SWA261

The Analysis Phase: Use Case Analysis

Outcomes

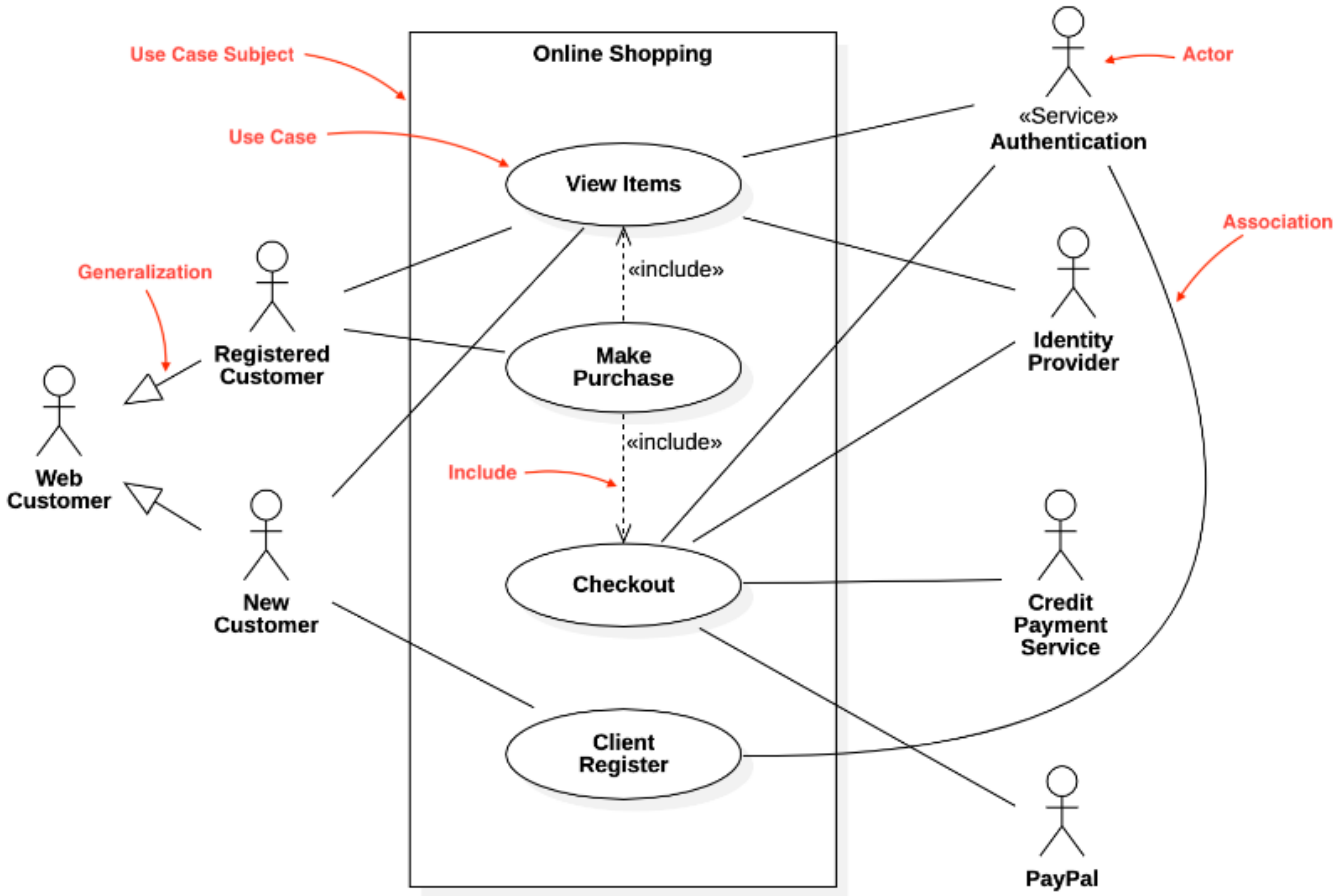
Students should understand the following outcomes, upon successful completion of this module:

- Explain the purpose of use cases in the analysis phase of the SDLC.
- Describe the various parts of a use case and the purpose of each part.
- Describe how use cases contribute to the functional requirements.
- Describe how use cases inform the development of test plans.
- Explain the process used to create a use case.

Introduction

- A use case represents how a system interacts with its environment by illustrating the activities that are performed by the users of the system and the system's responses.

- Use cases help us understand and clarify the users' required interactions with the system and can reveal most, if not all, functional requirements of the new system.



Introduction

- A use case depicts a set of activities performed to produce some output result.
- Each use case describes how an event triggers actions performed by the system and the user.
- With this type of **event-driven modeling**, everything in the system can be thought of as a response to some trigger event.
- When there are no events, the system is at rest, patiently waiting for the next event to trigger it.
- When a trigger event occurs, the system (and the people using it) responds, performs the actions defined in the use case, and then returns to the waiting state.

Role of Use Cases

- Use cases express and clarify user requirements.
- Purpose - define the expected interaction between user and system.
- Use that interaction to more fully describe functional requirements
- Used extensively in the analysis phase. Often a part of user interviews or JAD sessions.
- Text-based use cases are easy for the users to understand.
- Flow easily into the creation of process models and the data model.

Elements of a Use Case

1) Each use case has a name, number, and a brief description.

2) A priority may be assigned to indicate the relative significance of each use case.

3) An actor refers to a person, another system, or a hardware device that interacts with the system to achieve a useful goal.

4) A trigger defines the event that causes the use case to begin.
   - *external trigger* (triggers which are emerge from the entities present outside the system)
   - *temporal trigger* (usually a time-based event)

5) Preconditions: define the state the system must be in before the use case commences.

Elements of a Use Case

5) Normal Course: the description of the major steps that are performed to execute the response to the event, the inputs used for the steps, and the outputs produced by the steps.
   - The normal course lists the steps that are performed when everything flows smoothly in the system.
   - This is sometimes called the "*happy path*" because there are no problems or issues that arise when the steps are able to be followed normally.
7) Postconditions: defines the final products of this use case.
   - These postconditions also serve to define the preconditions for the next use case in the series.
8) Exceptions: describe any error conditions or exceptions that may occur as the use case steps are performed.
9) Alternative courses: depict branches in logic that also will lead to a successful conclusion of the use case.
10) Summary Inputs and Outputs: The final section of the use case summarizes the set of major inputs and outputs to the steps of the use case.
    - Each of the major inputs and outputs to the use case are listed, along with its source or destination.

Use Case example for an IT system

Use case example for an IT system called "Employee Onboarding System."

Name: Employee Onboarding System
Number: EOS-001
Description: The Employee Onboarding System is a web-based application designed to streamline and automate the process of onboarding new employees within an organization. It facilitates the creation of employee profiles, assignment of tasks to different departments, tracking of progress, and provision of necessary resources for successful onboarding.
Priority: High
Actor: HR Manager
External Trigger: An external trigger could be the submission of a new hire request form by the HR department.
Temporal Trigger: A temporal trigger could be the beginning of a new fiscal quarter when the company typically hires a batch of new employees.
Preconditions:

- The HR manager has access to the Employee Onboarding System.
- Necessary hardware and software infrastructure are in place to support the system.

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Use case example for an IT system called "Employee Onboarding System."

Normal Course:

i. HR manager logs into the Employee Onboarding System.
ii. HR manager selects "Create New Onboarding Process" option.
iii. HR manager enters details of the new employee (name, position, start date, etc.).
iv. System generates a checklist of onboarding tasks based on employee details.
v. HR manager assigns tasks to relevant departments or individuals.
vi. System sends notifications to assigned individuals about their tasks.
vii. Assigned individuals complete their tasks and mark them as done in the system.
viii. HR manager monitors the progress of the onboarding process through the system dashboard.
ix. Once all tasks are completed, HR manager finalizes the onboarding process.

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Postconditions:

- Employee's profile is successfully created in the system.
- All necessary onboarding tasks are completed.
- Employee is ready to start their job on the scheduled start date.

Exceptions:

- If assigned individuals fail to complete their tasks within the specified time frame, system sends reminders to them and escalates the issue to HR manager if necessary.
- In case of system downtime, HR manager resorts to manual onboarding processes.

Summary Inputs:

- New hire request form
- Employee details (name, position, start date, etc.)
- Onboarding task assignments

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Use case example for an IT system called "Employee Onboarding System."

Alternative Courses:

- If the new hire is a remote employee, additional tasks related to remote setup and equipment provisioning may be included in the onboarding checklist.
- If the new hire is a contractor or consultant, a modified onboarding process may be followed with different tasks and approvals.

Steps of building a Use Case

Step	Activities	Typical Questions Asked[a]
1. Identify the use cases.	Start a use case report form for each use case by filling in the name, description and trigger. If there are more than nine use cases, group them into packages.	Ask *who*, *what*, *when*, and *where* about the use cases (or tasks). What are the major tasks that are performed? What triggers this task? What tells you to perform this task?
2. Identify the major steps within each use case.	For each use case, fill in the major steps needed to complete the task.	Ask *how* about each use case. What information/forms/reports do you need to perform this task? Who gives you these information/forms/reports? What information/forms/report does this produce and where do they go? How do you produce this report? How do you change the information on the report? How do you process forms? What tools do you use to do this step (e.g., paper, e-mail, phone)?
3. Identify elements within steps.	For each step, identify its triggers and its inputs and outputs.	Ask *how* about each step. How does the person know when to perform this step? What forms/reports/data does this step produce? What forms/reports/data does this step need? What happens when this form/report/data is not available?
4. Confirm the use case.	For each use case, validate that it is correct and complete.	Ask the user to execute the process, using the written steps in the use case—that is, have the user role-play the use case.

Use Case - Example 2

Question: Create a use case for an Expense Reimbursement System. This is a digital platform that automates and manages the process of reimbursing employees for business-related expenses. It allows employees to submit expense reports, managers to review and approve/reject expenses, and finance departments to process reimbursements efficiently.

Questions

1. What is the purpose of developing use cases during systems analysis?
2. How do use cases relate to the requirements stated in the requirements definition?
3. Describe the elements of the use case's basic information section
4. Why is it important to state the priority level for a use case?
5. What is the distinction between an external trigger and a temporal trigger? Give two examples of each.
6. Describe two ways to handle a situation in which there are a large number of use cases.

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Thank You!

THE END

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