Choosing the Right UML Model

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- The What, Why, Who and When of Use Case Diagrams
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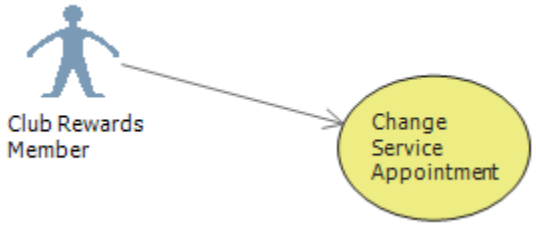
Why Use UML?

- **Provide a common model language for communicating information about software systems to multiple parties.**
- **Different model types to convey different aspects of the solution.**
  - Behavioral models (use case, activity, sequence)
  - Structural models (component, class)

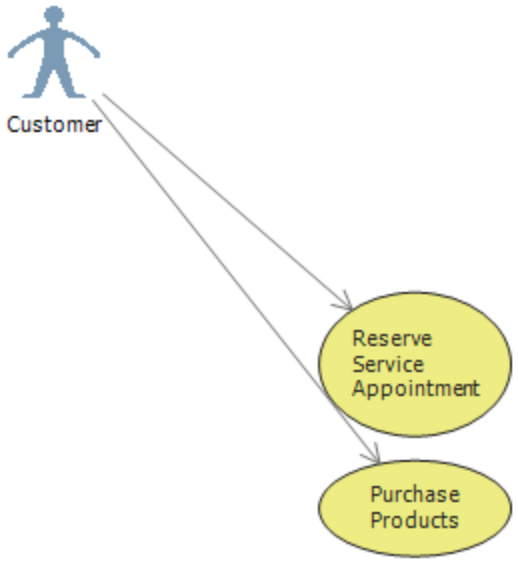
Use Case Diagrams – WHAT?

- **A use case diagram visually shows the relationship between users and their goals when using a system.**
- **Diagrams are made up of:**
  - Actors (human or system)
  - Use Cases
  - System Boundaries



Use Case Diagrams – WHY?

- Can be used to discover and define the functional requirements of a system.
- Puts a focus on user goals and not features.
- Primary benefit is simplicity.

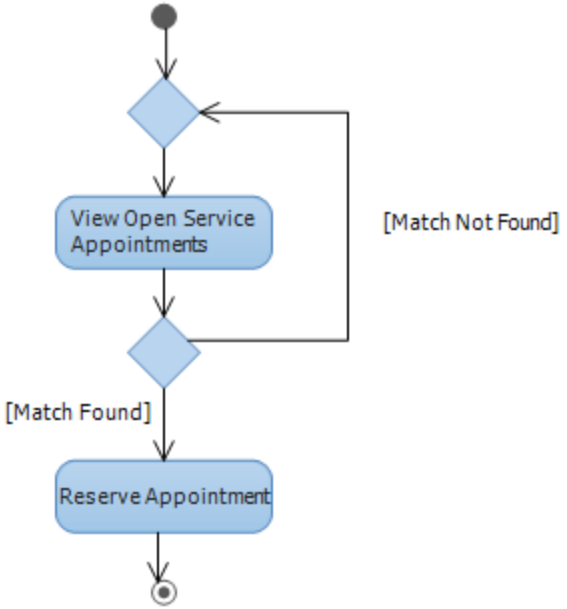


Use Case Diagrams – WHO? WHEN?

- **Created by …**
  - Business analysts, business SMEs, architects
  - Often created during in early phases of project.
- **Used by …**
  - Stakeholders to ensure that everyone understand the observable value that the system offers.
  - Project Managers who want to get a sense for scope of work being requested.
  - Architects who can begin to figure out how to satisfy the broad needs that the client has.
  - Business analysts that can leverage Use Cases as a tool for collecting functional requirements.

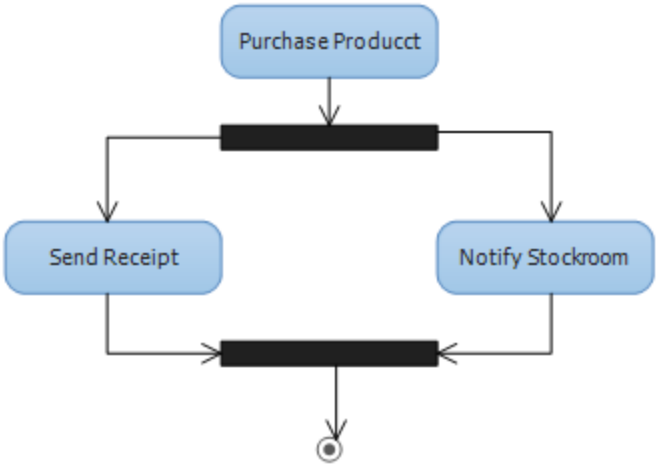
Activity Diagrams – WHAT?

- **An activity diagram visually shows business processes or system algorithms.**
- **Diagrams are made up of:**
  - Actions
  - Control Flow / Connector
  - Object Nodes
  - Control Nodes
  - Send Signal
  - Accept Event
  - Call Behavior
  - Call Operation
  - Input / Output Pins
  - Activity Parameters



Activity Diagrams – WHY?

- Show time and order dimensions on business processes.
- Compliment, and may be substitute for, use case description.
- Show activities that may span use cases.
- Capture and validate the business processes or algorithms being represented.

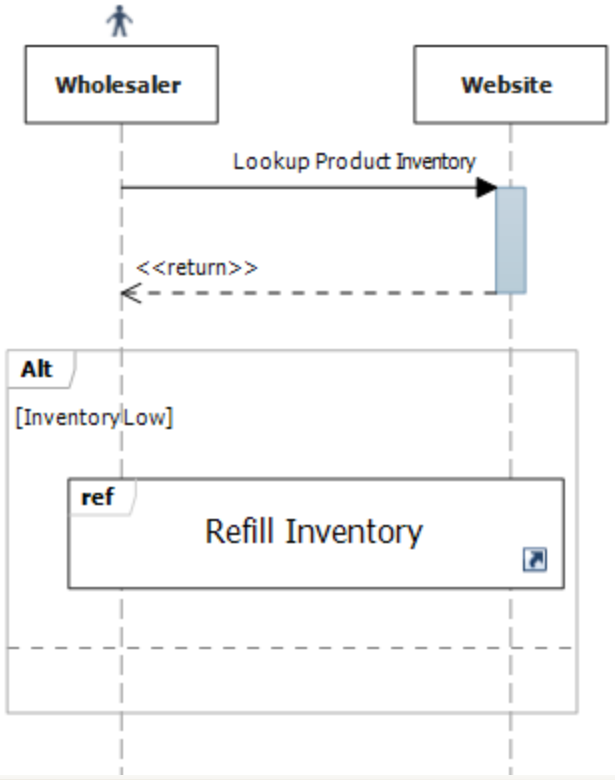


Activity Diagrams – WHO? WHEN?

- **Created by …**
  - Business analysts, business SMEs, architects
  - Often created in requirements phase of project.
- **Used by …**
  - Stakeholders to validate the core business workflow.
  - Architects who may create these to explain system use cases.
  - Business analysts that document the flow of the business process.

Sequence Diagrams – WHAT?

- A sequence diagram shows how components interact over time within a scenario.
- Diagrams are made up of:
  - Lifelines
  - Messages
  - Interaction Occurrence
  - Fragments



Sequence Diagrams – WHY?

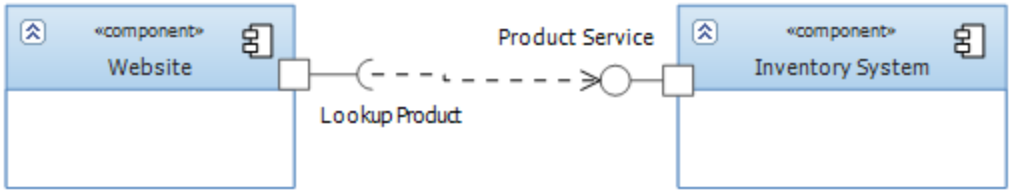
- Explains how the “nouns” in the system interact with each other.
- Refines requirements from a use case.
- May also use to document existing legacy system behavior.
- Investigate code after the fact to observe the responsibilities given to classes.

Sequence Diagrams – WHO? WHEN?

- **Created by …**
  - Architects, developers, Business analysts
  - Started in requirements phases to decide on object responsibilities and interactions.
- **Used by …**
  - Stakeholders to validate the core business object interactions.
  - Architects who describe how components communicate with each other.
  - Developers who describe interactions between classes.
  - Business analysts that document the exchanges between business objects.

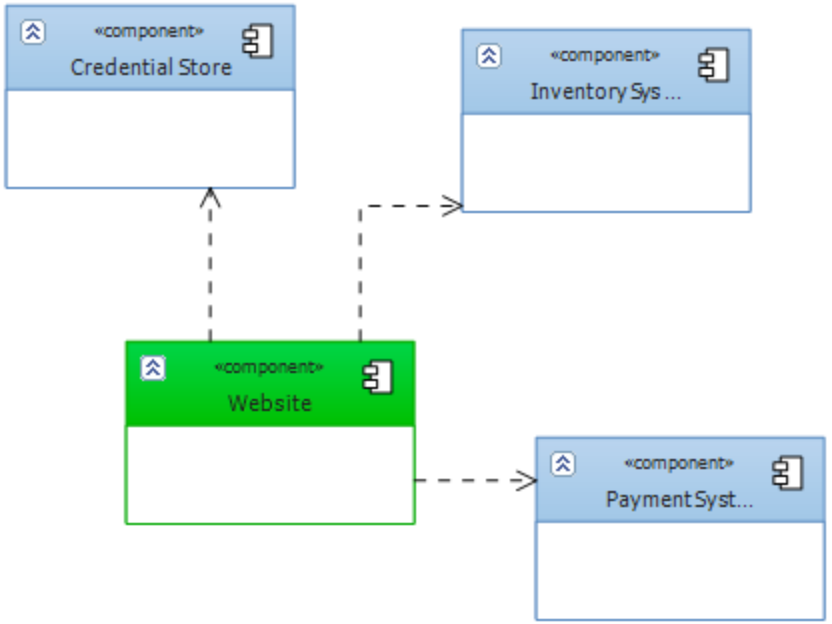
Component Diagrams – WHAT?

- **Component diagrams show physical structure of the system architecture.**
- **Diagrams are made up of:**
  - Components
  - Interfaces
  - Relationships



Component Diagrams – WHY?

- First chance to make high level decisions about the organization and responsibilities of the software solution.
- Highlight dependencies between systems that make up the solution.
- Identify all the individual units of work that will address the system's required functionality.

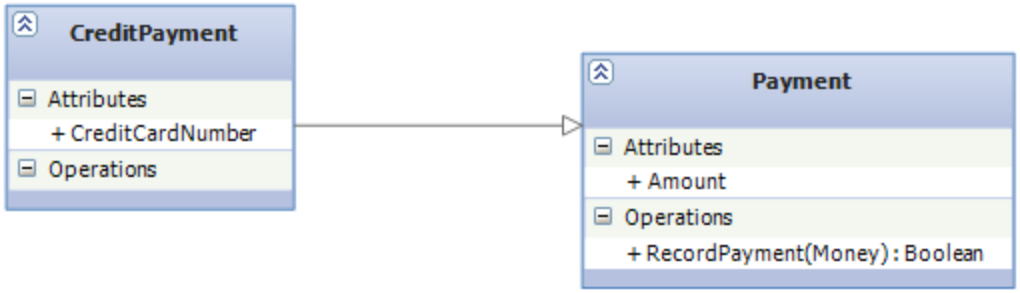


Component Diagrams – WHO? WHEN?

- **Created by …**
  - Architects, developers
  - May be started in requirements and matured during design of a solution.
- **Used by …**
  - Stakeholders to see how their business needs map to the solution.
  - Project Managers when they plan their delivery schedule for the solution software.
  - Architects as a blueprint for what the software solution should look like.
  - Developers who build the software pieces that comprise each component..

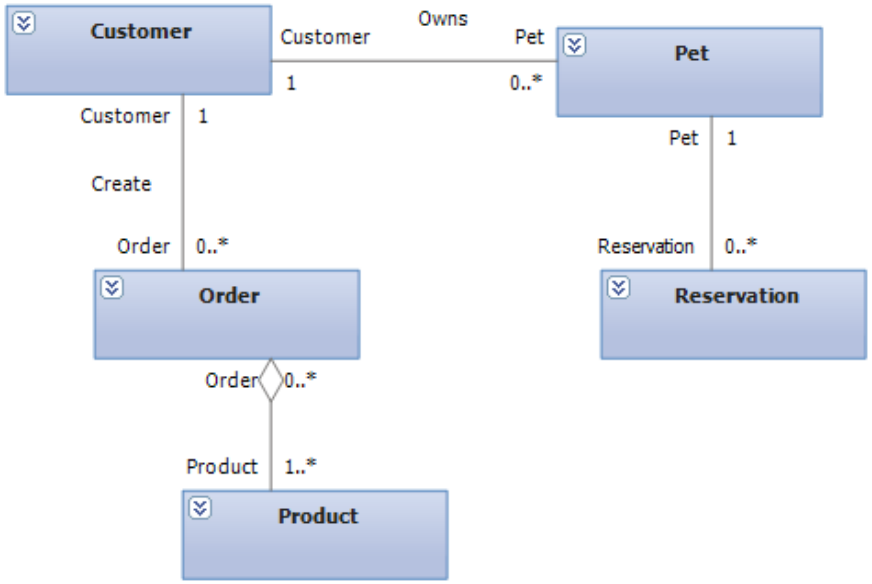
Class Diagrams – WHAT?

- A class diagrams are used to model both the business and construction elements of a software solution.
- Diagrams are made up of:
  - Classes
  - Attributes
  - Interfaces
  - Enumerations
  - Packages
  - Relationships



Class Diagrams – WHY?

- Capture the terms of the system and define entities that can be used in other diagrams.
- Model the business domain in order to understand key concepts and vocabulary.
- Show physical structure of software objects.



Class Diagrams – WHO? WHEN?

- **Created by …**
  - Architects, developers, business analysts
  - Domain model may be built during requirements phase and construction model built during the design phase.
- **Used by …**
  - Stakeholders to validate their domain objects and relationships.
  - Architects to verify that software objects will meet system functionality.
  - Developers who document their implemented software.

Summary

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