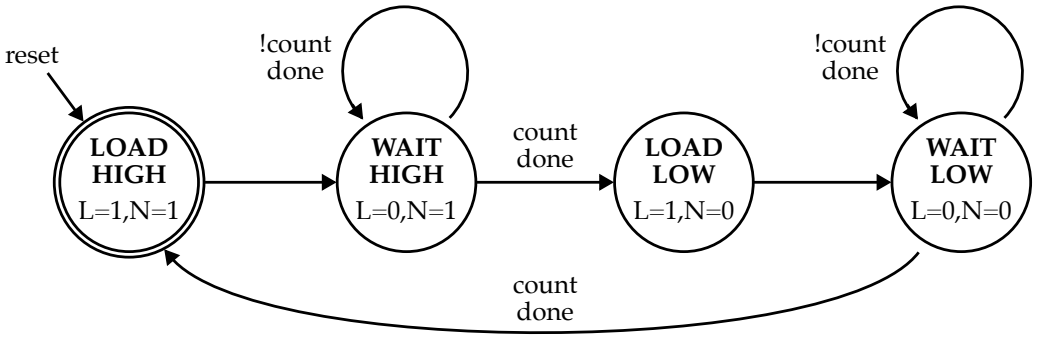
ECE 2300 Digital Logic and Computer Organization

Implementing the Note Player Control FSM

revision: 2025-10-15-20-53

Problem 1. FSM Next State and Output Table

Consider the following sequential finite-state machine and state encoding.



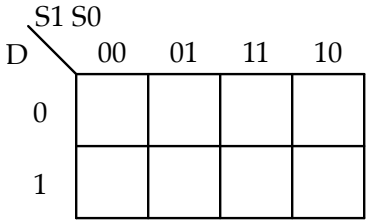
State	Encoding
LOAD HIGH	2'b00
WAIT HIGH	2'b01
LOAD LOW	2'b10
WAIT LOW	2'b11

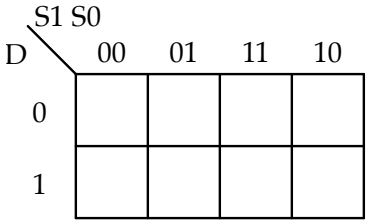
Fill in the following FSM next state and output table. *D* is the count done input. *L* is the count load output. *N* is the note output.

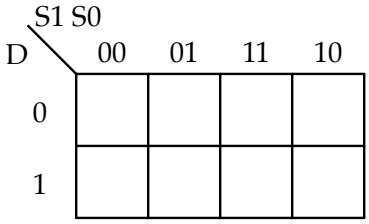
*S*1	*S*0	*D*	$S1_{next}$	$S0_{next}$	*L*	*N*
0	0	0				
0	0	1				
0	1	0				
0	1	1				
1	0	0				
1	0	1				
1	1	0				
1	1	1				

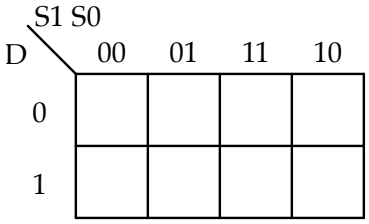
Problem 2. FSM Next State and Output Equations

Complete the Karnaugh maps below to derive a minimal sum-of-products (SOP) Boolean equation for each output. Each circle in your Karnaugh map must correspond exactly to the products in the minimal sum-of-products equation. **Label each circle with the corresponding product and write the final minimal SOP equation.**









Problem 3. FSM Gate-Level Implementation

Draw the gate-level implementation of this FSM.