Ingegneria del Software e Progettazione Web

Progetto A.A. 2022/2023

AskIng

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INTRODUCTION

Aim of the document

The aim of software engineering is to apply a systematic and quantifiable approach to the design, development, testing, deployment and maintenance of software system. We can say that is a perfect mix of software development, engineering, economics and, why not, also costumer care. In the process of creation of a software the technical knowledge of programmers is essential but not sufficient: the systematic approach typical of engineers is also needed to guarantee modularity, maintainability, flexibility, interest tracking and so on, always keeping in mind the economics aspect and the costumer's requests.
This project has been developed applying some of the practices of software engineering and they will be shown in this document. The chapter "Software requirement specification" takes part in the *problem domain* and, as the name suggests, it analyses the problem and extracts from it the requirements that the system has to meet. "Storyboards", "Design" are about the implementation, both visual and of the code, of the solution used to satisfy the requirements (*solution domain*).

Overview of the defined system

The project "AskIng" is a forum with a very specific topic: the courses of Software Engineering of the University of Rome "Tor Vergata". The idea of the project is born from the necessity, that I have encountered throughout these three years of obtaining information about a specific course from students of past years. Currently, there is no specific forum for this.
The structure of the forum is easy: there is a section for each one of the courses. Only people that are registered can write questions and responses. I decided to do this to hold people accountable of their action and maintain the forum a place free from violence, racism and other types of hate. In fact, the behavior of the users is monitored with two parameters: "points" (which indicate that the person helps the forum growth and is active in it) and "bad behavior" (the name is self-explanatory).
"points" is incremented every time a person posts a question or reply to a question. The "bad behavior" is incremented every time that a person writes a banned word in a question or response. Eventually the users can ask to become moderator. The requests are analyzed by the current moderators who can accept or decline based on the behavioral parameters of the users. The moderators also help to maintain the forum hate-free by removing posts that violates the forum policy.

The users who are not logged can only read the posts.

Related systems, Pros and Cons

The forum is very simple and essential. Of course other forums like *Stack Overflow* or *Reddit* are more complex, and offers more functionalities. For example, some forums allow users to upgrade their profile in different levels based on their experience. In my forum there are only two levels: regular user and moderator.
Stack Overflow allows to find a specific user (I don't like that feature since this is not a social) and maintains tracks of the views of a question.
The simplicity of my forum can be view as a pro or as a cons. I followed the saying "less is more" because I wanted to highlight the main functionalities and I wanted it to be visually intuitive. I personally find other forums like *Stack Overflow* too chaotic. A con is that my forum is single-user and does not allow concurrent usages from different users. Furthermore, my forum does not take note of the date in which a question or a response is posted and I think that this can be a future improvement.

HW and SW requirements

The software and hardware minimum requirements:
-RAM: 2GB of free RAM
-CPU: any modern CPU
-Disk space: 2.5GB and another 1GB for caches
-Monitor resolution: 1024x768
-Operating System: Microsoft 8 or later, macOS 10.14 or later, any Linux distributions that supports Gnome, KDE or Unity DE

USER STORIES

-As a registered user, I want to post a question about a specific course, so that someone can respond to me and remove my doubt.

-As a registered user, I want to respond to a question, so that I can help someone.

-As a moderator, I want to remove a post, so that the forum doesn't contain violence, racism, sexism, ableism and swearing.

FUNCTIONAL REQUIREMENTS

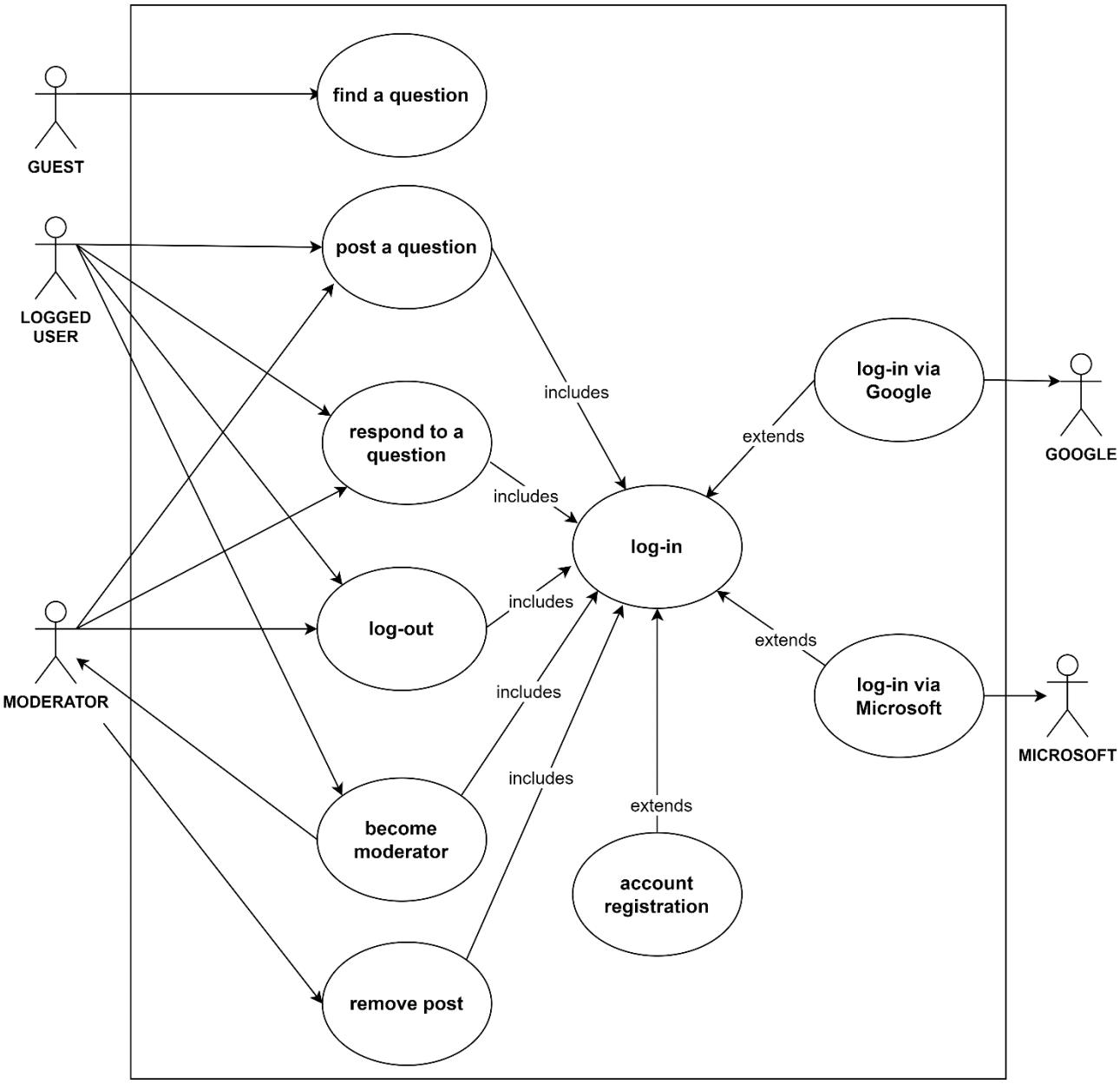
-The system shall provide a form to ask questions about a didactic course. The form contains a field to insert from 1 to 3 keywords* and a field to insert the question.

*Keywords: single words related to the content of the question.

-The system shall provide a search bar to find existing question threads using keywords.

-The system shall provide a log-in area where users can log-in using their username and password.

USE CASE DIAGRAM



NOTE: use cases *remove post*, *account registration*, *log-in via Google* e *log-in via Microsoft* are NOT implemented.

USE CASE INTERNAL STEPS

Name: Post a question

1. The user requests to post a question.
2. Log-in.
3. The system prepares a blank form with one field to insert from 1 to 3 keywords and one field to insert the text of the question.
4. The user submits the form.
5. The system checks if the keywords inserted are more than 0 and less than 4.
6. The system checks if the text contains more than 0 less than 1001 words.
7. The system checks if the question does not contain banned words.
8. The system saves the question.

Extensions:
5a. *User exceeds number of keywords*: System notifies the user and lets them remove a keyword.
5b. *User inserts 0 keywords*: System notifies the user and lets them add keywords.
6a. *The text is empty*: The system notifies the user and lets them insert the text.
6b. *The text exceeds the limit of 1000 words*: The system notifies the user and lets them edit the text.
7a. *Catalog system with banned words is not responding*: The system notifies the user and terminates use case.
7b. *The question contains banned words*: The system notifies the user, increases of one the “bad behavior” field of user’s profile and terminates use case.

Name: log-in

1. The system prepares a blank form with a username field and a password field.
2. The user submits the form.
3. The system verifies username and password.
4. The system sets current user.

Extensions:

3a. *Username or password are not correct*: System notifies the user and lets them complete the form again.

3b. *Catalog system with users' information does not responds*: The system notifies the user and terminates use case.

STORYBOARDS

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/UI%20prototypes

NOTE: Start the visualization of the UI prototypes from the file index.html

VOPC DIAGRAM (BCE PATTERN)

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/Class%20diagram

VOPC DIAGRAM (MVC PATTERN)

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/Class%20diagram

DESIGN PATTERN

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/Design%20pattern

ACTIVITY DIAGRAM

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/activity%20diagram

NOTE: In the “log-in” activity, the checks on the number of attempts and the timeout are NOT implemented.

In the “respond to question” activity the actions *Display "banned words present" error message* and *Increase "bad behavior" field in user's profile* are not simultaneous in the implementation.

SEQUENCE DIAGRAM

Link: **https://github.com/martinalupini/Deliverables-AskIng/tree/main/sequence%20diagram**

NOTE: All the synchronous calls are asynchronous in the implementation.

In addition to “boundary”, “entity”, “control”, I have marked the classes as “dao” (the main aim of these classes is to retrieve information from the persistency layer) and “engineering” (these classes are introduced as an additional help to the control class).

“boundary” classes cannot communicate with “entity” classes. In this case I used the “entity” mark also for the bean classes. Boundary and Bean classes can communicate with each other.

The destroys are not implemented since the deallocation in Java is in charge of the Garbage Collector.

STATE DIAGRAM

Link: **https://github.com/martinalupini/Deliverables-AskIng/tree/main/state%20diagram**

SELENIUM TEST VIA GUI

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/TestSeleniumGUI

SELENIUM TEST VIA API

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/TestSeleniumAPI

CODE

Link: https://github.com/martinalupini/AskIng

VIDEO

Link: https://github.com/martinalupini/Deliverables-AskIng/tree/main/video%20AskIng

SONAR CLOUD

Link: https://sonarcloud.io/summary/overall?id=martinalupini_AskIng