

# Systems Analysis and Design

## 8 Use Cases

Terry Marris December 2007

A scenario describes the interaction between a system and its user. A use case is a set of scenarios. We see what they look like and how to construct them.

### 8.1 Scenarios

A scenario is a sequence of steps that describes the interaction between a system and its user. Look at the steps involved in taking a book out of a library. One possible scenario is

1. librarian presents borrowers id
2. system finds borrowers record
3. librarian presents copy id
4. system finds copy record
5. system adds copy id and return date to the borrowers record

Another possible scenario is:

1. librarian presents borrowers id
2. system finds borrowers record
3. system reports borrower has reached their loan limit

The collection of scenarios that together describe the book loan process is an example of a use case.

Look at each step. An important question to ask is *what can go wrong?* The answers can you help find other scenarios.

You can put as little or as much detail as you like into a scenario. You do not need to put everything in, but just those things you (and your readers) find useful.

## 8.2 Use Case

A use case is a set of scenarios that accomplish a goal.

**Use Case:** Loan

**Purpose:** to record the loan of a copy to a borrower

**Actor:** librarian

### Main Success Scenario

- 1 librarian presents borrowers id
- 2 system finds borrowers record
- 3 librarian presents copy id
- 4 system finds copy record
- 5 system adds copy id and date due for return to borrowers record
- 6 exit success

### Exceptions

- 2a borrower not found
  - 2a1 exit failure
- 2b borrower has reached lending limit
  - 2b1 exit failure
- 2c borrower has fines not yet paid
  - 2c1 exit failure
- 4a copy not from loan stock
  - 4a1 exit failure

The actor is the person that uses the system.

The main success scenario describes the dialogue between user and system in the straightforward, no problem case.

The exceptions are the error scenarios - they describe what happens when things go wrong. For example:

- 2a borrower not found
  - 2a1 exit failure

means that in step 2 one of the possibilities is that the member cannot be found on the system. The action taken by the system then is to exit from the *Loan* process with an error message.

Every use case scenario, success or exception, must end in:

- exit success *or*
- exit failure *or*
- resume <step number>

*exit success* means no problems.

*resume <step number>* means go to a previous step. For example, resume 2 means go to step 2.

Use Cases are the starting point of any serious software development activity.

### **Exercises 8.1**

1. Construct use cases for each of the following scenarios:
  - a. return a loaned copy
  - b. renew a loaned copy
  - c. reserve a copy
  - d. retrieve loan history for a borrower
  - e. pay a fine

### **Bibliography**

FOWLER M *UML Distilled* 2nd Ed Addison-Wesley 2000