CSCI910 – Software Requirements, Specifications and Formal Methods

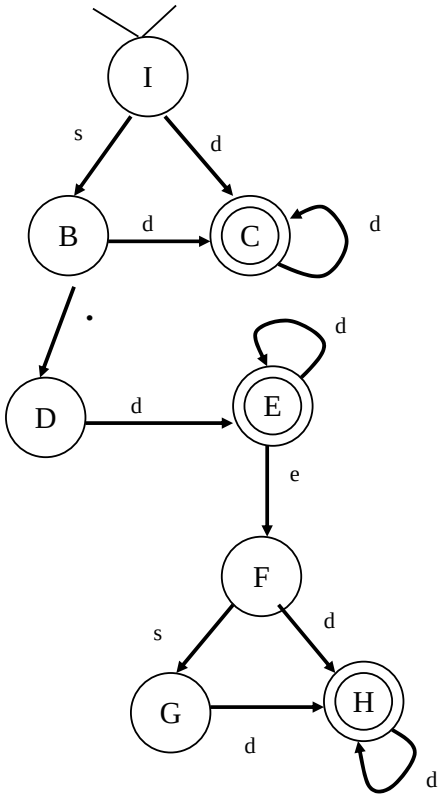
Tutorial 3, CCNU Summer 2020

Objectives

- This tutorial is to familiar and use Finite State Machina (FSM) notations to model a general microwave oven, based on the behaviors of the oven and events, which course the state transitions

Exercise 1:

Complete the state table for the following FSM.



S = { s, ., e, d}
Q={I, B, C, D, E, F, G, H}
F={C, E, H}
q0=I

Exercise 2:

Design a FSM for the oven based on the following description.

State	Description
Waiting	The oven is waiting for input. The display shows the current time.
Half power	The oven power is set to 300 watts. The display shows ‘Half power’.
Full power	The oven power is set to 600 watts. The display shows ‘Full power’.
Set time	The cooking time is set to the user’s input value. The display shows the cooking time selected and is updated as the time is set.
Disabled	Oven operation is disabled for safety. Interior oven light is on. Display shows ‘Not ready’.
Enabled	Oven operation is enabled. Interior oven light is off. Display shows ‘Ready to cook’.
Operation	Oven in operation. Interior oven light is on. Display shows the timer countdown. On completion of cooking, the buzzer is sounded for 5 seconds. Oven light is on. Display shows ‘Cooking complete’ while buzzer is sounding.

The following description gives the information about events to make state transitions.

Events	Description
Half power	The user has pressed the half power button
Full power	The user has pressed the full power button
Timer	The user has pressed one of the timer buttons
Number	The user has pressed a numeric key
Door open	The oven door switch is not closed
Door closed	The oven door switch is closed
Start	The user has pressed the start button
Cancel	The user has pressed the cancel button