Computer Engineering 174
Problem Statement

1   Introduction and Motivation

Scheduling and reserving rooms in a large organization such as a university or corporation is difficult. Hundreds of events of different types such as lectures, lunches, and meetings need to be scheduled efficiently and easily. Some events may be recurring (e.g., every day or week) or may happen only once. Each event has its own specific needs, some of which are required (e.g., size of room) and others that are optional (e.g., proximity).

Consider the problem of scheduling rooms for courses at an institution such as Santa Clara University. Most courses meet regularly, but some meet only a few times. Room capacity is generally the determining factor in scheduling, but location is also of great importance. Scheduling engineering classes in the Engineering Center is clearly desired for comfort, ease of finding the classroom, and traveling between classes in the allotted time, just as scheduling math classes in O'Connor is desirable. Have you ever seen a Humanities major trying to find a class scheduled in the Engineering Center?

Similarly, finding a meeting room in the Engineering Center itself is equally challenging. Rooms are limited and often scheduled far in advance by faculty or administrators. Quite often these rooms are reserved "just in case" and may not even actually be used, adding to the frustration of students looking for a quiet area to work on a project or rehearse a presentation. Equally annoying is having a meeting interrupted because the schedules conflict or finding "squatters" in a room that you reserved weeks ago.

2   Proposed Solution

For small organizations, a paper-and-pencil approach is adequate; however, for large organizations, an automated approach is desirable. An automated approach to reserving and scheduling rooms would eliminate the errors described above. Such an automated solution would need to incorporate many of the following features in order to solve the problem of scheduling rooms in a large organization:

- Once a room is scheduled, the new schedule is instantly visible to all clients of the system.

- Some form of access control is required to prevent clients from overwriting reservations that they did not make. Some form of overwriting is necessary however for administrators and senior-level officials (e.g., deans, directors).

- Reservations can be easily canceled, thereby encouraging clients to cancel "just in case" reservations.

- Finding a specific room that meets the desired needs (as far as possible) should be automated to a large extent by the system.

- Clients can be automatically informed of changes to a reservation.

- Clients can query the system find where a specific event is being held.

Such a system must be able to be used on a variety of computer platforms since most organizations have a heterogeneous computing environment. Furthermore, the system must be well-tested in a variety of virtual organizations, both large and small, so that a customer of the system will have confidence when deploying the system. The success of the project is measured by the number of features completed (implemented, tested, documented, and delivered).