UNIVERSITÄT PADERBORN
Die Universität der Informationsgesellschaft

Heinz Nixdorf Institute & Department of Computer Science
Software Engineering Research Group
Prof. Dr. Wilhelm Schäfer
Warburger Straße 100
33098 Paderborn

Specification of Software Patterns for Pattern-Oriented Software Development:

Use Cases

1 Preface

This document describes the use cases that are to be realized with the catalog management tool. In agreement with all team members the use case diagram can be changed.
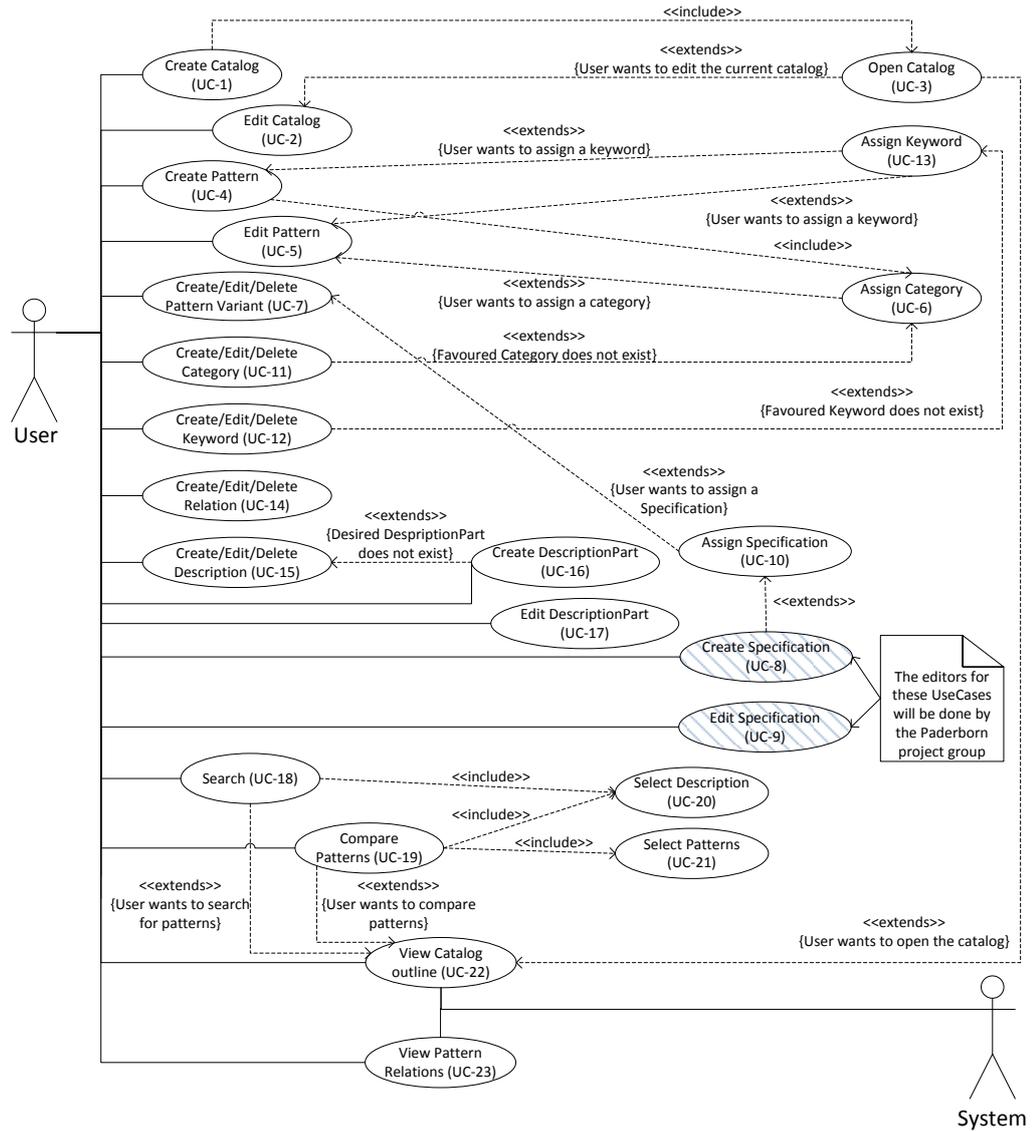
2 UseCases

Figure 1: The UseCase diagram

2.1 Organizing patterns

2.1.1 Create/Edit/Delete/Open pattern catalog (UC-1/2/3)

One basic feature is the creation as well as the deletion of a pattern catalog. If a catalog is deleted, all its containing categories, patterns and so on are deleted, too. Because every pattern catalog should be stored in a single file, the `Open pattern catalog` (UC-3) use case is needed to open (view) the catalog.

2.1.2 Create/Edit/Delete pattern (UC-4/5)

The user can create, edit and delete patterns. The edit and create use case are also containing the `Assign category` (UC-6) use case and the `Assign keyword` (UC-13) use case, which means that the user could perform those actions while editing or creating a pattern.

2.1.3 Assign category (UC-6)

This use case describes the action, which provides the functionality to assign a category to a pattern. For example the 'Observer' pattern belongs to the category 'Behavioral Pattern'.

2.1.4 Create/Edit/Delete pattern variant (UC-7)

The user can create, edit and delete pattern variants. Each pattern variant must be created for a specific pattern. It is not possible to create a pattern variant, which does not belong to any pattern.

2.1.5 Create/Edit/Delete/Assign pattern specification (UC-8/9/10)

For an existing pattern variant the user can create a new specification or assign an already existing one from another pattern variant. This specification can also be deleted. Createing and editing a pattern specification will open the specifition editor of the POSE project group.

2.1.6 Create/Edit/Delete category (UC-11)

The user can create and delete categories of a pattern catalog. In addition, those categories should be movable (e.g. a level up or down in the tree structure).

2.2 Describing patterns

2.2.1 Create/Edit/Delete keyword (UC-12)

For each catalog, the user can define a list of keywords.

2.2.2 Assign keyword (UC-13)

Defined keywords can be assigned to several patterns. This use case might be a part of edit and create pattern use case and can be extended by the `Create keyword` use case. While assigning a keyword to pattern, the user could directly create a new keyword in one action, if it does not exist already.

2.2.3 Create/Edit/Delete pattern relation (UC-14)

In a graphical editor, the user should be able to model the relations between patterns. Relations between patterns can be for example "usable with", "alternative to", "excludes" or "realized by" (see meta-model). In the editor the user can add and remove such relations. In addition to the graphical editor the user should also be able to add and modify relation inside the normal pattern edit form.

2.2.4 Create/Edit/Delete description (UC-15)

The user can add, edit and delete descriptions to/from patterns or pattern variants. The creation of a description might include the default creation of one description part. For more information look at the meta-model document.

2.2.5 Create/Edit/Delete description part (UC-16/17)

The user can add, edit and delete description parts to/form descriptions. For more information look at the meta-model document.

2.3 Explore patterns

2.3.1 Search patterns (UC-18)

Using some kind of search box, the user can look for specific patterns by executing a full-text-search. The search can be filtered by the different descriptions. Before searching patterns, the user can select the descriptions, which should be used for a detailed filtering.

2.3.2 Compare patterns (UC-19)

In a comparison view, the properties of several patterns can be juxtaposed. Before comparing patterns, the user must select the patterns.

2.3.3 Select descriptions/patterns (UC-20/21)

This use case simply describe the selection of descriptions or patterns, which are needed for the search and comparison.

2.3.4 View pattern catalog (UC-22)

The user can view the whole pattern catalog in a tree, which holds the categories, belonging pattern and variants. This use case is also be triggered by the system to provide a permanently synchronized view of the pattern catalog.

2.3.5 View pattern relations (UC-23)

The user can view the relations between the patterns in a graphical view. Patterns can be a small rectangle with the patterns name and lines between these rectangles show the relations.

2.4 Integration with the tool from Paderborn

2.4.1 Open pattern specification editor

It should be possible to open and edit each pattern specification in the pattern specification editor from the tool developed in Paderborn.

2.4.2 Start pattern application

Furthermore, the pattern application should be able to be started for a pattern specification out of the catalog.