Universidad Técnica del Norte

Modelamiento de Software

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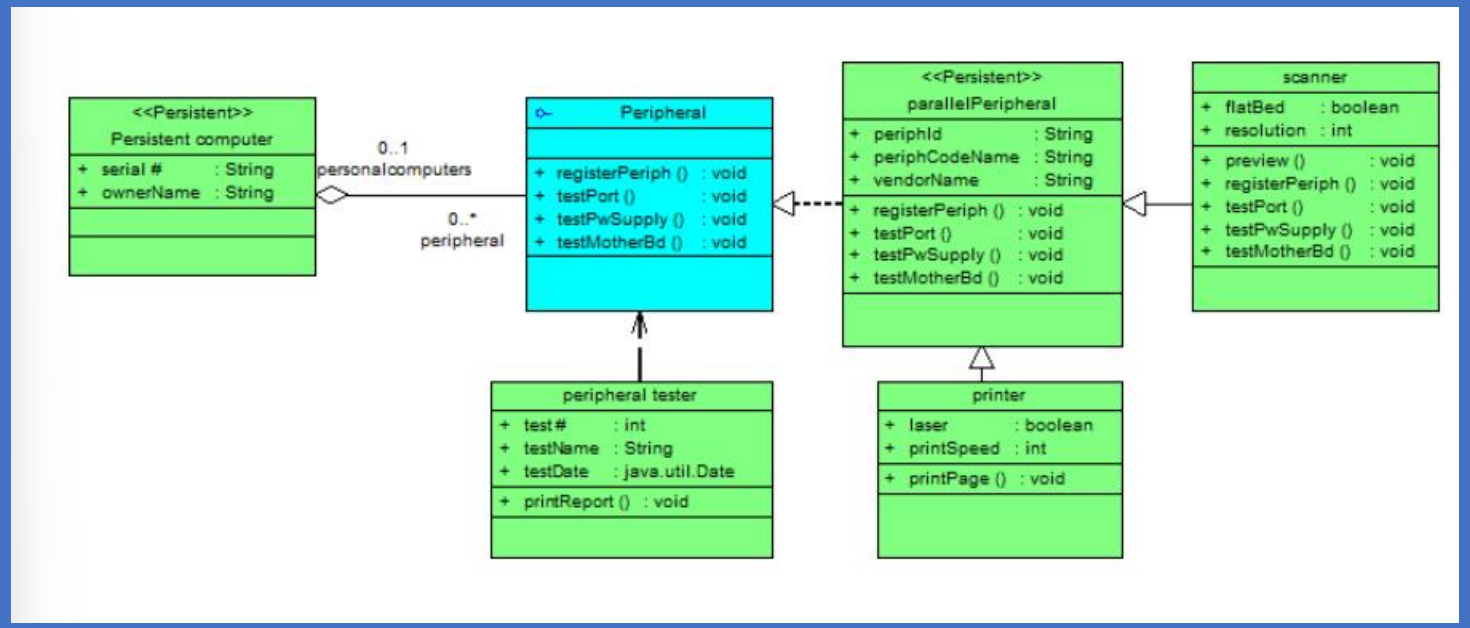
COMPOSITE STRUCTURE DIAGRAM



Introduction

- It is a tool used in software modeling to represent the internal structure of a complex software system or component.
- A composite structure diagram is a UML diagram that provides a graphical view of the classes, interfaces, and packages that compose a system, including the ports and parts that describe their internal structures.

Introduction

- This diagram performs a similar role to a class diagram, but allows you to go into further detail in describing the internal structure of multiple classes and showing the interactions between them.

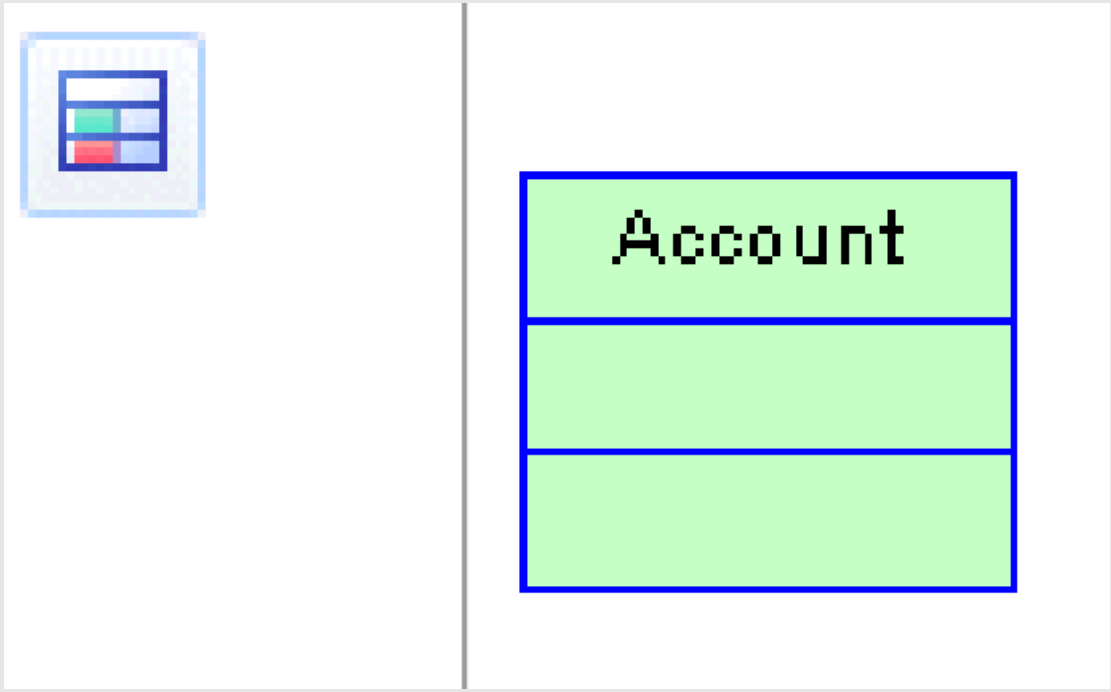
A composite structure diagram also provides these benefits:

- Helps users understand the current state of their system
- Breaks down the internal structure of multiple classes, interfaces, or components, and their interactions
- Provides users with information to optimize and troubleshoot their system

Basic components of a composite structure diagram

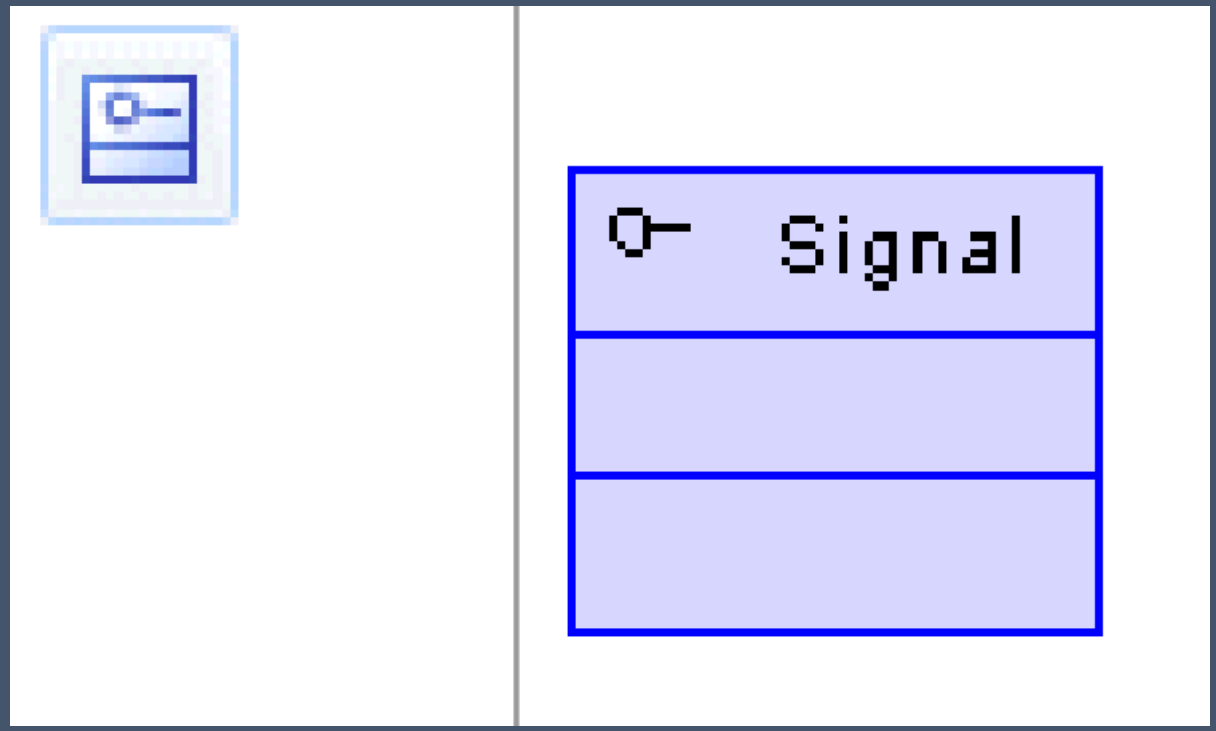
Class

- Set of objects sharing the same attributes, operations, methods, and relationships.



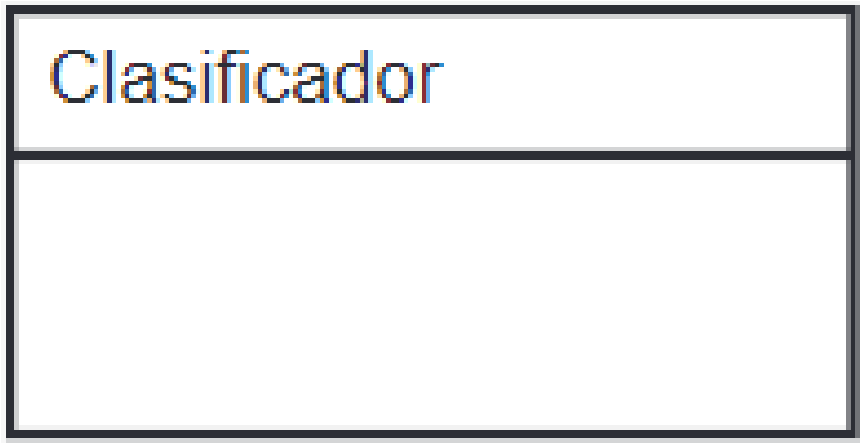
Interface

Descriptor for the externally visible operations of a class, object, or other entity without specification of internal structure.



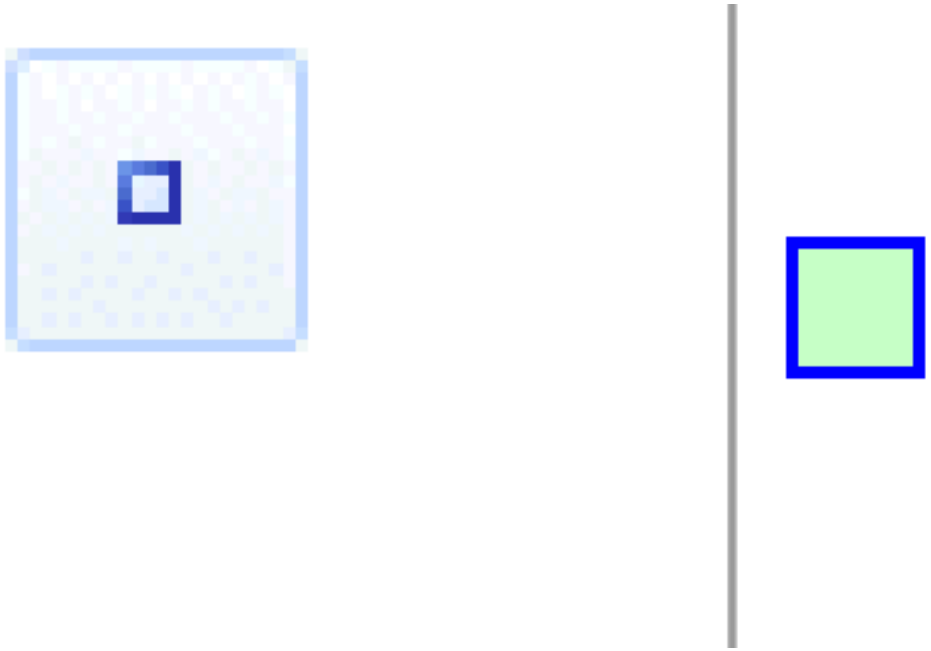
Classifier

- Represents a class, often an abstract class, its behavior can be described completely or partially by interactions between parts.



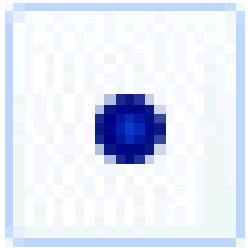
Port

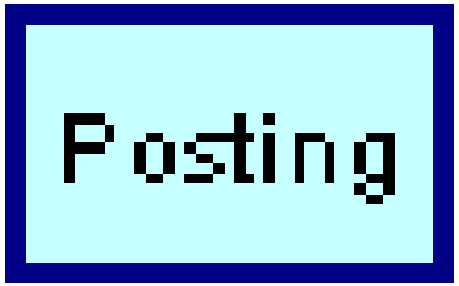
- Interaction point between a classifier and its environment



Part

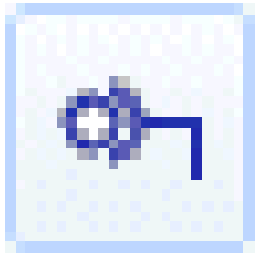
- It is shown with a rectangle and indicates the objects that make up the main object.

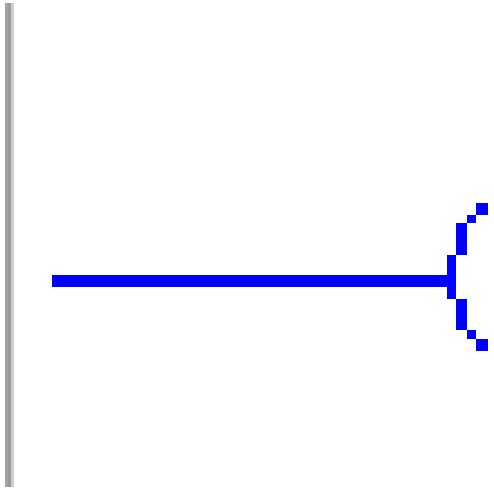




Requiere Link

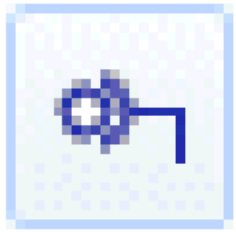
- Connects classifiers to interfaces.

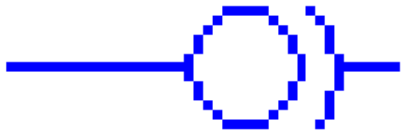




Assembly Connector:

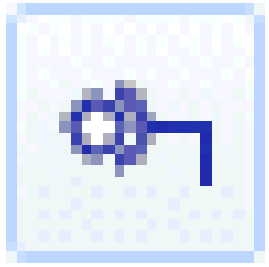
- Connects parts to each other.

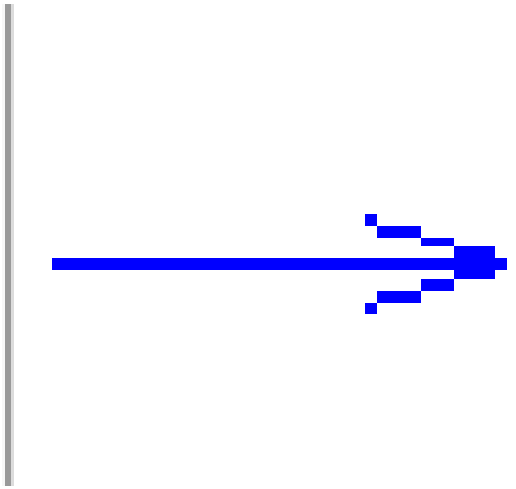




Delegation Connector

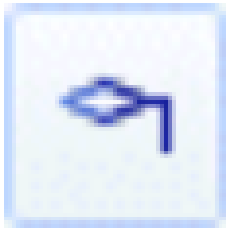
- Connects parts to ports on the outside of classifiers.

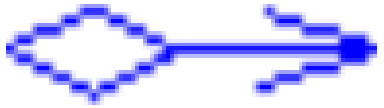




Aggregation

- Indicates that an object of one class is part of another object of another class.





Composition

- Composition is a relationship that represents a stronger and more restrictive association between two classes or components than aggregation.

Composite structure diagram vs class diagram

- As UML diagrams, both composite structure diagrams and class diagrams are used to visualize and organize the actors, interactions, and artifacts within a system. But while composite structure diagrams and class diagrams have similar meanings, they are ultimately different in how they express those meanings.

- A composite structure diagram allows users to more clearly model the implementations of an artifact's activity within a runtime. They're also more adept in depicting decomposition in context, describing the internal structure of multiple classes and the set relationships between them.

How to make a composite structure diagram:

1. Group components into classes and interfaces as needed by nesting them within a larger shape or with lollipop and socket shapes. Label the shape accordingly.
2. Add ports to each component, class, or interface to depict interaction points. Label each port.
3. Add nodes to represent additional types and instances within your system.

4. Model your system's process flow by drawing lines between the appropriate ports and components.