

Object Oriented Methods with UML



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Introduction to Component Diagram (Implementation Phase)

- **Topics (26/04/2016)**
 - Component Diagram

Component Diagram



- **Component diagram** shows components, provided and required interfaces, ports, and relationships between them. This type of diagrams is used in **Component-Based Development (CBD)** .
- **Components** in UML could represent
 - **logical components** (e.g., business components, process components), and
 - **physical components** (e.g., CORBA components, EJB components, COM+ and .NET components, WSDL components, etc.),



Notations

Component Diagram

Component

- A *component* is a **class** representing a modular part of a system
- A component has its behavior defined in terms of **provided interfaces** and **required interfaces** (potentially exposed via **ports**).



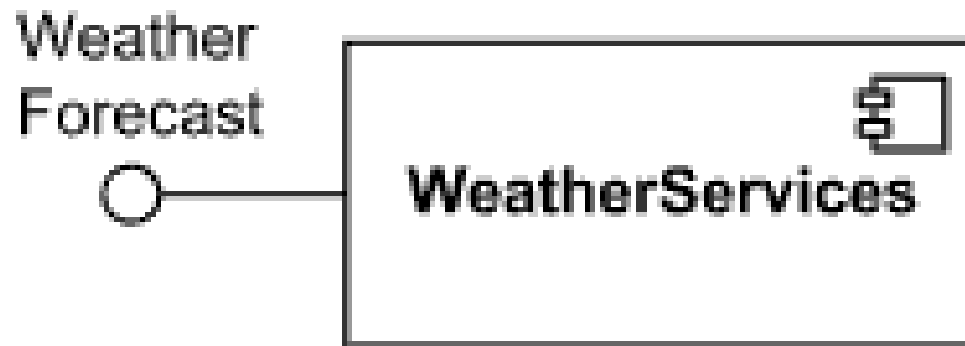
or



Provided Interface

- A **provided interface** is the one that is either
 - **realized** directly by the component itself, or
 - **realized** by one of the classifiers(realizing component) or

provided by a public port of the component.



*Weather Services component provides (implements)
Weather Forecast interface*

Required Interface

- A **required interface** is either
 - designated by usage dependency from the component itself, or
 - designated by usage dependency from one of the classifiers realizing component, or required by a public port of the component.



Stereotypes-Component Diagram



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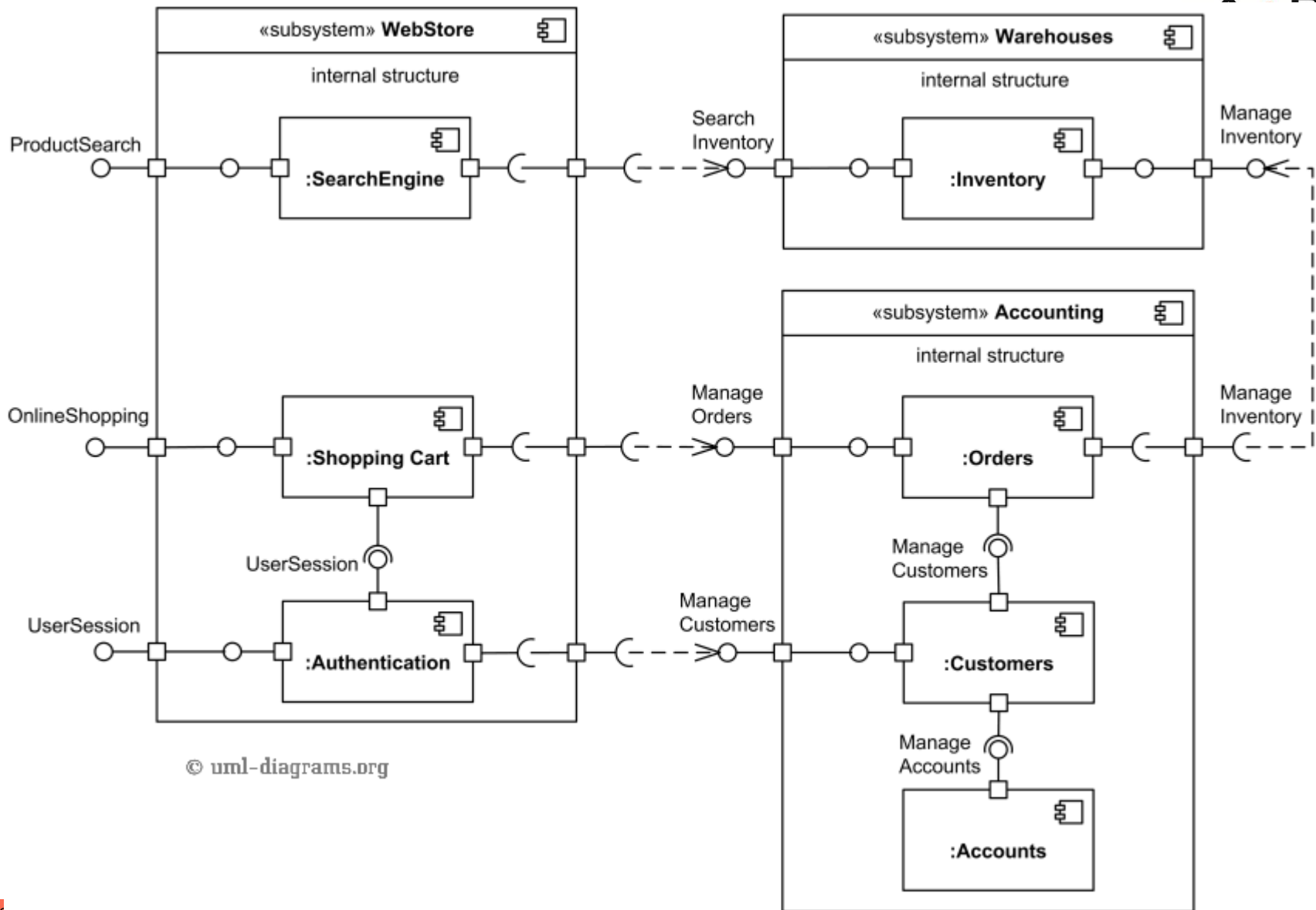
Name	Description
«BuildComponent»	A collection of elements defined for the purpose of system level development activities, such as compilation and versioning.
«Realization»	A component's behavior may typically be realized (or implemented) by a number of Classifiers. In effect, it forms an abstraction for a collection of model elements.
«Implement»	Implement is a component definition that is not intended to have a specification itself. Rather, it is an implementation for a separate <u>«Specification»</u> to which it has a <u>dependency</u> .
«Process»	Process is a transaction based component.

Stereotypes-Component Diagram



Name	Description
«Service»	Service is a stateless, functional component. Eg: WeatherServices
«Specification»	Specification is a <u>classifier</u> that specifies a domain of objects without defining the physical implementation of those objects. For example, a component stereotyped by «Specification» will only have provided and required interfaces,
«Subsystem»	Subsystem is a component representing an unit of hierarchy for large systems, and is used to model large scale components.

Component Diagram



References



- <https://msdn.microsoft.com/en-us/library/dd409393.aspx>
- [http://staruml.sourceforge.net/docs/user-guide\(en\)/ch05_7.html](http://staruml.sourceforge.net/docs/user-guide(en)/ch05_7.html)
- <https://www.visual-paradigm.com/VPGallery/diagrams/Component.html>