Mock workshop assignment

By Veselin Atanasov

Teacher: Lake Lakeman

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Introduction

The goal of this workshop is to exercise designing state machines and also get introduced to simulating expected behaviour using google mocks. The goal is to design a microwave with the following requirements:

R1: When the door is opened the microwave cannot be heating (the motor power must be 0)

R2: The user can change the power while heating

R3: The time dial does not turn while the door is open

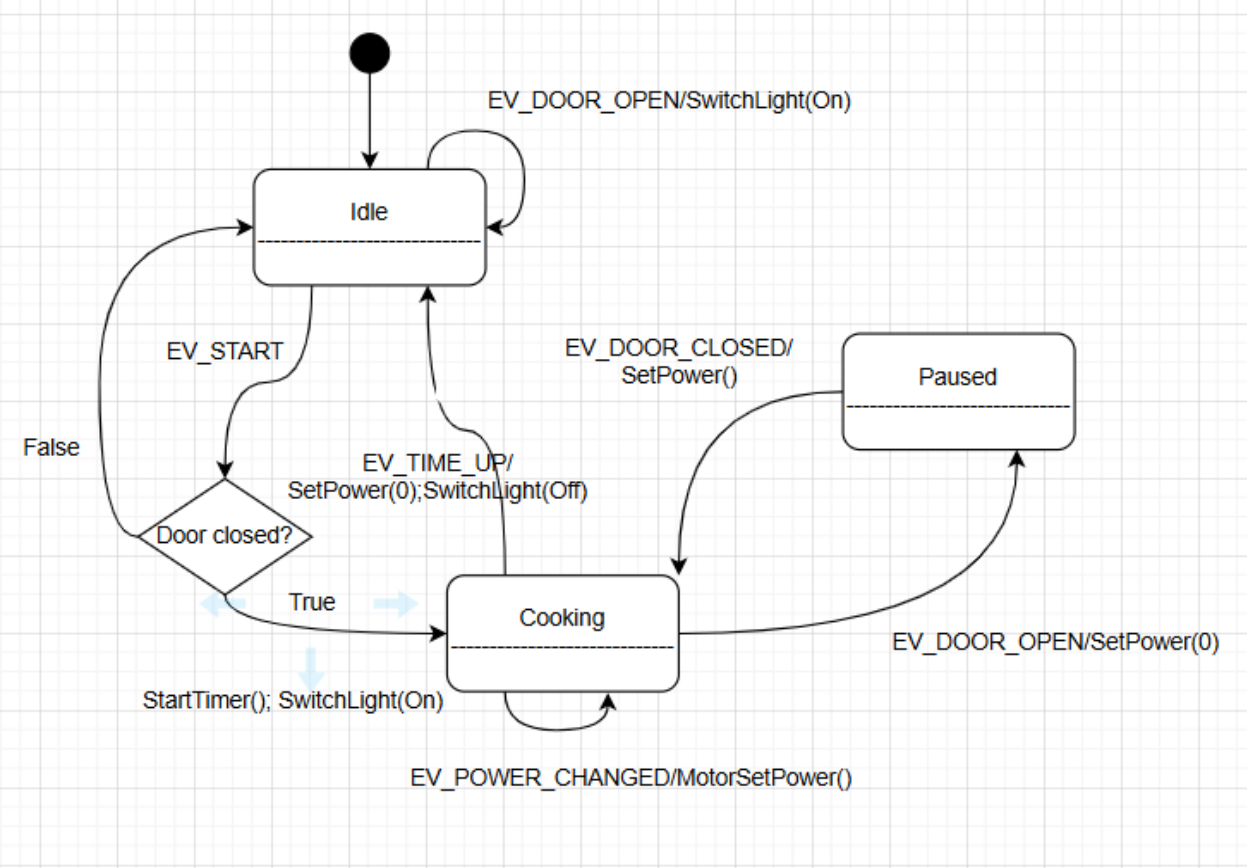
R4: The light is on while the microwave is heating

R5: The light is on while the door is opened.

R6: The microwave does not start heating before the “start” event happened.

R7: Every occurrence of the “time up” event is notified with a ping sound.

Design process



The first step is thinking of the states that are required and creating a state diagram.

Idle state

In this state, we need to be able to turn on the light when the door is open and also start heating depending on the user input. This will be simulated with the help of events that will be enumerations. This state can only transition to cooking state only if a start event is present and if the door is closed.

Cooking state

In this state the microwave turns on the light, sets the motor power and starts the clock. If an user opens the door while in this state, the state will be changed to paused state because of the door open event. When the timer runs out that means that cooking is done, the light gets turned off, power is set to 0, a ping sound is started to signal the user and the state changes to idle. While cooking the user can dynamically adjust the power and that is handled by the power changed event.

Paused state

This state happens when the user opens the door while the microwave is cooking. In this state the power gets set to 0, the clock gets stopped and the light is on. The only way of exiting that state is for the user to close the door. When the door is closed, the state changes to cooking and the process resumes as normal.

Conclusion

The design of this state machine allows all functionality and will make programming much easier and clear.