


Use Cases

- ❖ Narrative descriptions of domain processes
 - Often begins with the text: “This use case begins when ...”
- ❖ Done following Requirements Analysis
- ❖ Describes the sequence of events of an *actor* (external agent) using a system to complete a *process*
- ❖ UML icon is an oval 

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High-level Use Case for POST

- ❖ Use case: **Buy Items**
 - Actors: Customer, Cashier
 - Type: primary
 - Description:
 - ◆ A Customer arrives at a checkout with items to purchase. The Cashier records the purchase items and collects payment. On completion, the Customer leaves with the items.
 - ◆ Fields may be added or omitted (not specified by UML)

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Expanded use case for POST

- ❖ Use case: **Buy Items**
 - Actors: Customer (initiator), Cashier
 - Purpose: Capture a sale & its cash payment
 - Type: primary and essential
 - Overview: (same as before)
 - Cross Ref: Functions: R1.1, R1.2, R1.3, R1.7, R1.9, R2.1
- ❖ And verbose description of “flows” (p. 50)
 - main flow, alternate flows, exception flows


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Use case elements

- ❖ Type - ordered pairs from the following:
 - 1. primary, secondary, or optional
 - 2. essential or real
- ❖ Typical course of events
 - main flow
 - ◆ Sometimes called “Happy Day scenario”
- ❖ Alternate course of events
 - alternate flows or exception flows

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Actors in use cases

- ❖ Any external entity that participates in the use case
 - One *initiator actor* starts the use case
 - Zero or more *participating actors* may exist
 - Possible “roles” include:
 - ◆ human
 - ◆ computer system
 - ◆ electrical or mechanical device
- ❖ The UML icon is a “stick man” 

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Identifying use cases

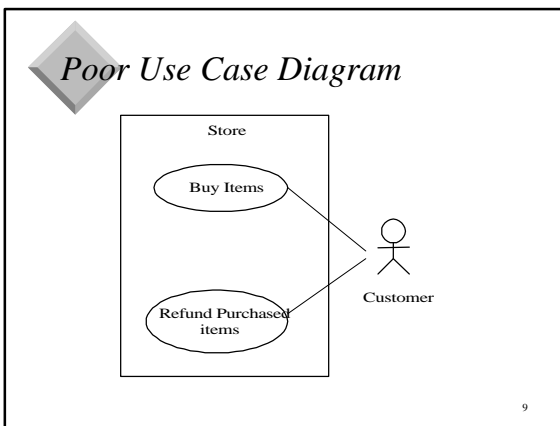
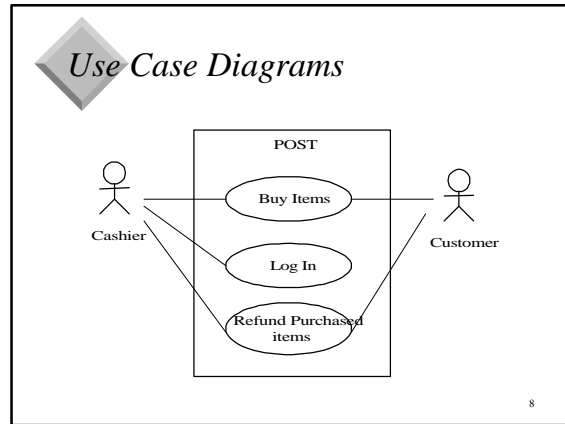
- ❖ Identify actors
 - Humans
 - independent entities separate from the system
- ❖ Identify events
 - Cashier: Log In, Close out register
 - Customer: Buy Items, Return for refund
- ❖ Abstract use cases
 - sub use cases (more later)

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Use Cases & Domain Processes

- ❖ Use cases describe business processes
- ❖ A process describes, from start to finish
 - a sequence of events, actions, or transitions required to complete something of value
 - Examples:
 - ◆ Withdraw cash from an ATM
 - ◆ Order a product (*m-Butterfly*)
 - ◆ Register for courses @ university

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Use Case Boundaries

- ❖ What was wrong with the latter use case diagram?
 - Ans: The boundary was incorrect!
 - With the Store boundary, the Cashier disappeared.
 - Identifying boundaries is a key analysis task

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Use Case Categories

- ❖ High Level - Requirements Phase
- ❖ Expanded Form - Analysis
 - includes Standard Flow (Typical course of events)
 - Alternate Flows: Planned deviations
 - Exception Flows: Unplanned but expected
 - ◆ Example: POST runs out of change!
 - Errors are unplanned and unexpected events
- ❖ Design Use Cases - Between Developers

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Use Case Types

- ❖ Primary - common processes
 - all "Happy Day" scenarios must be represented
- ❖ Secondary - rare processes
 - Alternate or Exception flows
- ❖ Optional - may/may not be implemented
- ❖ Essential - details are abstractly stated
 - All High-level use cases
- ❖ Real - details are critical to the use case

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Essential Use Cases

Use Case Degree of Design Commitment

- ❖ Expanded in form
- ❖ Free of technology & implementation detail
- ❖ Design decisions are deferred and abstracted
 - especially those related to the User Interface
- ❖ Degree of abstraction exists on a continuum

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Real Use Cases

- ❖ Describes the process in terms of its real implementation
- ❖ Commitment to specific technologies is made
 - Ex: Product code will be UPC (and not SKU)
 - Customer ID is done by type of transaction
 - ◆ Cash purchase - None
 - ◆ Check purchase - Driver's License
 - ◆ Credit purchase - Credit Card magnetic strip

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Tips for Use Cases

- ❖ Name use cases starting with a verb
 - Buy Items, Enter an Order, etc.
 - ◆ This emphasizes that it's a process
- ❖ Start an expanded use case in the form:
 - This use case begins when <Actor> <initiates an event>
 - ◆ "This use case begins when a Customer arrives at a POST with items to purchase"
 - Notice that actors names are capitalized

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Use Cases within Develop. Process

Plan and Elaborate Phase

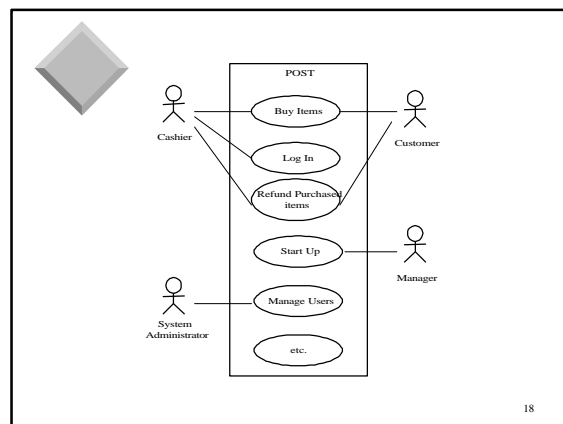
- ❖ After listing sys. fns, define sys. boundary & identify actors and UCs
- ❖ Write all use cases in *high-level* format. Categorize them as *primary*, *secondary*, or *optional*
- ❖ Draw a *Use Case Diagram*
- ❖ Identify *Use Case Relationships* (covered later in the text)
- ❖ Write the most critical, influential, and risky UCs in *expanded essential* form
- ❖ Delay writing all other use cases until you reach the development cycle in which they are addressed
- ❖ Ideally, delay writing *real use cases* until the design phase
- ❖ However, sometimes details are requirements and can't be avoided
- ❖ Rank use cases (discussed in the next chapter)

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Use Cases within Develop. Process

- ❖ Analysis Phase
 - Write expanded essential use cases for those which are being addressed in the current development cycle
- ❖ Design Phase
 - Write real use case descriptions for those which are being addressed in the current design phase.

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POST Use Cases

❖ Descriptions of the Use Cases are on pages 65 - 70 in the text by Larman

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