

Figure 1

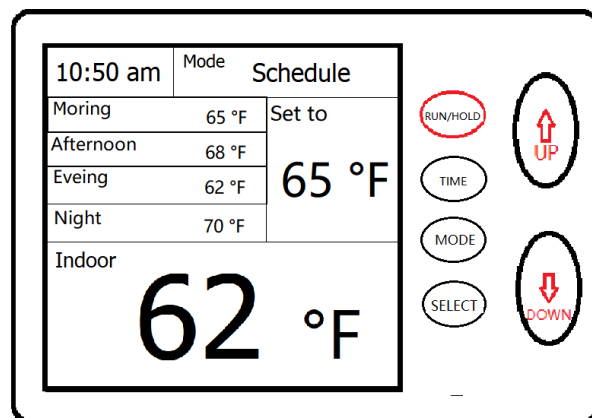


Figure 2

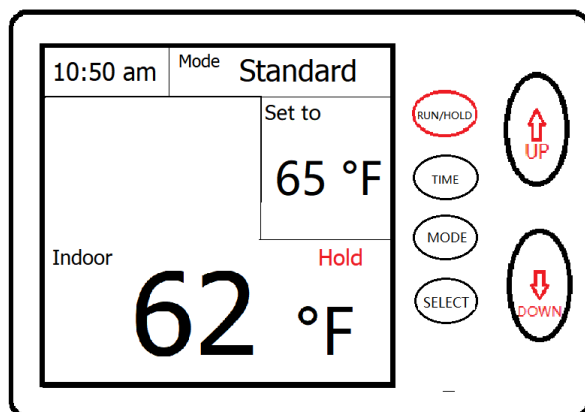


Figure 3

Conceptual model : Pressing down Buttons can control the programmable thermostat such as changing its mode, setting temperature ,overriding the temperature, setting its clock and so on. With Run / Hold button, we can determine whether to keep the temporary temperature or run the thermostat automatically. By using Time Button, we can set the clock of the thermostat. Moreover, Mode button is for choosing Standard mode or schedule mode. To explain, standard mode is the mode that override the temperature while schedule mode is to setting different temperature in morning, afternoon, evening and night. The Select button only can be used when it is in the Schedule mode for changing the period from morning to night in order to set different temperature for each period. Most importantly, up and down buttons only can be used for warming up or cooling down the temperature unless when it is setting time.

Affordance: This programmable thermostat afford 6 buttons to press. Run/hold is used for keeping current temperature or run the thermostat. Time and Mode is for setting clock and changing mode within schedule and standard. Select button is used for selecting period from morning to night for setting temperature in schedule. UP/ DOWN is used for setting the temperature or clock; it depends what is the previous operation.

Signifier: On each button, there is a simple English word, which is the signifier of each button. Future more, there is a screen that display the current setting of the thermostat. If we change the mode from standard from schedule, the would be a signifier on the right-top side. Also, the screen would show what temperatures have been set to different period in the left side. Run and hold button also has its signifier on the right- bottom side.

Feedback: When pressing the buttons, the display would should what has been press. For example, when we press the up and down buttons, the setting temperature would increase or decrease immediately. What is more, pressing down Hold and run button would display the Hold with red on the right- button on the screen. When Pressing down the Mode button, the screen would change the mode immediately. However, select button only can be used when it is in schedule mode. So there would be no feedback when the current mode is standard. This is one thing I need to improve.

Natural mapping: Since the both buttons are placed on the left side, there is no obvious mapping with Run/Hold, Mode, Clock and Select button. However, UP and Down buttons Strictly follow the natural mapping rule.

Constraint: All the buttons are only can be press down. The display contents are displayed on a fixed area.

Visibility: All the functions are visibility and easy to understand unless the Select button. Currently, I don't have any other solution for it and maybe write the instruction for the button more carefully can be a good idea.