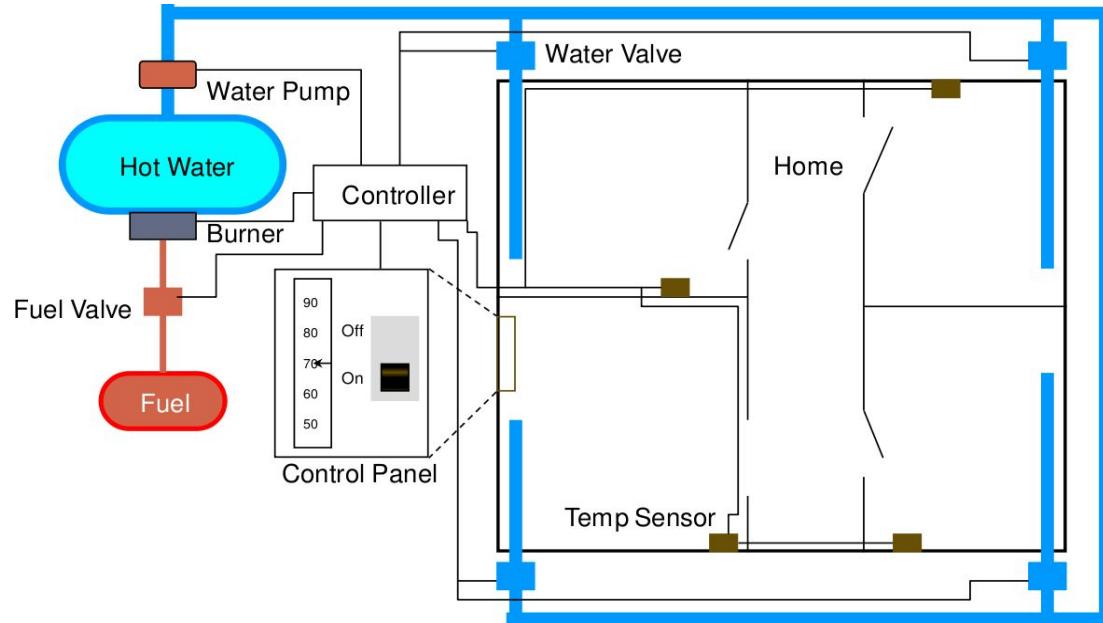


CSCE 740 - Object Modeling Activity

Name(s):



The purpose of the software for the Home Heating System is to control the heating system that heats the rooms of a house. The software shall maintain the temperature of each room within a specified range by controlling the heat flow to individual rooms.

You have the following requirements for the system:

- The software shall control the heat in each room
- The room shall be heated when the temperature is 2F below desired temp
- The room shall no longer be heated when the temperature is 2F above desired temp
- The flow of heat to each room shall be individually controlled by opening and closing its water valve
- The valve shall be open when the room needs heat and closed otherwise
- The user shall set the desired temperature on the thermostat
- The operator shall be able to turn the heating system on and off
- The furnace must not run when the system is off
- When the furnace is not running and a room needs heat, the software shall turn the furnace on
- To turn the furnace on the software shall follow these steps
 - open the fuel valve
 - turn the burner on
- The software shall turn the furnace off when heat is no longer needed in any room
- To turn the furnace off the software shall follow these steps
 - close fuel valve
 - turn burner off

You also have the following information about the physical design of the hardware:

- A room consists of a thermometer and a radiator.
- A radiator consists of a valve and a radiator element.
- The home heating system consists of a furnace, rooms, a water pump, a control panel, and a controller.
- The furnace consists of a fuel pump and a burner.
- The control panel consists of an on-off switch and a thermostat.
- The controller controls the fuel pump, the burner, and the water pump. It monitors the temperature in each room, and opens and closes the valves in the rooms.
- The operator sets the desired temperature, and turns the system on and off.
- The controller gets notified of the new desired temperature.

1. **From the requirements, come up with an initial list of objects or classes for the system.**
2. **Eliminate unnecessary classes. Look for those that are redundant, irrelevant, vague, attributes of another class, operations, roles, or implementation details. For each class you removed, give a reason why you removed it.**

3. Choose at least three of the classes and write the data dictionary for each defining the purpose of the class and some of the attributes or operations it might have.
 4. Derive associations and complete the class diagram.