

As part of a team of 9-12 students, develop a On-call Tracking System for a Board of Education in Ontario. Organize your team in a way that makes efficient use of each team member's skills and time. Evaluate your progress over short iterations, and update your organizational strategies based on your evaluations. We will work as a class to establish project milestones but you can expect to deliver a new increment in lab on October 13th, October 27th, November 17th, and December 1st.

Your project mark will be based not only on the quality of the product you build (about 2/7 of total project mark), but also on the quality of the processes your team adopts during development (about 5/7 of total project mark). It will also be scaled according to a peer-assessed weighting factor and a scaling factor I apply based on my own observations. Assessment guidelines will be provided as the project unfolds.*

On-call Tracking Systems

A Board of Education in Toronto, Ontario needs a software tool to help high school administrators assign and track classes which need to be covered each day by substitute teachers. The Board includes 29 High schools which need to be serviced by the tool. Since many users will use the tool in varied locations, the tool must be a web-based application.

The primary function of the tool will be to assign substitute teachers to cover *absences* each day, for every school in the district. Teachers from across the board need to be able to report absences, and Vice Principals (VPs) in each school need to use the tool daily to generate a list of absences and who is covering them. Determining the coverages must be automated.

There are 2 types of substitute teachers available to cover absences:

- *On-callers* are *regular teachers* who are called upon to cover someone else's class during their spare period
- *Supplies*, are *supply teachers* assigned to a school by the Board on a day-to-day basis to cover absences.

Supply teachers must be able to update their availability on a weekly basis, and based on this, the tool must assign supplies to coverages in school for which they are available. An *Operations Manager* (OM) at the board must approve supply placements daily, before supplies are informed about their placements. Schools cannot turn down a supply teacher once it has been placed, but they need to be able to rate supplies based on their appropriateness for their school, once they have had an interaction with them. When there are more absences than supplies (which is normally the case), the tool assigns *on-calls* to make up the difference.

Placements are decided based on a combination of factors including: (1) the availability of each teacher (for on-callers this is their *spare schedule*), (2) the *skill set* of each teacher (3) rules the board has about the number of supplies provided to each school to cover absences (4) rules the board has about how many on-calls a regular teacher can be assigned per week and per month. When it is impossible for a class to be covered, students are sent to a study-hall for that period. All of the information required to make assignment decisions must be stored within teacher profiles, school profiles, and a board profile within the tool.

There are at least two types of teacher absences which must be covered, and the system must handle both kinds. *Personal absences* represent situations when the teacher calls-in to report that they will not be showing up to work for a part, or whole day. These absences are reported using the tool. *Work absences* represent situations when a teacher is not available to teach their regular classes because they are away on a school outing (day trip, long trip, sporting event etc.). These absences are tracked by a school *Office Administrator* (OA) who must be able to enter them into the system.

Clients would like the tool to be user friendly, but are willing to set up textual and/or excel based input and configuration files rather than using a complex or cumbersome GUI if it would be easier to input data this way. They already have some semi-automated tools which do some of the input and tracking in excel. They like the idea of using these files as a base for inputs to the new system where possible. For instance, the OA will use the tool to initialize a school schedule at the start of the term, and would like the tool to interface with a scheduling spreadsheet already in use in order to do this.

**Chronic absences from class and/or team meetings and/or failure to meet reasonable team expectations will drive your instructor-assessed scaling factor to 0, at which time you will be removed from your team (and forfeit your Team Development Project Marks).*

Everything the tool generates should be available for view in an online UI where possible, but the clients would like the option to produce at least the following reports in excel format:

- For the Board:
 - A list of active supply teachers together with their skill sets
 - A daily list of assigned supply teachers, together with the school and period assignments
- For each School:
 - A spreadsheet of absences across a given term organized by the term schedule, including total tallies
 - A spreadsheet of coverages across a given term, organized by the term schedule, including total tallies for each substitute for the current week and month
 - A sortable daily list of placements including the name of the *substitute*, the name of the the *absentee*, the period and name of the course being covered, and the room number
- For each teacher:
 - A running list of their placements (including date, term, period, course, and absentee)
 - A running list of their absences (including date, term period, course, and replacement)

Other suggestions for what can be done with this system will be welcomed – especially with respect to aggregating numbers for review and planning.

Teacher privacy is paramount to the school board, so its important to control access, limit what is stored to strictly necessary information, and to store it all securely. Note however, that we will be developing with a ‘dummy’ data set.

--- For more information about this application , see the User Profiles ---