

Model-Based Systems Engineering

State Machine Diagram

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Exercise 1:

One can think of the hardware being in one of three states. The idle state is when the device is disabled or inactive. No I/O occurs in the idle state. When active (not idle) the hardware toggles between the busy and ready states. The interface includes a flag specifying either busy (0) or ready (1) status. Hardware-software synchronization revolves around this flag.

Propose a state-machine diagram for this problem.

Exercise 2:

Design a traffic light controller for the intersection of two equally busy one-way streets. The goal is to maximize traffic flow, minimize waiting time at a red light, and avoid accidents.

Exercise 3:

Compare Finite State Machine and SysML State Machine Diagram