Semestral Work Topics

October 6, 2023

This document lists some topics for the EAR course. First, **the preferred way is that you invent your own topic, based on your personal or professional interests**. If you don't have any such topic this document can help.

In addition to the standard topics listed in section Topics, we also offer a few advanced topics that are of particular interest to the work of the Knowledge-based and software systems group FEE CTU. These topics are more complex than the standard ones, but are motivated by practical problems that we solve as a part of our research project. These advanced topics are meant for students that would be interested in leveraging them into a bachelor thesis, or for those that already have significant experience in enterprise application design and implementation.

Topics

Journal Manuscript Preparation System A journal editorial board manages submission/publication process of journal articles. Its members ask experts to read and review papers. Each reviewer needs to be informed (e.g. by email) about a new paper assigned to him/her to review. He/she downloads the paper, prepares a review and writes notes into a single large text area or uploads a self-prepared PDF file. Editorial board, as well as authors want to know, which articles are already reviewed and which are under review.

Private Library The system serves for people that often lend books (or other content) to publicly advertise their books, including their design, content summary, or assessment by others. The system should provide also an overview of the library status (which books are lent, which are free, which are reserved). The system should support automatic notifications after some time period (e.g. 6 months). The system will allow easy management of books (insertion/removal), as well as reservations. It should distinguish different type of access (e.g. guest, librarian).

Vacation Planning System Small teams need to organize their vacations to avoid overlaps of important people. Each team member should be able to insert his/her request for vacations. A summary calendar-like view with highlighting of current day, state holidays, number of available team members, is expected. Each team

member should be informed about remaining number of holidays to be scheduled in the year. Optionally, various roles (manager, developer, technical support, etc.) of team members might be considered to highlight days where the role is missing.

Meeting Scheduler The system is similar to Doodle, but has more functions. The organizer offers several options for a meeting in terms of time slots and possible places. Each poll participant decides how much the offer is good for him/her (e.g. in terms of 0-10 points) and can fill in a remark.

Meeting Room Reservation System A system which would support management of meeting rooms and their reservation. It should also support prioritization of the rooms, so that some rooms are made available only when there are no other rooms for the given time.

School Information System The system is a simple version of KOS, maintaining courses, students, teachers, rooms. Teachers can create a course and schedule them into rooms that restrict the capacity of the course. Students can enroll into the course unless the course is no more capacity left. Students can list courses they are enrolled into, teachers can list courses that they teach.

System for bachelor/diploma/dissertation thesis reviewers During bachelor / diploma / dissertation thesis evaluation, one or more reviewers have to read and assess the thesis. The system should be able to manage reviewers (CRUD), together with their expert topics (Provided by means of a taxonomy), affiliation and contact. Guests can search reviewers based on the works they have reviewed and based on the topics matching their expertise.

Sports Club Evidence There is a sports club (e.g., a running club). It needs to keep records of its members: name, address, phone number. Yearly membership payments need to be recorded. There is also a cup where points are awarded based on attendance at races. User/admin roles.

SW for Agile Team An agile team has a hierarchy of tasks (WBS – work breakdown structure). A mindmapping tool (e.g., Freeplane) can be used to realize simple editing. There is a backlog – a list of tasks ready for implementation. Each task is estimated using story points (Fibonacci sequence). Sprint – a restricted time interval (1-3 weeks) during which the team has to do the planned tasks. UI contains task states: READY, IN PROGRESS, DONE. Ideally, some form of drag&drop for state changes between corresponding columns. Synchronize work progress with the mindmap (e.g., using colors). Bonus: evaluation of spring success rate.

Calendar for Group of Athletes A group of runners (10-50 people) would like to know about races in the near future and members attending them. The idea is to create a calendar where anyone can create a race – when, where. Anyone can plan to attend a race in the calendar. Every user sees who and which race is everyone attending. Extra 1: Have a list of close friends highlighted in the calendar. Extra 2: Races which are attended by my close friends are highlighted in the calendar.

System for managing bachelor/master thesis topics A university needs a system for the management of bachelor and master thesis topics. In this system, teachers enter available topics, which may be carried over from previous semesters. Students are then able to sign up for a topic and, after the teacher approves this sign up, they work on the topic. Topics should be searchable by various criteria, students can sign up to at most one topic at a time.

Helpdesk The system should help in communication between customers and a service-providing company (e.g. a GSM operator). It should allow customers to pose new issues (of various - potentially in-app customizable types), comment them and react on responses. For simplicity, the company has a manager who assigns employees to the issues according to their type. (S)he decides on their severity, deadlines, etc. The employees working on an issue should be able to track their time spent and inform the customer that the issue is resolved. Once the customer approves he is happy with the resolution, the manager can close the issue.

Lab Information System Consider you are in a biotech/pharma (feel free to adjust the topic to another type of company that you like) company that needs to have some overview of experiments and case studies performed. Each experiment has some planning (time frame, resources needed, drugs/animals/plants involved), some execution (actual description of what is OK, what not), and some summary report afterwards. Each experiment is supervised by a single researcher, but other researchers can be involved too.

Vocabulary Manager As an enterprise you want to create a corporate vocabulary platform. One employee is the responsible approver, but anyone of the company can suggest new terms, their definitions and links to documents / processes they come from. Once someone wants to create a company-level document (s)he should use the approved vocabulary wherever possible and equip the document with the glossary - for this purpose the Vocabulary Manager should have some export function to HTML/MarkDown/etc.

Advanced Topics

You can also choose an advanced topic (not listed here). Such a topic may not cover all of the EAR checkpoint criteria, but will likely require learning and applying a new skill or going much deeper into one of the topics taught in EAR. Grading in such cases is individual and the project can then be transformed into a bachelor's thesis. Ask your teacher in case you are interested in working on such a topic.