Course Information Management System

Group 2

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Project Overview Document (POD)

Problem and Users

Information for courses today are scattered over several different course websites, making it a time consuming task to check for course news or get an overview what's currently happening in all the courses. We would like to solve this problem by creating a single system that enables student to get easy access to all the information from all the different courses she is enrolled in and course leaders an effective and easy way to maintain the course website.

The main users will be students, who we consider to be above 18 years old, able to read English and can operate websites without any difficulty. Except for this we expect the students to be a fairly diverse group of people. The students are expected to use a range of different operating systems and web browsers. The system will mainly solve the problem of getting an easy overview of the courses the student is currently enrolled in, and providing a single interface for all course websites helping quick navigation. Other than this the system will also provide necessary functionality for the students, such as laboratory and exam registration, schedule and general course information.

Other users will be course leaders and course assistants. They are assumed to be able to read and understand English. They will not always be as used to navigating websites as the students normally are. Generally they are also older than the students. Also these two groups are expected to be diverse, for example using different web browsers and operating systems. For these two groups the system will simplify the process of maintaining the website and providing functions common to course websites. The course leaders and assistants are not expected to have any experience or skills in web design.

Main Uses

For the students the system will provide functions for getting a quick overview of the courses they're currently taking, for example by functions for displaying course news from all the courses the student is attending, RSS-feeds[1] for all course news, a compilation of all courses' deadlines and schedules and by offering a uniform layout of the course websites. The following is a usage narrative for a student:

> Simon is on his lunch break after a morning of lectures. After finishing his meal he takes up his laptop to check the latest news from the web via the university's wireless connection. While checking his normal RSS-feeds he discovers that news has been posted for one of the courses he is enrolled in. This afternoon's lecture has been cancelled.

> In the news he also discovers that the course administrator in his Economics course has just opened the registration for the seminars. Simon checks his compiled schedule for all the courses he's enrolled in and finds a time that suits him. He logs in and registers for the seminar right away. Thereafter he logs out from the site to end the session.

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[1] RSS-feeds enable users to easily stay updated with news on many websites simultaneously using special software or integrated functions in web browsers such as Mozilla FireFox or Internet Explorer 7.

The main usage for the course leaders and assistants is to administrate the course website. The course leader can also easily add functionality common to all (or some) course websites, for example functionality for searching, exam registration and course evaluation.

> Eric is a new member of the Digital Electronics institution and has just been assigned his first course in Digital Design. He has planned the course in detail and is about to create the course website from his computer in his office.
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> He logs in to the system and easily creates a new website in a couple of easy and intuitive steps using a wizard. The wizard queries him for what functionality he would like to have on the website and helps him add content. After finishing the wizard the system sets up a website with the functions Eric specified. The course website for Digital Design now contains functions for searching, publishing course news, registering for laboratory classes and a calendar for the deadlines in the course, as well as general course information and information about booked guest lecturers.
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> The course news will be automatically displayed on the enrolled students' front page as well as in their RSS-feeds, enabling Eric to communicate quickly with many of his students. The course's schedule will be included in the compiled schedule for the students.
> Eric thereafter logs out from the site to end the session.

Context and Environment for Usage

By course leaders and assistants the system will be used mostly at a stationary computer, for example in the course leader's office, at home or in one of the computer labs. The course leaders and assistants will be spending more time in the system than the average student.

For students the usage will be more spontaneous. They'll most likely be using the system from laptops connected to the Internet via the university's wireless connection, by mobile phone (to view the schedule) or from home.

Scope of the System

The aim for the system is to provide the necessary functions without needless clutter.

Topic	In	Out
General course information	X	
Schedule	X	
Import schedule from iCal for teachers	X	
Export schedule to iCal	X	
Laboratory registration	X	
Exam registration	X	
Result registration	X	
Course news	X	
RSS-feed for news	X	
Registration for course	X	
Course evaluation	X	
Uploading of files for teachers	X	

Uploading of files for students' hand-ins	X	
Overviews of deadlines for courses	X	
Access to schedule via WAP	X	
Course website statistics	X	
Search functionality	X	
Forum		X
Course selection		X
Integration with KTH's systems		X
Subway or bus schedule		X
Lunch menus		X

Designing and Building the System

One of the problems the system aims to solve is to provide an easy and fast user interface to quickly get an overview of course news and schedule. To develop a user interface that provides this information easily will be one of the main challenges for this project.

Building an administration system that can be easily used even by a person without any knowledge in web design will also be a significant problem. We will have to take extra care when designing this system part of the system, and preferably conduct user testing. An example of when the user interface will be tricky to design would be the authoring of a course evaluation. The administrators then need the ability to add different type of questions (text questions or multiple-choice questions) and then specify attributes for the questions (rows for the text field or the different choices available).

The users shouldn't be able to view all data in the system, so we have to implement an authentication system to restrict users. The system also has to keep track of different users' privileges.

The schedule customized for mobile phones has to be small to make sure that it loads fast enough and doesn't cost too much to use (since users generally pay for the traffic they use).

For result registration the system has to support different grade systems and point systems. The major grade systems should be supported, as well as most customizations that may be used in individual courses. Supporting all customizations might prove to be very complex, and some calculations may have to be done externally from the system. For this purpose it is important that the student's results can be exported by the course leader to the CSV file format[2] that can be imported to Microsoft Excel, OpenOffice Calc, iWork Numbers and a range of other software for further processing.

One problem for the result registration would also be to create a user interface that enables the teachers to effectively assign results. To accomplish this, the user interface should be designed in such a way, that the teacher quickly can navigate through fields only by using the keyboard. The system should allow for batch processing for students to limit the number of user actions (for example allowing the user to select all users for a certain grade and then

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[2] The CSV file format has been around since the early days of business computing, and is therefore supported by most platforms and a wide range of software. The format is a comma-separated list, which can easily be parsed even by custom software.

assigning the grade to them all at once). Page loading has to be at a minimum (AJAX[3] should be used as much as possible for this) and page loads that cannot be avoided need to be quick.

Technologies and Risks

For the website we plan on using JavaServer Pages[4] backed with MySQL[5] as a database. For the web pages we will use HTML[6] and CSS[7]. We also plan on using the JavaScript library Scriptaculous[8] for AJAX features and user interface programming. For exportation and importation of schedules we'll be using the iCal format.

The main risk lies in the lack of experience using JavaServer Pages within the group. All the group members have experience using Java in general, but none have previously worked with JavaServer Pages. The group has also found that the number of examples for JavaServer Pages on the web is not as many as for example that for PHP and ASP.NET. To limit this risk we plan on studying JavaServer Pages early on in the process.

The group feels confident using databases in general and MySQL in particular and is not expecting any major problems surrounding that area. Even so, all group members have been assigned to refresh their knowledge in MySQL.

The group lacks a person with solid skills in design, and creating a good looking user interface might prove to be a challenge. To overcome this risk we will try to create a simple user interface, and separate it clearly from the logic implementation so that it may be developed externally later should the need arise.

Some of the user interface programming will inevitably be dependant on the different web browsers so much time must be spent testing on different web browsers. Creating code that is compatible across browsers might be a challenge. For the AJAX functionality this will be helped in part by the Scriptaculous library which is compatible with most of the common browsers used today.

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[3] AJAX refers to several web development techniques that enable the client and server to communicate in an asynchronous manner, making it possible for parts of the web pages to be dynamically updated without having to reload the entire web page.

[4] JavaServer Pages enables software developers to create dynamic web pages that run on the web server. The web pages can for example load and process data from a database server, as well as receive user input from end-users.

[5] MySQL is a widely used open source database relation management system.

[6] HTML is the most widely used markup-language for create web pages.

[7] CSS is a formatting language that enables web developer to separate styling from the layout of the web pages, as well as enabling styling options not available otherwise.

[8] Scriptaculous is a JavaScript library that is run on the client. The library is designed to be compatible with most common web browsers and provides functions for AJAX and visual effects.