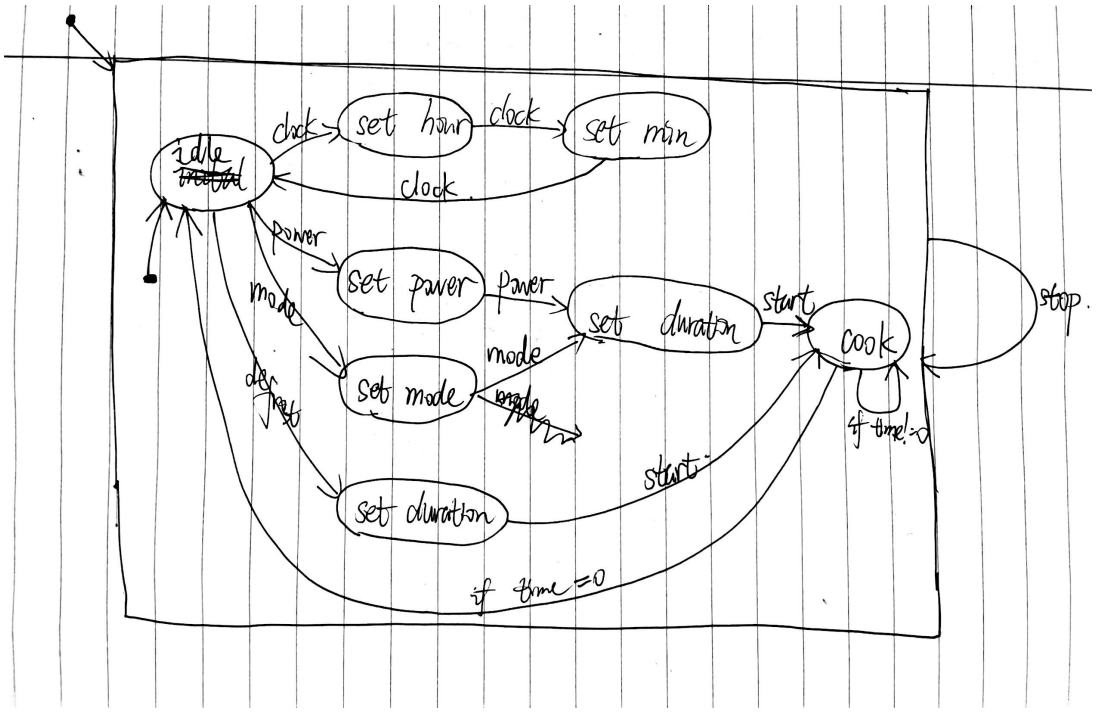
Qt Lab#3 : Statecharts

Xiang WEI - IGD IP Paris

Introduction

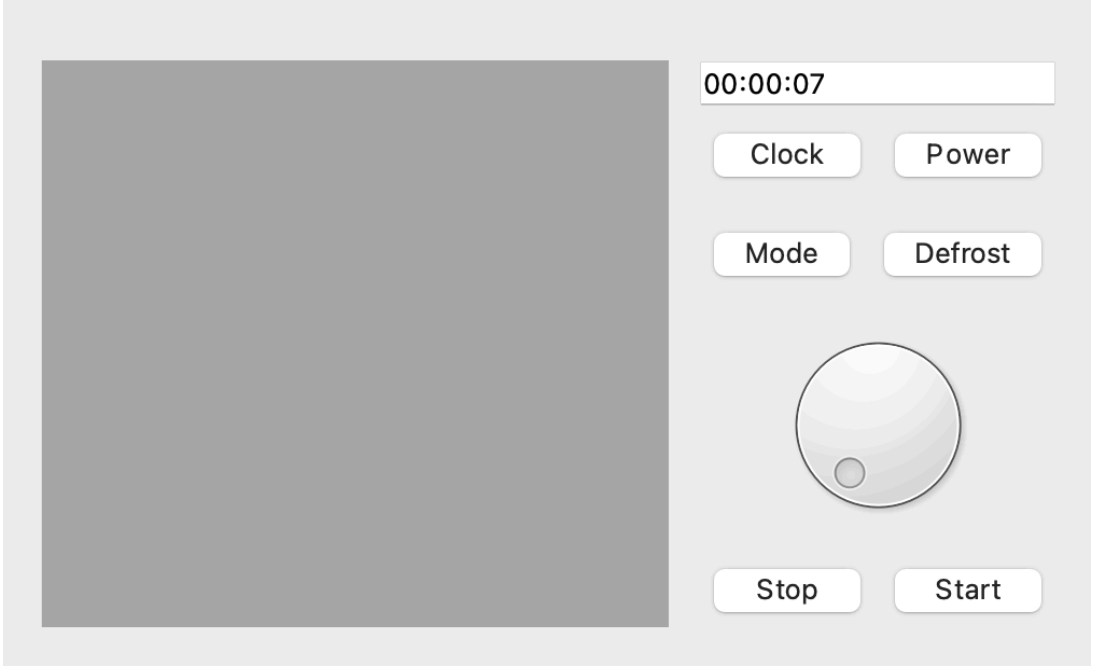
I implement the presentation and interaction control panel of a microwave oven on Qt.
Platform: QT Creator 4.13 + macOS 11.2

1. Design the Statechart



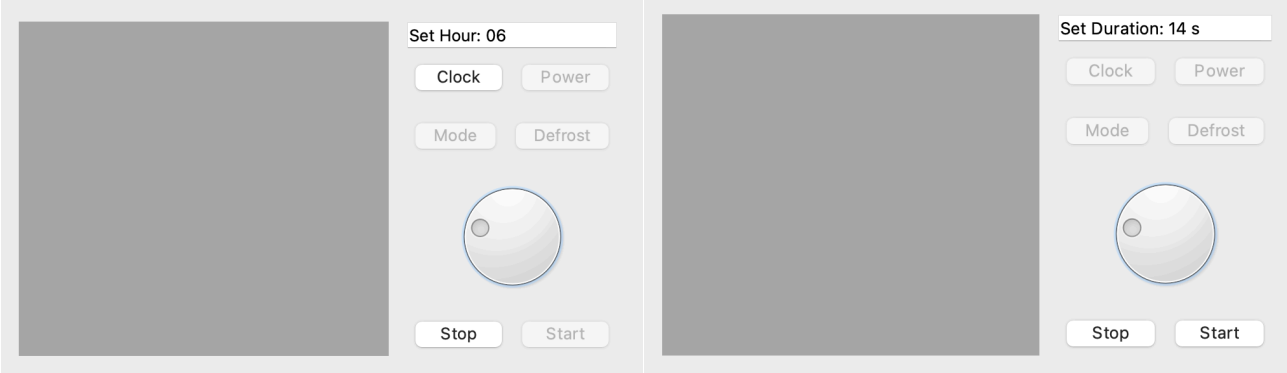
2. Graphical interface

In this part, I created a graphical interface by dragging and dropping based on Qt Designor. I used QLineEdit and QDial as display panel and slider.



3. Implement

In this part, I first implement the QtStateMachine according to the Statechart shown in the first section. I created 9 states and use *state->addTransition()* to link different states with different buttons. Then I connected different slots function when enter different states. In the slots function, I also set button enable status according to the state.



4. Clock

In this part, I created two QTimer and used start or stop to control them depending on the state. Also I emited a customized signal when the cooking time runs out, and added transit from cook state to idle state when receiving this signal.

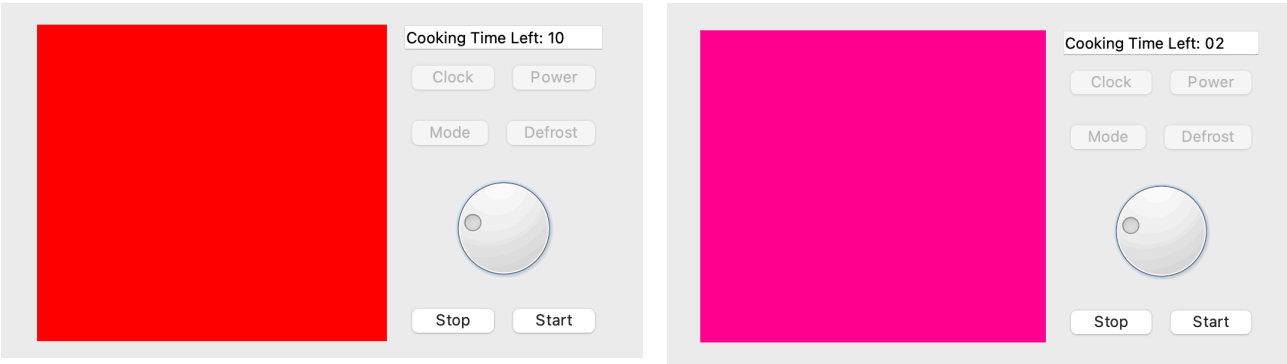
```
start->addTransition(this,SIGNAL(cookfinished()),s11);
```

5. Improve GUI

After completing all the steps above, I tried to show some heating effects by using animation. I implemented a color gradient effect by using QPropertyAnimation. It's not straightforward because color is not a supported property so I have to add myself.

```
Q_PROPERTY(QColor color READ color WRITE setColor)

private:
    void setColor (QColor color);
    QColor color(){ //fake read function
      return Qt::black;
    }
```



Conclusion

By following all the steps, I had a better understanding of the state machine in Qt and also reviewed my knowledge on slots. I also learnt more about timer and animation in Qt and tried to find the link with doing them in web development.