# Objective

When the correct two picture frames are hung on the correct picture hooks, the two doors to the fireplace cabinet are opened.

## Picture frames

- The frames contain  a small  computer processor, an RFID sensor, and a small rechargeable battery. In addition, there are two RFID tags installed in the wall, just below each picture hook.
- The battery can be  accessed by removing the small cover on the back of the frame (if you're looking at the back of the frame, the battery compartment is in the lower left portion of the frame. It's easiest to just rotate the single plastic clip at the top of the battery cover, and then press on the bottom of the battery cover to raise the top of the cover.
- Each frame has a number (1, 2, or 3) written inside the battery compartment to identify it. The software is matched to each frame.
- To re-charge the battery, pull on the white plug on the end of the battery to unplug it from the frame. It may then be plugged in to the charger, and then plugged back into the frame when charged, Make sure the plug is oriented correctly when plugging in.
- Be careful when replacing the picture in the frame -- there are wires connecting the RFID sensor that can come unplugged.

## Fireplace cabinet

- The cabinet doors are held closed with a magnetically controlled lock. There is a power supply, power switch, and processor installed in the back of the cabinet.
- When both active picture frames are hung on the correct picture hooks, the frames send messages to the cabinet processor. When the cabinet receives messages from both frames, the doors are opened.
- To reset the processor in the cabinet, you may turn the power off and then back on again. There is also a way to reboot through the website, explained below.

# Monitoring the system

- The processor in the fireplace cabinet runs its own wireless network. It also runs a simple web server that can be used to monitor the system.
- To access the web site, do the following:
    - Connect your computer to the UH_Jefferson_1 network:
        - SSID = UH_Jefferson_1
        - Password = dj@edylu4X#jG77*XX5e4&H4
    - On a web browser, open the page http://uh_jefferson_cabinet.local/
        - You can also find the page at http://192.168.4.1
- The web page displays the state of each of the three frames:
    - Not in use -- the frame is a spare or out of service
        - You don't need to put a battery in the spare
    - In place -- the frame is hanging on the correct hook
        - Note that the web page will also indicate if the frame belongs on the left or right hook
    - Not in place -- the frame is not hanging on the hook
    - NOT RESPONDING -- the frame has stopped communicating with the cabinet processor. The usual cause is a dead battery in the frame.
- The status web page will automatically refresh about every 20 seconds.
- There are also 3 buttons on the status web page
    - Configure the frames
        - Select which frame belongs on the left hook and which on the right hook. The remaining frame will be treated as a spare and will not affect the cabinet locks
        - Be sure to click the Submit button to make any changes
    - Open the cabinet doors
        - Clicking this button will open the cabinet doors. Note that once opened, the doors can be locked again by just pushing them closed.
    - Restart the system
        - Reboots the processor in the cabinet. Note that the wireless network may briefly disappear as the processor reboots, so you may need to re-connect your computer.
        - After the cabinet is rebooted, or after replacing a battery in a frame, it may take several minutes for the processors in the frames to properly reset themselves.

- The software is written to be as resilient as possible. If it detects any errors or anomalies, it will re-boot itself to try to correct the problem. If the s