EECS 371
HW 5
Due 2/23/2019 11:59 p.m.

In this assignment, we will practice defining and using qualitative representations. Specifically, we will use WebSketch to represent how a room gets heated. This assignment will include defining direct influences (I+, I-) and qualitative proportionalities (qprop+, qprop-). Additionally, WebSketch will automatically infer some spatial relations, such as objects being inside another object.

For this assignment, we consider a scenario of heating a conference room. The room has a large window facing a beautiful view of Lake Michigan. The other 3 walls are insulated walls internal to the building. The window is not well insulated, and heat transfers through the window. For the sake of this model, we can assume that the internal walls are sufficiently insulated to prevent heat transfer. You do not need to worry about how the heater generates heat and whether it is on or not.

The first thing you want to draw is the room, and then you will want to put a heater in the room. Then you need to define the qualitative relations (direct influences and qualitative proportionalities) that describe the heat flow from the heater to the room. As part of this, you will need to represent the rate at which heat flows, the heat in the room, and the temperature of the room.

Next you will need to define an outside; this can simply be any area outside of the room. Then you need to define the qualitative relations that describe the heat flow from the room to the outside. Again, you will need to represent the rate at which heat flows, the heat outside, and the temperature outside.

To help you figure out what are the relations you need to define, first, look at https://www.grc.nasa.gov/www/k-12/airplane/heat.html. This describes the relation between heat and temperature. Also, heat flow is analogous to liquid flow, which we discussed in class.

0. Getting Set Up

Access the knowledge base:

- Start websketch by going to
  https://gavotte.cs.northwestern.edu/websketch/websketch.html
- Go through the tutorial:
  - Click Open Sketch > WebSketch-Tutorial.skw
  - Follow the instructions in the pane to the far right

1. Sketching the assignment

- When you are done with the tutorial, click Close Sketch
- Start the assignment by clicking Open Sketch > RoomHeating.skw
- Begin to sketch things out
  - In addition to drawing the room, heater, and outside, draw glyphs for things that do not have a physical footprint (e.g., heat). The shape/size of these glyphs do not matter.
  - When drawing the qualitative relations, the direction of the arrow should be from the influencing quantity to the influenced quantity. For example, in the water flow example, the arrow would go from the amount of water to the level of water.

2. Completing the assignment

- You will be turning in a sketch file for this assignment.
  - Click Download Sketch, which will download a file of your current sketch.
  - There is currently no save function built-in. You may want to download your progress on a regular basis.
  - You can continue a sketch you have downloaded by clicking Upload Sketch.