Rohit Tandon
ICS372 Object Oriented Design and Implementation
Group Project Two

Project Goals

- Form groups and plan work for successful project submissions
- Follow the specifications given and write compliant code.
- Build State diagrams
- Apply state patterns and observer patterns
- Document and lay out your code properly as specified under ICS 372 Coding Standards.

Project Description

Consider a refrigerator with two parts. (The definitions may not be fully accepted in conversation, but this is the terminology we use.)

Fridge: A unit where the temperature is kept between 37 and 41 degree Fahrenheit.
Freezer: A unit where the temperature is kept between 0 and -9 degree Fahrenheit.

Independent compressors and related components work to maintain the desired temperatures in the respective units.

We will use the Fahrenheit scale for all temperatures.

The user may use a control to keep the temperatures of the two units at any one of the temperatures available. For example, the user may choose to keep the fridge temperature at 38 degrees and the freezer temperature at -3 degrees.

The outside temperature (the temperature of the room where the refrigerator is kept) may vary between 50 degrees and 110 degrees.

Assume that we have the following scenario. The user sets the fridge temperature at 39 degrees and the freezer temperature at -4 degrees. Suppose those temperatures have been attained. Let the outside temperature be 70 degrees. Since the fridge and the freezer are at the desired temperatures, they are not actively cooled at the moment. Although there is insulation, the fact that the room temperature is much higher than the inside temperatures of the two units, the freezer and the fridge temperatures increase and when they become too high, the cooling units (compressor, etc.) start working again.

There are independent lights within the two units that go on when the respective units are opened.

When a unit is opened, it is exposed to the room and the temperature rises more rapidly than it would if the door were closed.

Your task in the first pass is to model the refrigerator and its two units, the fridge and the freezer.

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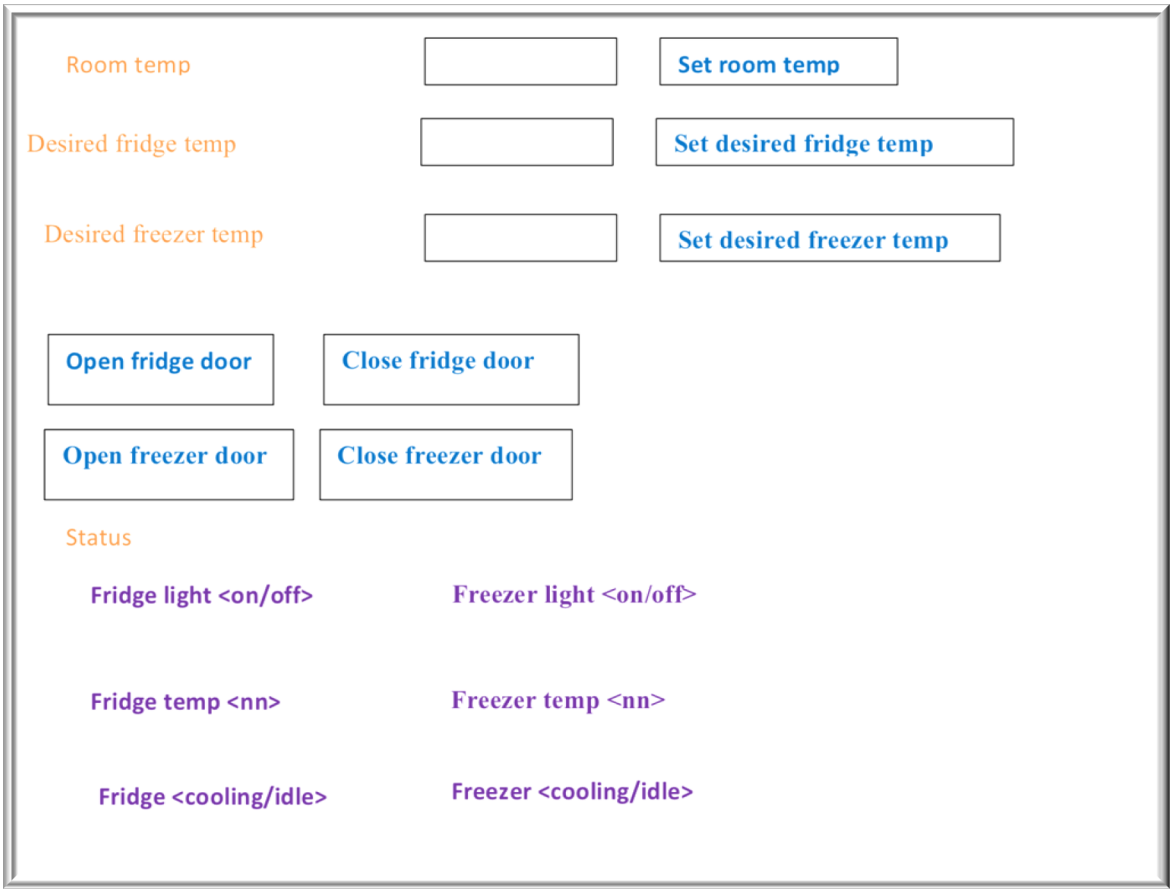
When the temperature within a unit is 1 degree above the desired temperature, the cooling system becomes active.

Provide a graphical user interface. Here is a sample design:



The following the content of a starting configuration file (properties.config) that can be used.

FridgeLow=37
FridgeHigh=41
FreezerLow=-9
FreezerHigh=0
RoomLow=50
RoomHigh=75
FridgeRateLossDoorClosed=30
FridgeRateLossDoorOpen=2
FreezerRateLossDoorClosed=10
FreezerRateLossDoorOpen=1

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FridgeCompressorStartDiff=2
FreezerCompressorStartDiff=1
FridgeCoolRate=20
FreezerCoolRate=30

If needed, you may assume that the minimum room temperature is always more than the desired temperatures of the fridge and the freezer.

Miscellaneous:

1. Initially, set the freezer and fridge temperatures the same as the outside temperature.
2. To make it possible to test the program in a reasonable amount of time, transform time periods in minutes to seconds. That is, let the clock generate a tick every second, rather than every minute.

Organization:
Develop the minimized state transition table and diagram. In this iteration, have at least the following classes:

- GUI as described above
- The logic to switch between the states
- A thread to keep track of time

Program Submission

Submit the following:

1. A single Word or PDF file that contains the state transition diagram, state table.
2. The source files for all classes

Zip the files and submit in the D2L dropbox. *If the program has syntax errors, the grade will be 0: no exceptions.*