M2 - Building USE CASE

Wednesday, August 4, 2021 7:59 PM

Point of sale case study.

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USE CASE MODEL:

Use case - Text stories.

1. Discover and record requirements
2. Stories using a system to meet user goals.
3. It is input to many subsequent artifacts.
4. Use cases are requirements; primarily they are functional requirements
5. Use cases define a promise or contract of how a system will behave.
6. Us**es cases are text stories of some actor using a system in order to meet goals.**

- Useful for understanding and describing requirements.
- Comes under requirements discipline.
- Text documents.
- However, the UML defines a use case diagram to illustrate the names of use cases and actors, and their relationships.

Use case and Adding value:

1. Defining actors
    a. An actor is something with behaviour, **such as person, computer system or organization;** for example cashier
    b. A scenario: Sequence of actions between actors and the system under discussion. (Use case instance)
        i. Primary
            1) Has user goals fulfilled using the services of SUD (system under discussion)
               Ex : Cashier
        ii. Secondary
            1) Provides a service, example information to the SUD.
               Ex: Payment authorization service
        iii. Offstage actor.
            1) Has interest in the behaviour of use case
               Ex: Government tax agency

Use case Type and formats:

1. Black box use case are traditional ones
2. Formality types
    - Brief
        - Terse one paragraph summary. Usually of the main success scenario
    - Casual
        - Informal paragraph format. Multiple paragraph formats that covers various scenario.
    - Fully dressed.
        - The most elaborate. All steps and variations are written in details and there are preconditions and success guarantees.
        - Deep understanding of goals, tasks and requirements.

POS USE-USE model

1. Brief:

   A customer comes to the shop, He selects the required items and add them in the cart, He directs towards the cahier and produce items. The cashier uses POS system then Uses barcodes to identify the items and then system presents the running total, and line item details, customer enters payment information and system validates, updates inventory and customer is given receipt and he leaves with the items.

2. Casual:
    a. Handle returns
        i. Successful scenario

           Customer comes up with the items and the cashier uses POS system to checkout those items

        ii. Alternate scenario
            1) Customer provided payment information is rejected due to any reasons, so the cashier asks for the alternate method.

        2) If Item is not found in machine, enter the item id manually.
        3) If any issue occurs in transaction like network failure or system reboot, reinitiate the transaction.

3. Fully dressed pg: 60

a. Use Case Name :	Starts with a verb
a. Scope	The system under design
a. Level	User goal or subfunction
a. Primary actor	Calls on the system to deliver its services
a. Stake holder and interests	Who cares about this use case, and what do they want
a. Preconditions	What must be true on start, and worth telling the reader
a. Success guarantee (Post conditions)	What must be true on successful completion, and worth telling the reader
a. Basic flow (success scenario)	A typical, unconditional happy path scenario of success
Extensions	Alternate scenarios of success or failure
a. Special requirements	Related non-functional requirements
a. Technology and data variation list	Varying i/o methods and data formats
a. Frequency of occurrence.	Influences investigation, testing and timing
a. Miscellaneous.	Such as open issues

1. Scope
    i. Scope bounds the system under design
    ii. System use case : A use case defines use of one software system
    iii. Business use case: How a business is used by its customers and partners
2. Level
    i. User goal or subfunction goal
    ii. User goal level : describes the scenarios to fulfil the goals of a primary actor
    iii. Subfunction level: Describes sub steps required to support user goal.
3. Stakeholder and interests
    i. It suggests what system must do
    ii. What should be in the use case ?
        a) That which satisfies all the stakeholder interests.
4. Pre Conditions:
    i. State what must always be true before a scenario is begun
    ii. Pre conditions are not tested in the use case, they are assumed be true.
    iii. Usually implies a scenario of other use case, ex: logging in
    iv. Avoids useless noise to requirement documents
5. Post Conditions:
    i. The guarantee must meet the needs of all stakeholders.
6. Main success scenario:
    i. Happy path / Basic flow / Typical Flow
    ii. Typical success path that satisfies the interest of stake holders.
    iii. No conditions or branching
    iv. GUIDELINE: Defer all conditional and branching statements to the extensions section
    v. Scenario record steps, which there are of 3 kinds
        1) An interaction between actors
        2) A validation by system
        3) A state change by the system
7. Extensions
    i. Important and contains majority of the test
    ii. Indicates branches, both success or failure
    iii. An extension has two parts
        1) Condition
        2) Handling
    iv. GUIDELINE: When possible write the condition as something that can be detected by the system or an actor,

Note: There is two column variation format. Check TB: 78.

Essential style writing:

➢ Keep the UI interface out and focus on real user intent.

- Avoid something which is not suitable for early requirements work.
- Use essential style and avoid concrete style.
- Write black box use cases
  - Should not describe internal workings of system (ex: systems writes to a database etc)
  - Just tell the responsibilities of the system rather than components or design of it.
  - Avoid taking how decisions.
- Take an actor and actor goal perspective
  - Write requirements focussing on the users or actors of a system, asking about their goals and typical situations
  - What actor considers a valuable result.

Finding use cases:

1. Choose the system boundary, it is just a Sw/Hw application as a unit, that plus a person using it, or an entire organization ?
2. Identify the primary actors: Those that have goals fulfilled using services of system
3. Identify the goals of primary actors
4. Define use cases that satisfy user goals.

Tests:

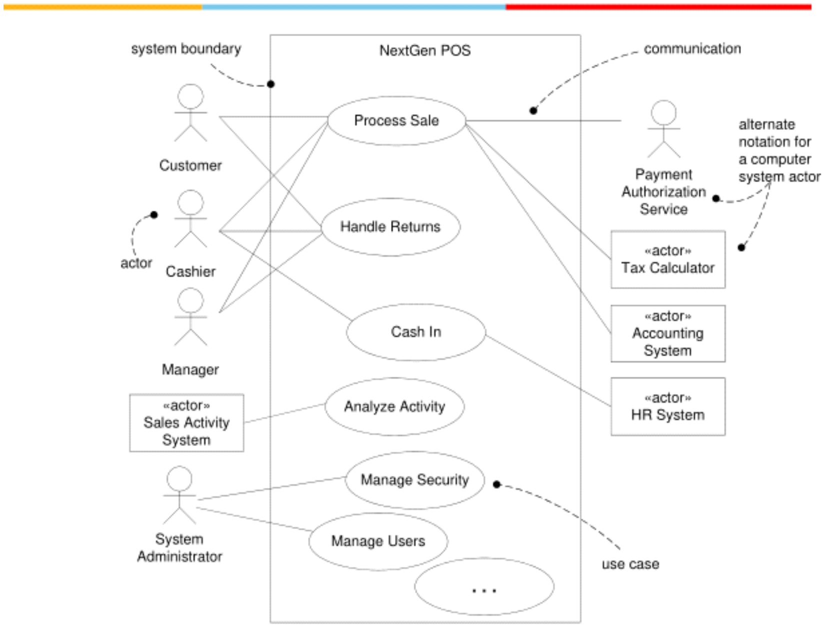
1. The boss test
2. The EBP Test
3. The size test.

Elementary business process:

A task performed by one person in one place at one time, in response to a business event, which adds measurable business value and leaves the data in a consistent state. e.g., Approve Credit or Price Order [original source lost].

USE CASE DIAGRAMS: PG:90

A use case diagram is an excellent picture of the system context; it makes a good context diagram.



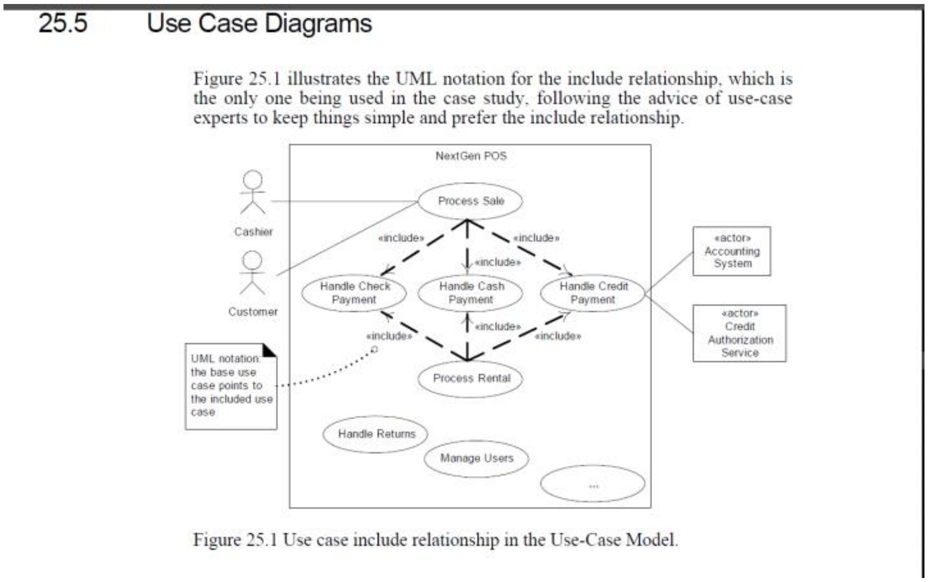
Relating use cases:

- There are some common behaviours in between use cases which we can create relationship in order to reduce the duplication of text and improve management of the documents.
- Includes and extend associations.

Ex: handle credit card payment may be part of several use cases such as process sale, make payment and process rental.

Include relationship:

Guideline: Use include when you are repeating yourself in two or more separate use cases and you want to avoid repetition. Or simply to decompose an overwhelmingly long use case into sub units to improve comprehension.

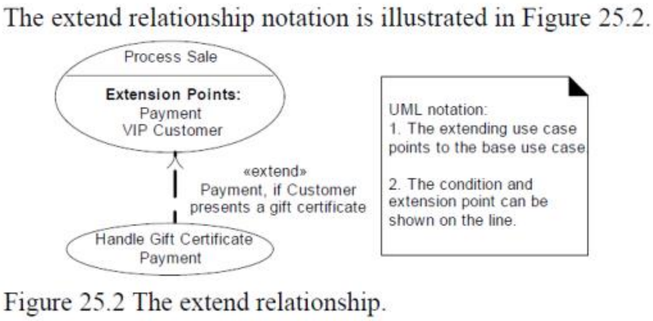


25.5 Use Case Diagrams

Figure 25.1 illustrates the UML notation for the include relationship, which is the only one being used in the case study, following the advice of use-case experts to keep things simple and prefer the include relationship.

NextGen POS
Cashier
Customer
Process Sale
«include»
«include»
«include»
Handle Check Payment
Handle Cash Payment
Handle Credit Payment
«include»
«include»
«include»
Process Rental
Handle Returns
Manage Users
...
«actor» Accounting System
«actor» Credit Authorization Service
UML notation: the base use case points to the included use case

Figure 25.1 Use case include relationship in the Use-Case Model.



The extend relationship notation is illustrated in Figure 25.2.

Process Sale
Extension Points:
Payment
VIP Customer
«extend»
Payment, if Customer presents a gift certificate
Handle Gift Certificate Payment
UML notation:
1. The extending use case points to the base use case
2. The condition and extension point can be shown on the line.

Figure 25.2 The extend relationship.