Course: Software Development Methods.
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HW 4. OBJECT-ORIENTATION FOUNDATION

Exercise 1
Prepare a class diagram for a graphical document editor that supports grouping, which is a concept used in a variety of graphical editors. Assume that a document is composed of several sheets. Each sheet contains drawing objects, including text, geometrical objects, and groups. A group is simply a set of drawing objects, possibly including other groups. A group must contain at least two drawing objects. A drawing object can be a direct member of at most one group.
Geometrical objects include circles, ellipses, rectangles, lines, and squares.

Exercise 2
A directory file contains information about files in a directory, including both ordinary files as well as other directory files. Prepare a class diagram which models directory files and ordinary files. Since a directory plus a file name uniquely identifies a file, you will probably want to use file name as a qualifier.

Exercise 3
A simple digital watch has a display and two buttons to set it, the A button and the B button.
The watch has two modes of operation, display time and set time. In the display time mode, hours and minutes are displayed, separated by a flashing colon. The set time mode has two sub-modes, set hours and set minutes. The A button is used to select modes. Each time it is pressed, the mode advances in the sequence: display, set hours, set minutes, display, etc. Within the sub- _ modes, the B button is used to advance the hours or minutes once each time it is pressed. Buttons must be released before they can generate another event. Prepare a statechart diagram of the watch.

Exercise 4
Revise the dynamic model from the previous exercise to provide for more rapid setting of the time by pressing and holding the B button. If the B button is pressed and held for more than 5 seconds in set time mode, the hours or minutes (depending on the submode) increment once every 1/2 second.