

SOFE 2720 Class Activity – Component Level Design

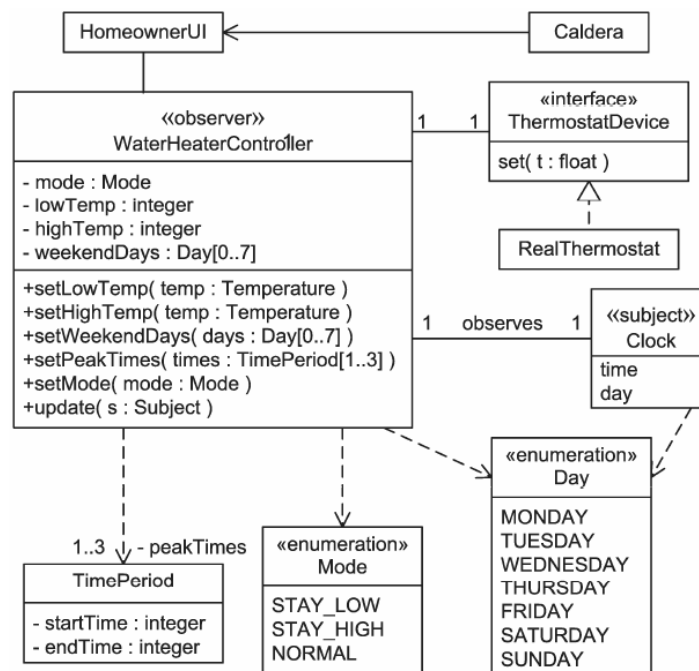
Learning Objective

This activity emphasizes the design of software based on components.

Exercises

After carefully now studying more component-level design it is worth designing the Caldera software system using components. The textbook presents 2 types of component design views: 1) Object-oriented view and 2) Traditional view.

An elaborated design for the Caldera software product is shown below.



Class	Responsibilities
Caldera	Operational: Initialize and configure the program
HomeownerUI	Operational: Interact with the product user
WaterHeaterController	Data: Keep track of the current mode, record the allowed low and high temperatures, record the weekend days, and keep track of up to three peak times for water heating Operational: Allow the user (through the user interface) to set the mode, low and high temperatures, weekend days, and peak times; alter the thermostat setting over time in response to notifications from the clock that the time has changed
TimePeriod	Data: Record the start and end times of a time period (used for peak times)
Clock	Data: Keep track of the current time and day Operational: Notify the WaterHeaterController every minute that time has passed
ThermostatDevice	Operational: Specify the interface for a virtual thermostat
RealThermostat	Operational: Provide a virtual device that interacts with a thermostat on a real water heater
Mode	Data: Provide constant enumeration values for tracking the WaterHeaterController's mode of operation
Day	Provide constant enumeration values for the days of the week

1. Design a component for the *WaterHeaterController* using the Class design similar to Fig. 11.1 in the text book for the *PrintJob* class. Note that the only Interface provided is for the *HomeownerUI* as the *WaterHeaterController* uses the interfaces of the other Classes.
2. Design a component structure chart for the Caldera Water Heater using the traditional view. In this case you will have to define a few control components and include the infrastructure component such as the Thermostat. This diagram is similar to Fig. 11.2 in the text book for the Job Management System. Elaborate further one of the problem domain controllers such as *setMode*.