

Hw eight

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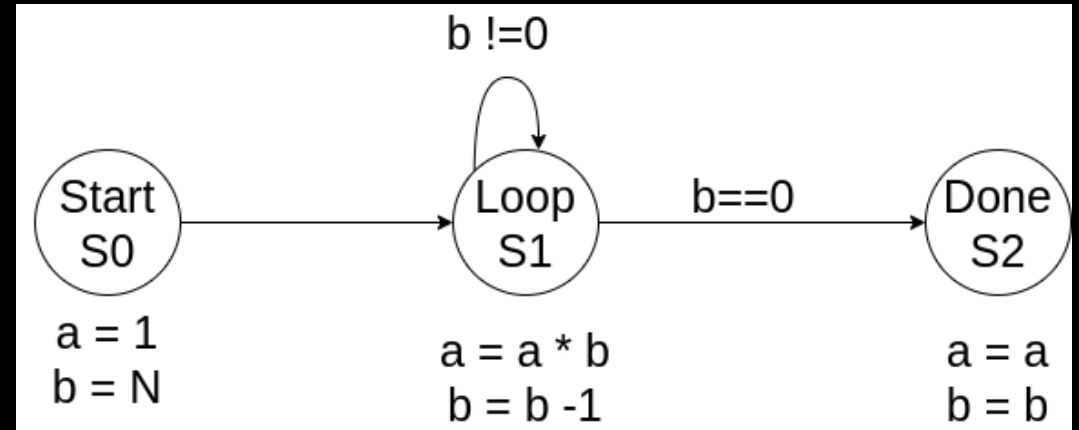
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FSM of factoreal

Watch this video first

<https://www.youtube.com/watch?v=oi1Jb-dGsWU>

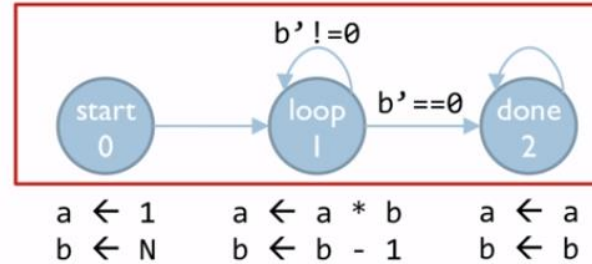
Fsm schema



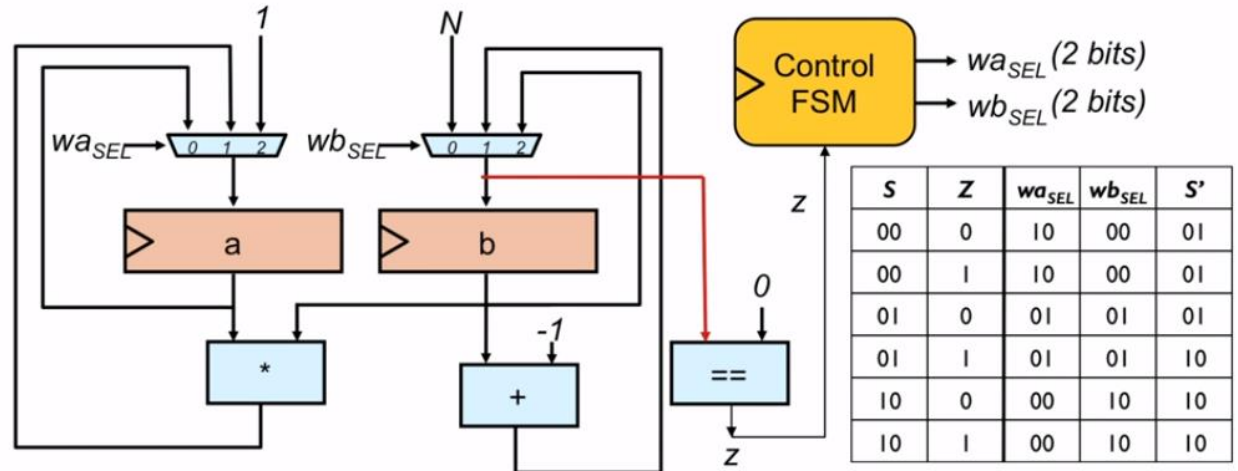
Data path

Hardware design of factorial

Control FSM for Factorial



- Draw combinational logic for transition conditions
- Implement control FSM:
 - States: High-level FSM states
 - Inputs: Transition logic outputs
 - Outputs: Mux select signals



Datapath & FSM in gezel

```
dp factoreal
{
    reg a : tc(32);
    reg b : tc(32);

    always
    {

    }

    sfg init
    {
        a = 1;
        b = 5;
    }

    sfg mul
    {
        a = a * b ;
        b = b - 1 ;
    }

    sfg lastop
    {
        a = a ;
        b = b ;
    }

    sfg printresult
    {
        $display($dec,"result = ", a);
    }

}
```

```
fsm fac(factoreal)
{
    initial s0;
    state s1, s2 ;

    @s0 init -> s1;

    @s1 if(b == 0) then lastop -> s2;
    else mul -> s1;

    @s2 printresult -> s2;

}
```

Run it with seven clocks
Fdl sim 7 factoreal.fdl

**How to run
the code?**