



## 2. Requirements Analysis Questions

In the current Calendar Tool requirements, the people who serve as system administrators are anonymous. This is because the official definition of "Calendar Tool Administrator" is anyone who happens to know the password for the Calendar Tool Administration program. No record is kept of who these people are.

The Calendar Tool customer wants to change this aspect of the requirements. Specifically, there needs to be a managed list of people who serve as Calendar Tool administrators

The the following information is to be kept for each registered administrator:

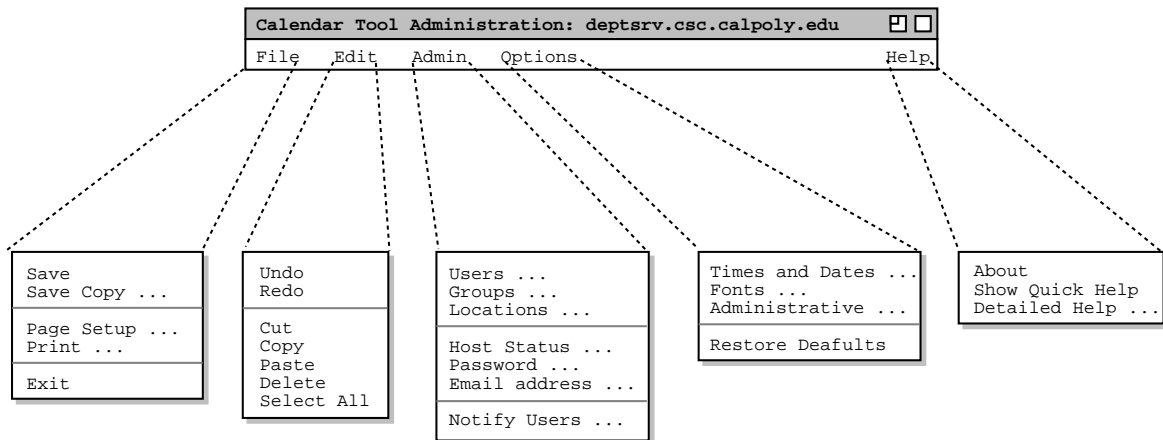
- Full name (first, last, middle)
- Password
- Phone number (area, number)
- Email address

There is one pre-defined administrator, with a pre-defined password. From there, additional administrators can be added, changed, and deleted.

The list of administrators needs to be distinct from regular Calendar Tool users. It's fine if someone wants to be both an administrator and a regular user. In such a case, the person will have two separate Calendar Tool records -- one as admin, and another as regular user.

Given this background information, answer the following questions.

- a. (16 points) How does the above new functionality fit into the current UI of the Calendar Tool Administration program? Specifically, what changes need to be made to the following menu-based UI? For clarity, the Admin menu is described in the paragraph immediately following the picture:



The top three commands in the 'Admin' menu provide access to the three databases of: Calendar Tool users, user groups, and meeting locations. Administrative users can add, change, and delete database information. The 'Host Status' command allows the administrator to view and edit information about the Calendar Tool central host computer. The 'Password' command is used to set the administrative access password. 'Email Address' is used to set the email address through which regular users contact the administrative staff. 'Notify Users ...' provides the means to send a message to some or all Calendar Tool users.

Give your answer to Question 2a by drawing a picture of where your new command(s) go(es) in the menus, and what other UI changes you think need to be made. Do not redraw the entire set of menus, but only as much as necessary to provide adequate context for your answer. Also, you can refer as necessary to your answer to Question 2b, to avoid redrawing UI screens. Note that the command(s) you add should be consistent in style with the existing command menus.

- b. (42 points) Write a scenario that describes how an administrative user adds a new administrator to the system. Provide no more than three screen shots, which you consider to be the three most important screens to convey these requirements. Supply necessary supporting narrative.



**3. Modeling Questions**

- a. (20 points) Based on your answer to Question 2, derive Java objects for the collection of administrator records, subsidiary objects, and associated operations. The model should be compilable.

- b. (10 points) Draw a UML diagram that is equivalent to the preceding Java definitions.

- c. (20 points) Using Spest notation, define preconditions and/or postconditions that formally specify the following requirements:
- all registered administrators have unique names, i.e., no two or more registered administrators can have the all of the same first, middle, and last names
  - an administrator password must contain at least one digit and at least one letter; the Java library functions `Character.isDigit(char ch)` and `Character.isLetter(char ch)` are used to determine whether a character is a digit or letter

It's up to you to determine which method or methods these conditions are specified for, and whether they are preconditions, postconditions, or both. Once you have made these determinations, write your answer by giving the full signature of the method(s), preceded by the appropriate Spest specification.