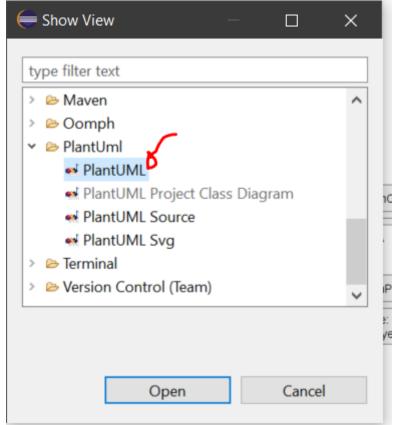


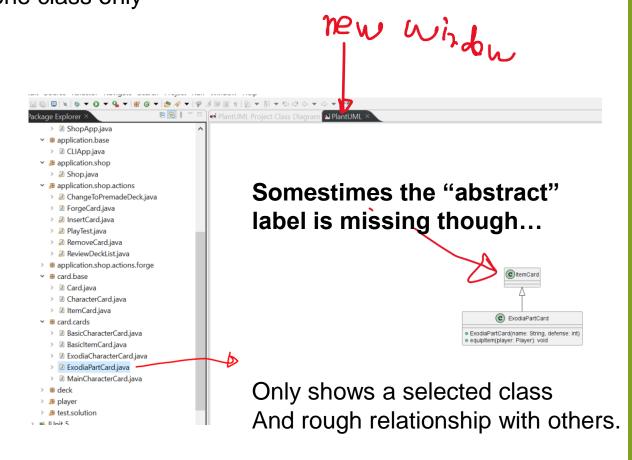






If you want to only look at one class only





We can click on another class to change the diagram right away.

