Online Course Registration

Specifications

Haley Allen
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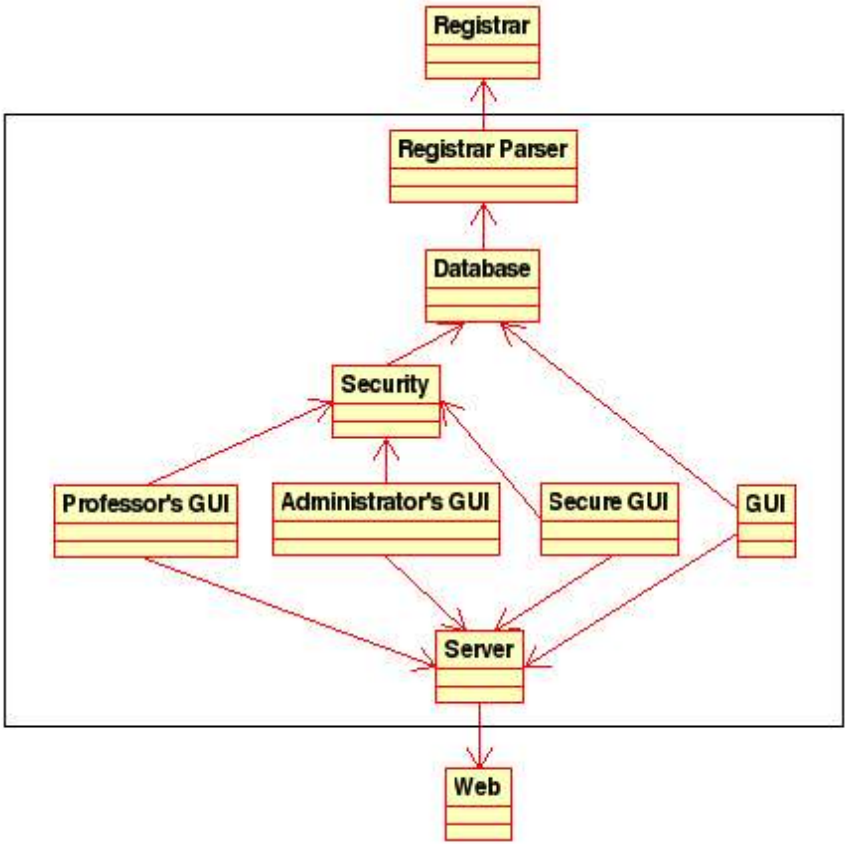
Background

Online course registration has long been a source of conflict for Brown. While some, perhaps those more technology-savvy, have pushed for a more streamlined, automated approach to the bi-annual event of course registration, others, especially the Registrar, have been reluctant. That is, until recently. Now Brown has made a multi-million dollar deal for an online course registration system, Banner. Problem solved, right? Wrong. Not only will minor Brown traditions have to change in order to accommodate this new system, such as changing the name "concentration" to "major", but there will have to be other, more fundamental changes made, for example adding an extra digit to every course title (CS190 will become CS1900) and enforcing course prerequisites. The biggest problem has been their recent announcement that instead of having the first version of Banner be available this semester, it will not be out for another year, and they will need another ten million dollars! With our version of online course registration we will implement fewer features than Banner, but we will do them better and faster, finishing by the end of this semester. We will also pay closer attention to the desires of the student body, those users who will use the program the most.

System Model Diagram



System Components

Registrar Parser

- Interface with the Registrar's current internal system.
- Convert Registrar's data to a format our Database can handle.
- Convert registration data from our Database back to a format the Registrar's system can handle.

Database

- Keep track of current courses and all their related info (i.e. class time, professor, location, etc.).
- Be searchable based on all such features.
- Record information from professors (i.e. caps on classes, advising permissions, etc.).

Security

- Provide a secure way for students to log in using their netid and password to register for classes.
- Provide a secure way for professors to log in and allow students into their courses and sign off on first-years' courses.
- Provide a secure way for administrators to log in and make changes to the Database and other related features.

Student's GUI

- Allows students to peruse course information anonymously.

Student's Secure GUI

- Provides a secure way for students to log in using their netid and password to register for classes (and, optionally, look at transcript information and concentration requirements).

Administrator's GUI

- Allows administrators to log in securely and set up and make changes to the Database each semester.

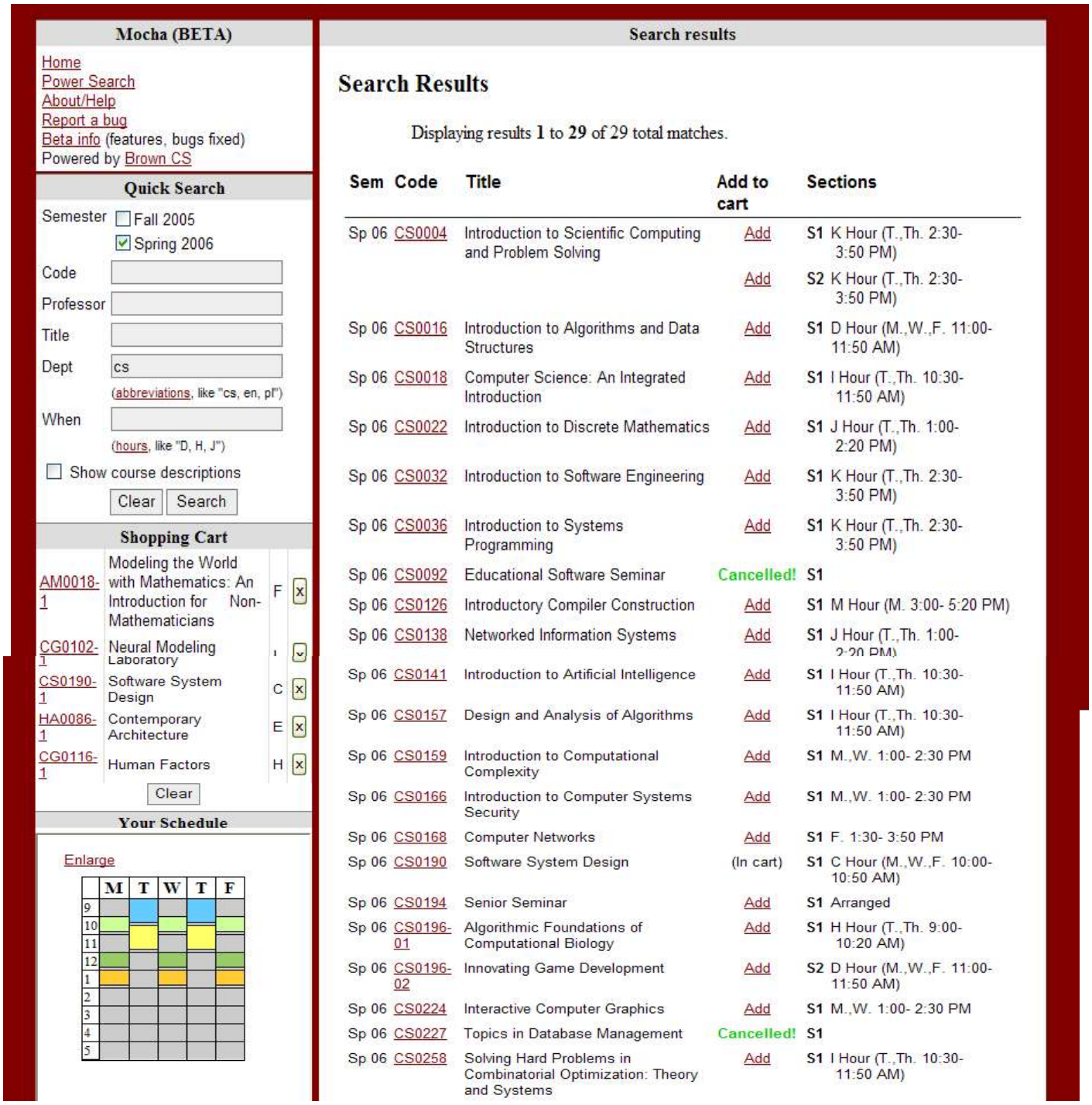
Professor's GUI

- Provides a secure way for professors to set up features of their course such as a class cap, previous requirements, and so on.
- Allows professors, as advisors, to approve first-years' course choices online.

Server

- Provides the web interface for the program so that all of this can be done from the comfort of your home or office.

User Interface



Interface Components

Course Listings

- Courses and relevant information should be clearly listed as a result of a search. Relevant information includes course title and number, meeting time, and whether or not is has been canceled or a changed in any way by the professor or administration.

Searching

- One should be able to search by various parameters including but not limited to meeting time, professor, title, and department.
- The search feature should appear on every page in the Student's GUI.

Shopping Cart

- A shopping cart allows students to browse courses and save those they may be interested in.
- An optional feature would be to save such information in a cookie in the user's browser or in the Database.

Schedule Visualizer

- The schedule visualizer allows a student to view their courses based on meeting time in the Brown classic course time layout (see above for an example).
- A bonus would be to map out on a Brown campus map where the locations of courses are relative to the times they meet.

Transcript

- Once securely logged in, a student should be able to easily refer to their internal transcript.
- A option would be to take this information and show students what courses they could take based on the requirements they would fulfill.

Critical Review

- As an optional feature, a course page could include a link to or summary of the Critical Review's information regarding each course.

Shopping Period

- During shopping period, students could also log in to add and drop courses, as well as make grade changes.
- Adding courses would be a two-part process: a student would make an add request and it would be pending until the professor logged in and approved it.

Confirmation

- For any changes made to the Database and other related components a confirmation page will be displayed to indicate to the user that their request has been received.

Priorities

All requirements specified by the administration are crucial to a functional, usable, and stable online course registration system at Brown. Those requirements important to the student body are also of high priority but are not fundamental to the basic bare-bones functioning. Non-feature requirements are also very important but not vital and are listed in order of importance. Finally, those features listed as optional are least important and are too listed in order of importance. The exact priorities are specified in parentheses at the end of each bullet.

Non-Feature Requirements

Reliability

- If a user receives a confirmation page, we must ensure that their request has been processed and the appropriate changes to the Database have been made. (5)

Performance

- The Server and Database (and program in general) must be able to handle any number of users at one time (around three thousand in a day as a worst case scenario). (5)
- It must also respond reasonably quickly to user's search and register requests, for example, if a student already knows which courses they wish to register for, it should take them less than five minutes to do so. (5)

Testing

- The Database and Server must be tested for performance as they're the most likely places to bottleneck in the case of overloading. (4)
- The Database must also be consistent, recover from crashes gracefully, and "never" corrupt data. (5)
- The GUIs must be able to handle users trying to do weird things such as scheduling for two classes at the same time. (3)
- The Security system must be complete and, at the very least, rival the current system implemented at Brown. (4)

Ease of Use

- The GUIs must be intuitive, and by that I mean, if my grandfather can navigate it, then it is probably sufficiently easy to use. (4)
- In addition, the administration must be to able to add or delete many courses at once relatively easily as this is something they'll have to do at least once a semester. (3)

Features

Basic

- Allow students to enroll in courses at Brown through an online interface. (5)
- Requirements important to the administration:

    - Have registration data for each student be formatted for easy integration into the Registrar's existing database. (5)
    - Prevent students from enrolling in a course that is already full. (5)
    - Ensure a secure way for advisors to sign off on their first-years' schedules through a site in which they can log into and approve pending requests. (5)
    - Have it be on a first-come, first-served basis in order of numbers of semesters at Brown(i.e. Seniors will have first priority, then Juniors, and so on). (4)
    - Provide an online way to add and drop courses throughout shopping period. (4)
- Requirements important to the student body:
    - Allow users to search for courses based on title, department, professor, and time of day and allow those results to be sorted based on those features. (4)
    - Warn students about enrollment caps and current enrollment numbers. (3)

Optional

- Allow users to add courses to a "shopping cart" schedule that shows them their tentative schedule visually. (2)
- Optionally list or graph courses that students are able to take based on prerequisites they have already filled or prerequisites they could fulfill by taking potential courses. (2)
- Allow students to visualize their courses on a campus map that lays out their daily treks. (1)
- Provide information about concentration requirements and which courses could fulfill them. (1)
- Link to the Critical Review's information about each course. (1)

Risks

- Interfacing with the Registrar and the Web (those shown outside of the box in the System Model Diagram shown above).
- Allowing for an entire campus to register on the same day without crashing.
- Security of Database and potential hackers (CS166 kids?).
- Maintaining it after CS190.
- Working in any way, shape, or form with the Registrar and any other administration outside of the department.