

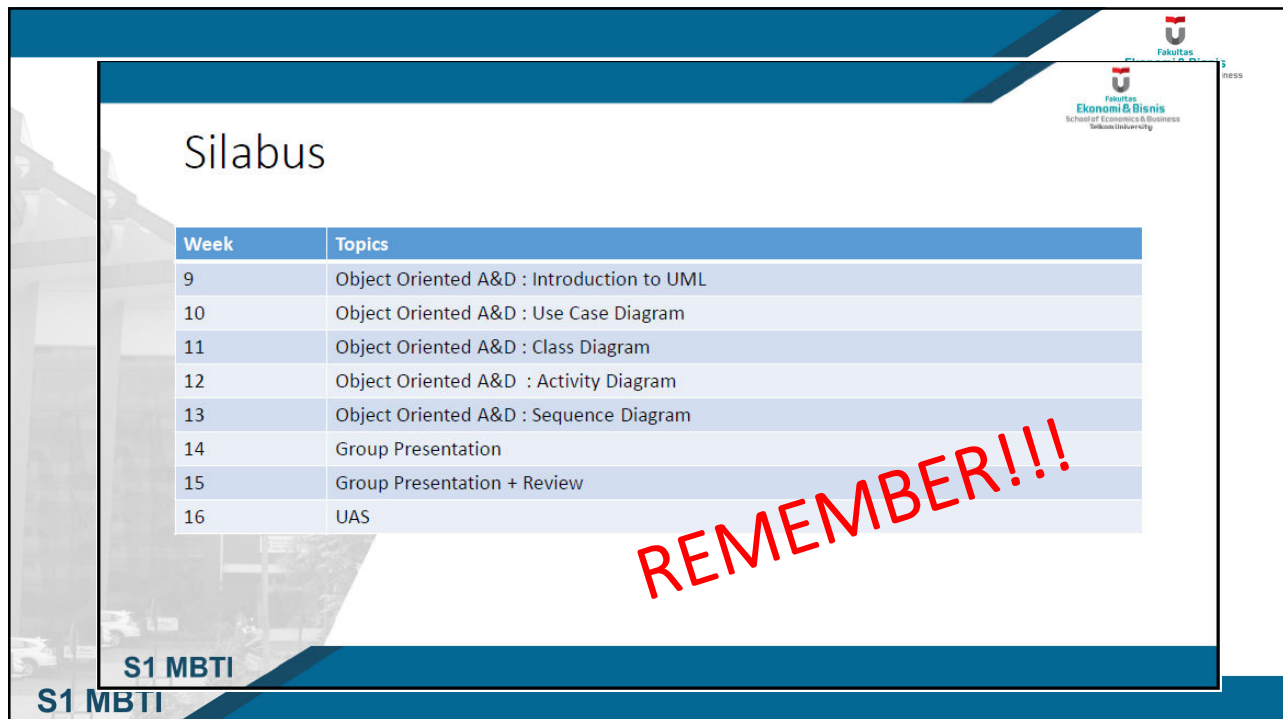



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**Ekonomi & Bisnis**  
 School of Economics & Business  
 Telkom University

# Analisis dan Perancangan Sistem (APS)

OO SAD with UML



  
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## Silabus

Week	Topics
9	Object Oriented A&D : Introduction to UML
10	Object Oriented A&D : Use Case Diagram
11	Object Oriented A&D : Class Diagram
12	Object Oriented A&D : Activity Diagram
13	Object Oriented A&D : Sequence Diagram
14	Group Presentation
15	Group Presentation + Review
16	UAS

**REMEMBER!!!**

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## Object-Oriented Analysis and Design

- Works well in situations where complicated systems are undergoing continuous maintenance, adaptation, and design
- Objects, classes are reusable
- The Unified Modeling Language (UML) is an industry standard for modeling object-oriented systems.

## Object-Oriented Analysis and Design (continued)

- Reusability
  - Recycling of program parts should reduce the costs of development in computer-based systems
- Maintaining systems
  - Making a change in one object has a minimal impact on other objects




# Major Topics

- Object-oriented concepts
- Unified Modeling Language
- Use case and other UML diagrams
- Using UML

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# Object-Oriented Concepts

- Objects
- Classes
- Inheritance

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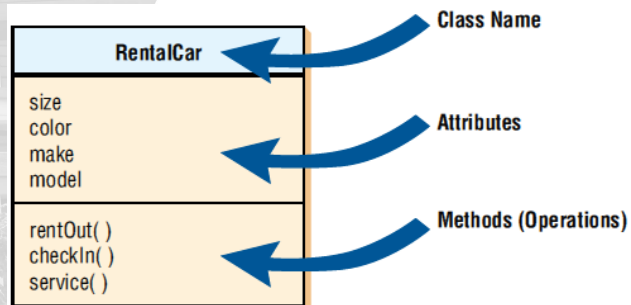
## Objects

- Persons, places, or things that are relevant to the system being analyzed
- May be customers, items, orders, and so on
- May be GUI displays or text areas on a display

## Classes

- Defines the set of shared **attributes** and **behaviors** found in each object in the class
- Should have a name that differentiates it from all other classes
- Instantiate is when an object is created from a class
- An attribute describes some property that is possessed by all objects of the class
- A method is an action that can be requested from any object of the class

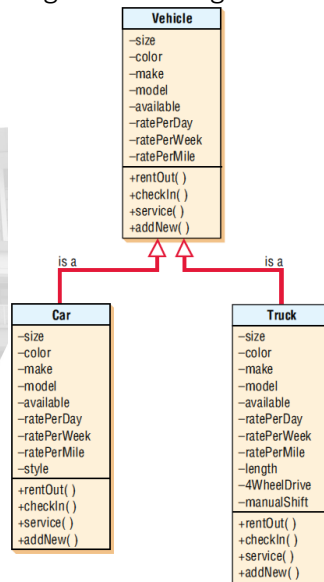
An Example of a UML Class: A Class Is Depicted as a Rectangle Consisting of the Class Name, Attributes, and Methods (Figure 10.1)



## *Inheritance*

- When a derived class inherits all the attributes and behaviors of the base class
- Reduces programming labor by using common objects easily
- A feature only found in object-oriented systems

A Class Diagram Showing Inheritance (Figure 10.2)



Car and truck are specific examples of vehicles and inherit the characteristics of the more general class vehicle.

## The Unified Modeling Language (UML) Concepts and Diagrams

- Things
- Relationships
- Diagrams

## Things

- Structural things are:
  - Classes, interfaces, use cases, and other elements that provide a way to create models
  - They allow the user to describe relationships
- Behavioral things
  - Describe how things work
    - Interactions and state machines
- Group things
  - Used to define boundaries
- Annotational things
  - Can add notes to the diagrams

## Relationships

- Structural relationships
  - Tie things together in structural diagrams
    - Dependencies
    - Aggregations
    - Associations
    - Generalizations
- Behavioral relationships
  - Used in behavioral diagrams
    - Communicates
    - Includes
    - Extends
    - Generalizes

## Diagrams

- Structural diagrams
  - Used to describe the relation between classes
- Behavior diagrams
  - Used to describe the interaction between people (actors) and a use case (how the actors use the system)

## Structural Diagrams

- Class diagrams
- Object diagrams
- Component diagrams
- Deployment diagrams



## Behavioral Diagrams

- Use case diagrams
- Sequence diagrams
- Collaboration diagrams
- Statechart diagrams
- Activity diagrams

## Commonly Used UML Diagrams

- Use case diagram
  - Describing how the system is used
  - The starting point for UML modeling
- Use case scenario
  - A verbal articulation of exceptions to the main behavior described by the primary use case
- Activity diagram
  - Illustrates the overall flow of activities

## Commonly Used UML Diagrams (continued)

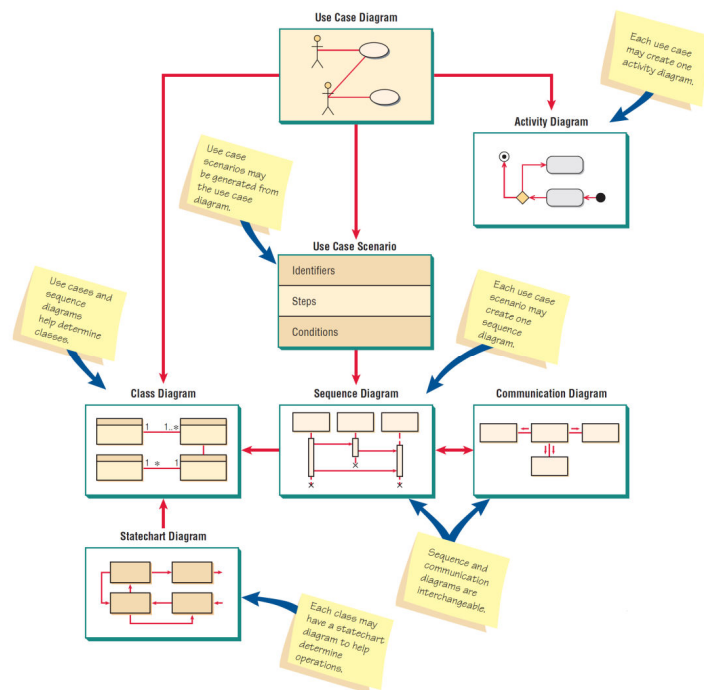
- Sequence diagrams
  - Show the sequence of activities and class relationships
- Class diagrams
  - Show classes and relationships
- Statechart diagrams
  - Show the state transitions

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An Overview of UML Diagrams Showing How Each Diagram Leads to the Development of Other UML Diagrams (Figure 10.5)



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# TUGAS

## Buatlah ringkasan tentang:

1. Object Orientation
2. Use case diagram
3. Class Diagram
4. Activity Diagram
5. Sequence Diagram

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# Additional Reference

**YouTube channel : Rmb1905**

<https://www.youtube.com/user/rmb1905/videos?sort=da&view=0&flow=grid>

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