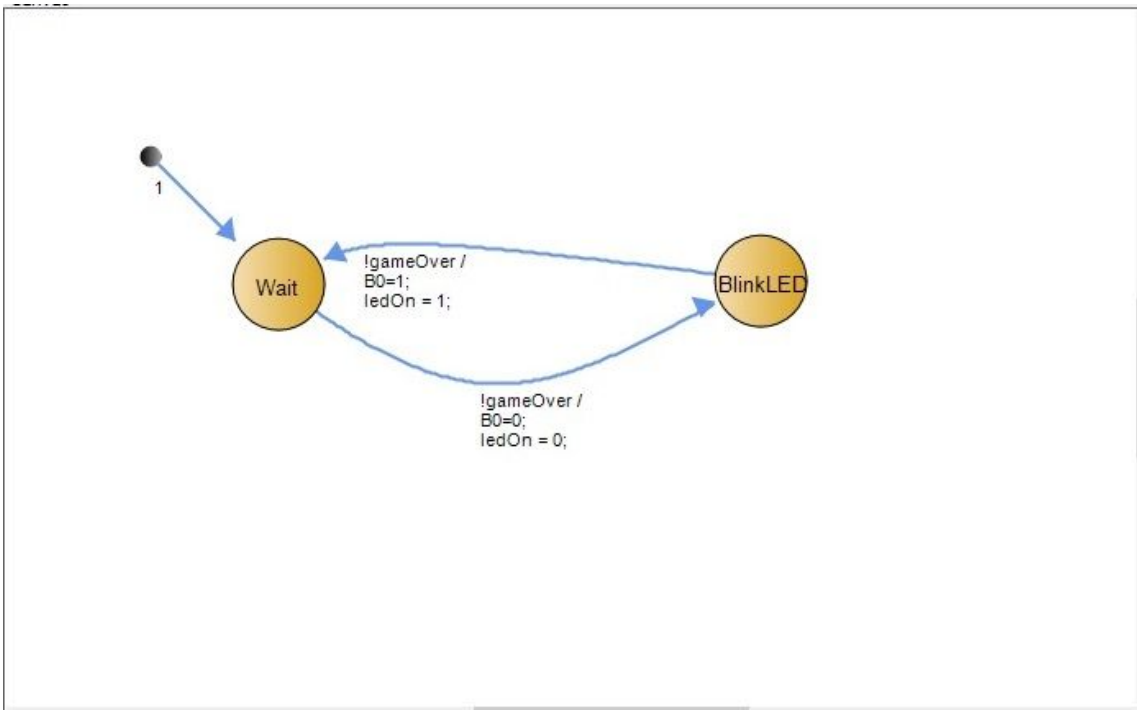
Flicker Game(with lives)

Create a game where the player attempts to press the button(A0) at the same time an LED(B0) lights up. The button will use A0 as input while the flickering LED will use B0 output. The score will be displayed as a 4-bit value on outputs B1 - B4. The remaining bits(B5 - B7) will serve as the amount of lives the player has. Use a 500ms on and off for the LED. The game ends when the player runs out of lives. When the game ends, the LED should stop blinking, while also displaying the score. Design a concurrent synchSM to implement this game.

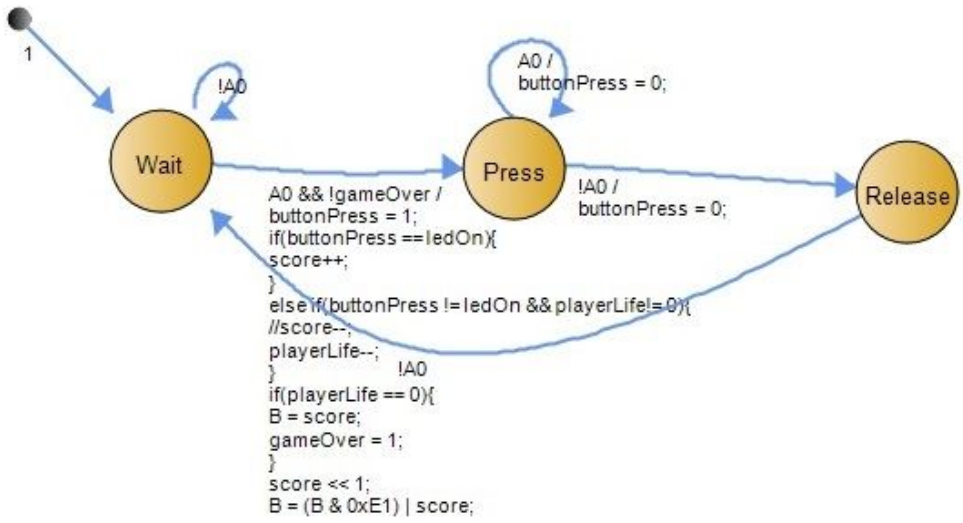
One way to implement this game is by using three state machines.

Global variables:
unsigned char score = 0;
unsigned char ledOn = 0;
unsigned char playerLife = 7;
unsigned char gameOver = 0;

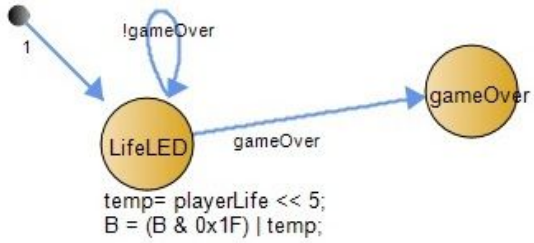
We can have a state machine that blinks the LED with a period of 500ms



A state machine that checks for button presses and also updates the score and lives. The period should be low enough to catch the blinking LED.



And finally another state machine that displays the lives on the LED. This state mahcine should have the same period as the blinking LED state machine so that the display does not go out of sync.



The last two state machines can be put together to accomplish the same thing(display on LEDs).