Assignment 3: Coin Acceptor Coke Vending Machine design and implementation. (10%)

A simple circuit is to be designed for coin acceptor of an electronic coca vending machine.

- Assume the COKE costs 1birr.
- The coin acceptor only accepts 25 cents, 50 cents and 1 birr as coins.
- Exact change must be provided. The acceptor doesn't return extra money
- Valid combination including the order of coins is four 25 cents, two 25 cents and one 50 cents, two 50 cents coin, and one 1birr coin.

Circuit Requirements

- When each coin is inserted a 2-bit signal is inserted
- The output of digital circuit is a single bit. Each time the total amount inserted is 1 birr coin or more, an output signal coke goes high and vending machine is released for exactly one clock cycle.
- A synchronous reset signal can be used to reset the finite state machine.
- You can represent the inputs, outputs and states as
    - No coin = 2'b00, 25 cents = 2'b01, 50 cents = 2'b10, 1birr coin = 2'b11.
    - States: has 5 states s0 = 0 cents, s1=25 cents, s2 = 50 cents, s3 = 75 cents, s4 = 1 birr coin

1. Draw the Finite state machine for coke vending machine.
2. Write the Verilog description for the coke vending machine.
3. Write the Testing files for the coke vending machine to test
4. Assign the inputs using switches, and output using LEDS as well as HEX. When coke is delivered out show 'COKE' character is shown on HEX0-HEX3.