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CLASS DIAGRAM

- Class Diagram is a diagram that describes classes, interfaces and the relationships between them.
- Can draw with tools, for example: StarUML, Draw IO, Power Designer...etc

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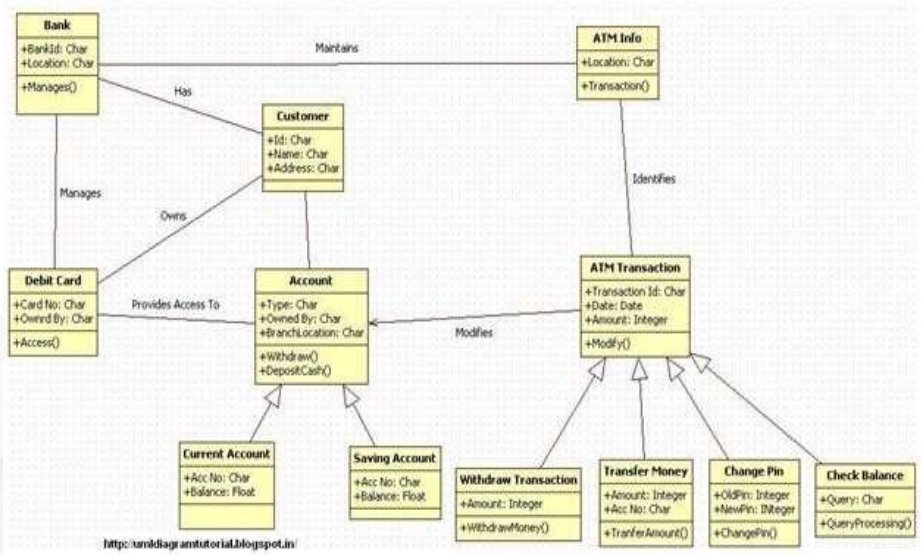
CLASS DIAGRAM



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CLASS DIAGRAM

CLASS

Class is the main component of the Class Diagram drawing.

Class describes a group of objects with the same properties and methods in the system

- Class Name: is the name of the class.
- Attributes: describe the properties of objects. For example: a customer has a Customer Code, Customer Name, Address , Date of Birth, etc.
- Operations (operations/methods): only actions that this object can perform in the system. It represents the behavior of objects created by this class.

Class Name
Attributes
Operations

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CLASS DIAGRAM

CLASS -ATTRIBUTES

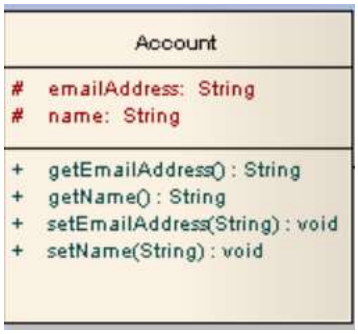
AttributeName : Type = Default

EX: CustomerID: int

- **OPERATIONS**

OperationName(parameter:type,...):returnType

EX: GetCustomerName(CustomerID:int): String



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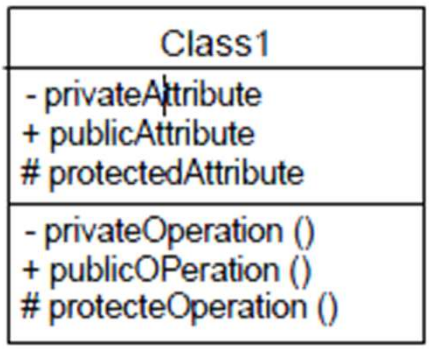
CLASS DIAGRAM

ACCESS SCOPE

- **Public :** + **Public access**
- **Private:** - **Private access**
- **Protected:** # **Protected access**
- **Package:** ~ **Package access**



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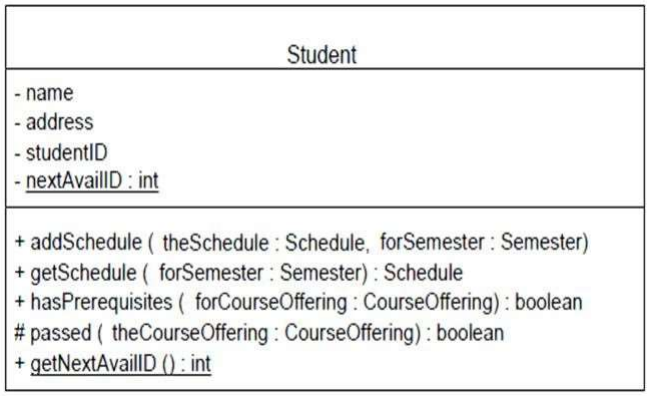
CLASS DIAGRAM

STATIC

Static properties and methods



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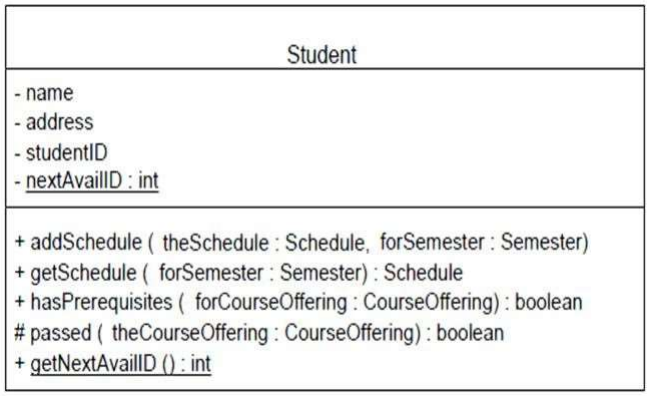
CLASS DIAGRAM

STATIC

Static properties and methods



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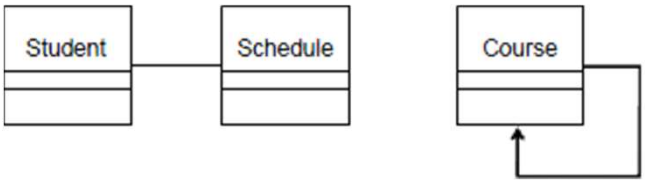
CLASS DIAGRAM

ASSOCIATION

The semantic relationship between two or more classes



- **For each Professor object, there are many Course Offerings that can be taught.**
- **For each Course Offering object, there can be 1 or 0 Professors teaching**

Unspecified	
Exactly One	1
Zero or More	0..*
Zero or More	*
One or More	1..*
Zero or One (optional value)	0..1
Specified Range	2..4
Multiple, Disjoint Ranges	2, 4..6

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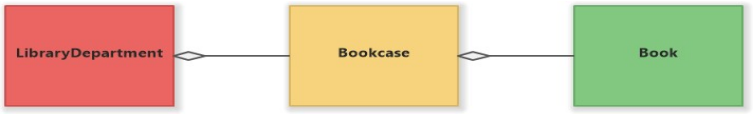
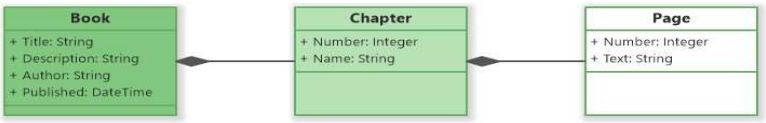
CLASS DIAGRAM

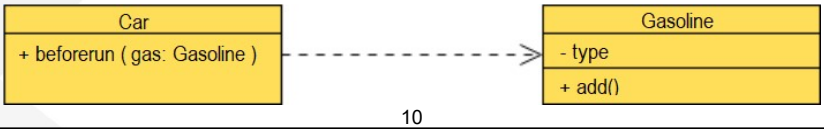
AGGREGATIO: aggregation is a type of association that represents a "whole-part" relationship between classes



COMPOSITION: composition is a stronger form of the aggregation relationship. It represents a "whole-part" relationshi p where the part (subordinate class) is an integral part of the whole (containing class)



DEPENDENCY: a dependency relationship indicates that one class depends on another class. This means that changes in the definition of one class may affect the behavior or implementation of another class



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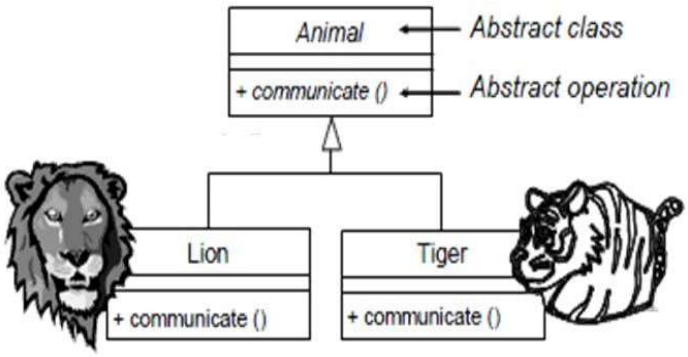
CLASS DIAGRAM

ABSTRACT CLASS



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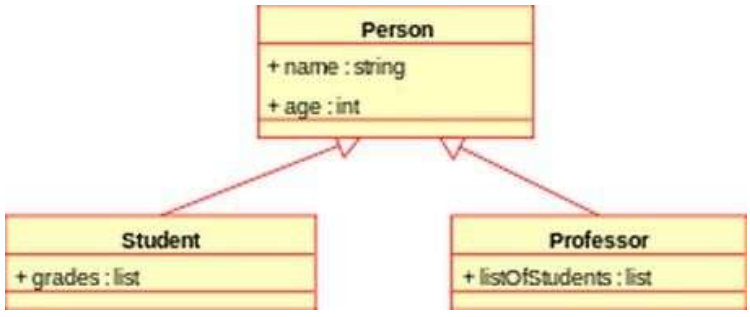
CLASS DIAGRAM

INHERITANCE



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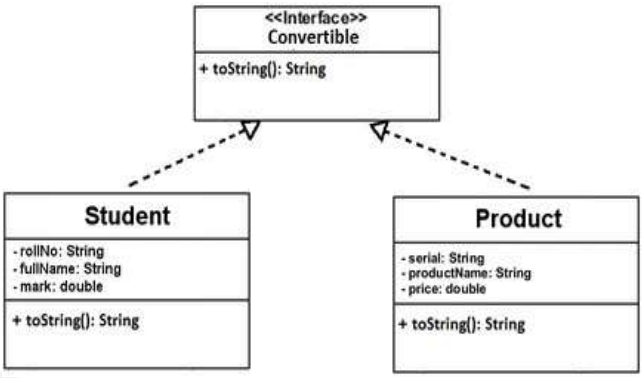
CLASS DIAGRAM

INTERFACE



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CLASS DIAGRAM

Exercises

Question 3 – Lab 4

The university trains students in two systems: college system and university system. Information that needs to be commonly managed for all students includes: student number (String), student's full name (String), total n umber of credits earned (int), average score (double). In there:

- College students, in addition to the above information, also have: graduation exam scores (double).
- University students, in addition to the above information, also have: thesis name (string) and thesis score (double).
- Graduation procedures are also different:
  - ➢ College students graduate when they have a total number of credits of 100 or more, an average score of 5 or more, and a graduation exam score of 5 or more.
  - ➢ Undergraduate students graduate when they have a total number of credits of 150 or more, an average score of 5 or more, and must defend their thesis with a score of 5 points or more