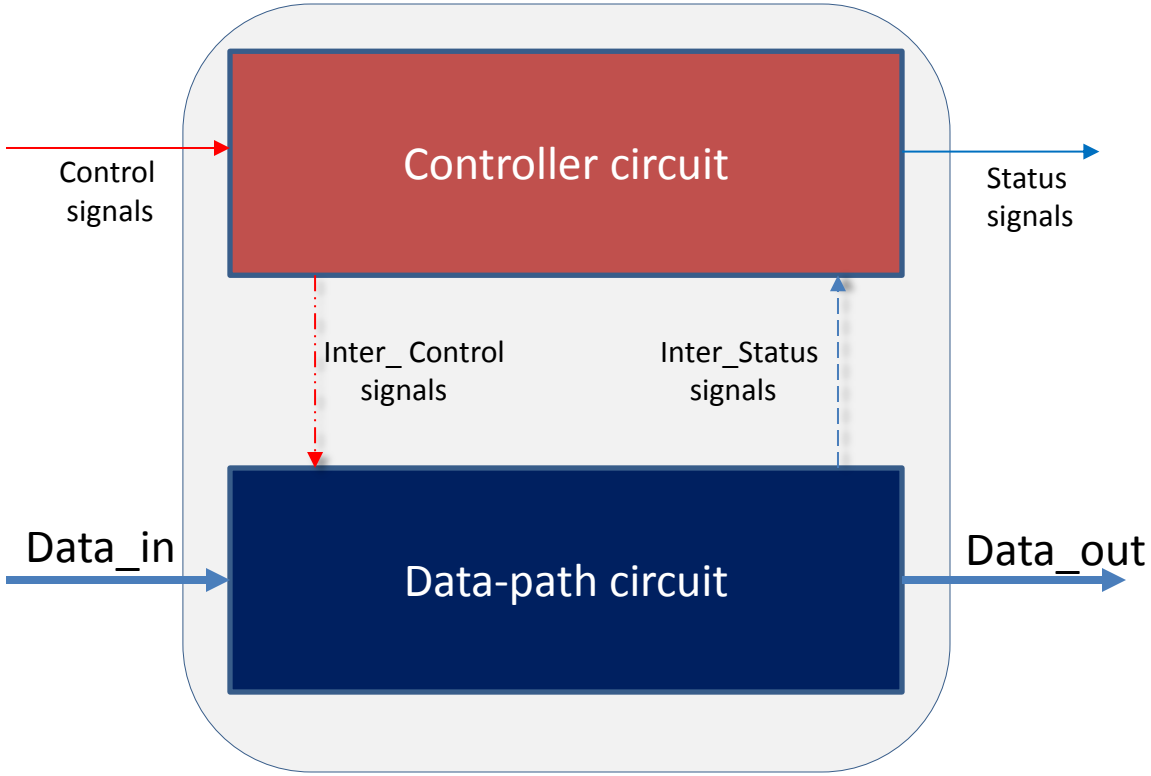
IC Design

Lab 2: Bit Counting Circuit

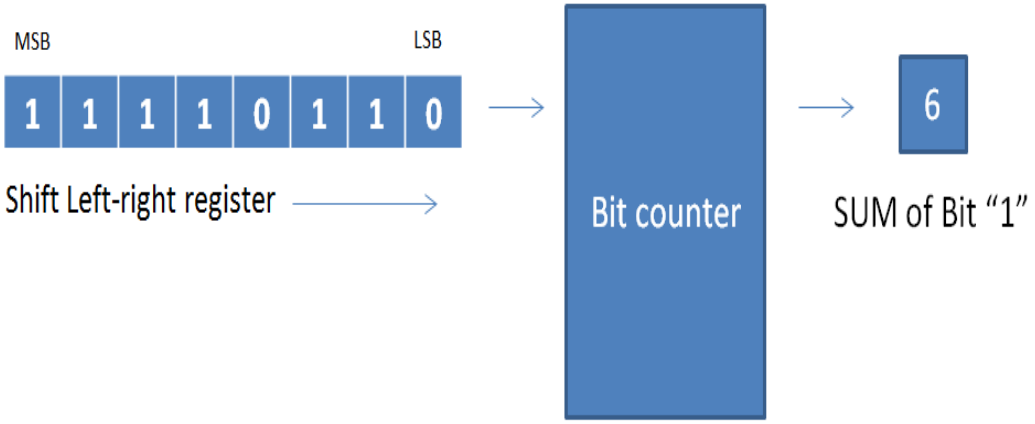
system have two parts

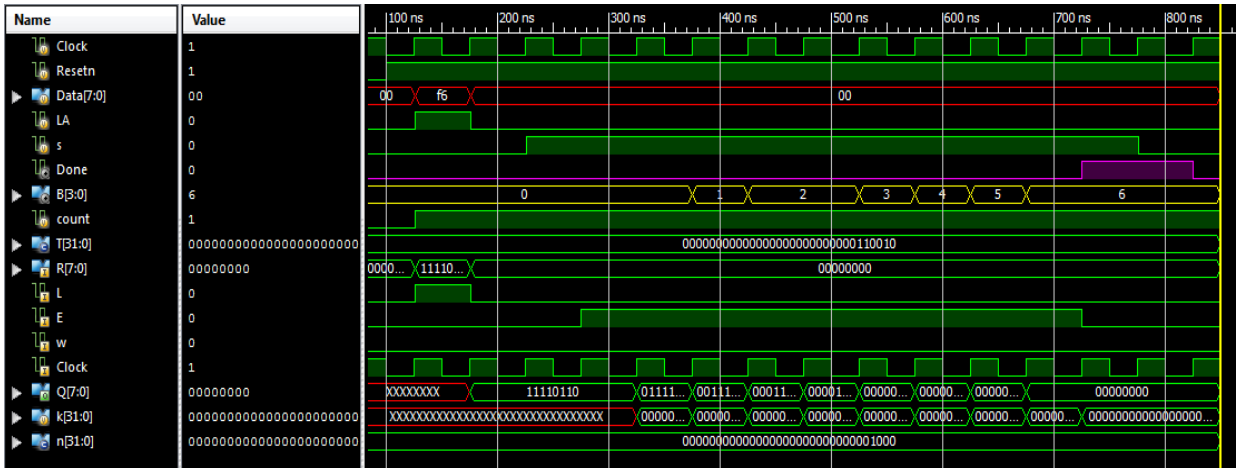


Course 2: Bit Counting Circuit

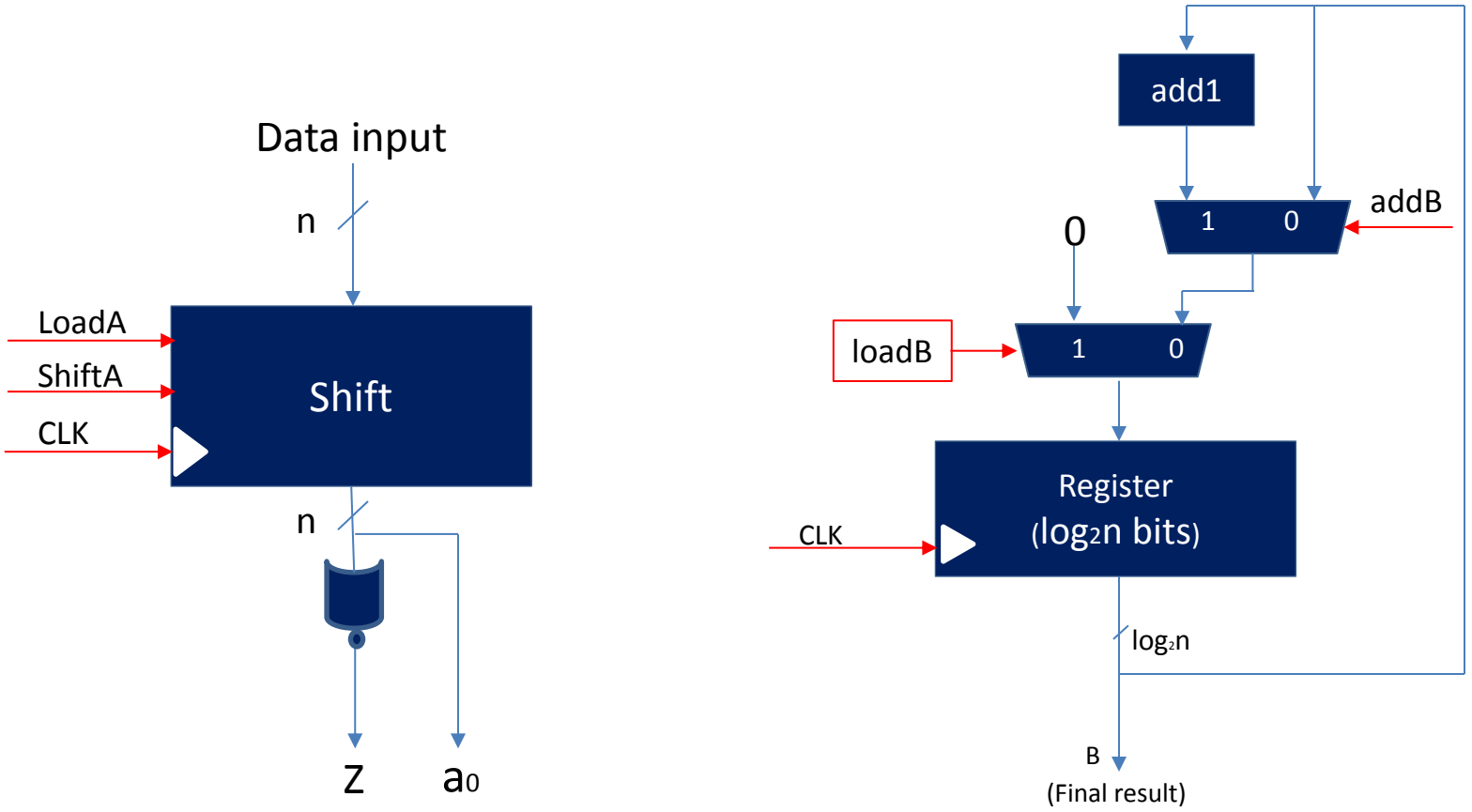
Suppose we want to count the number of ‘1’s in a word. Algorithm to do this:

```
B=0
  While (A # 0) do
     if (a0= 1) then
        B = B+1
     end  if
     right shift A
End while
```

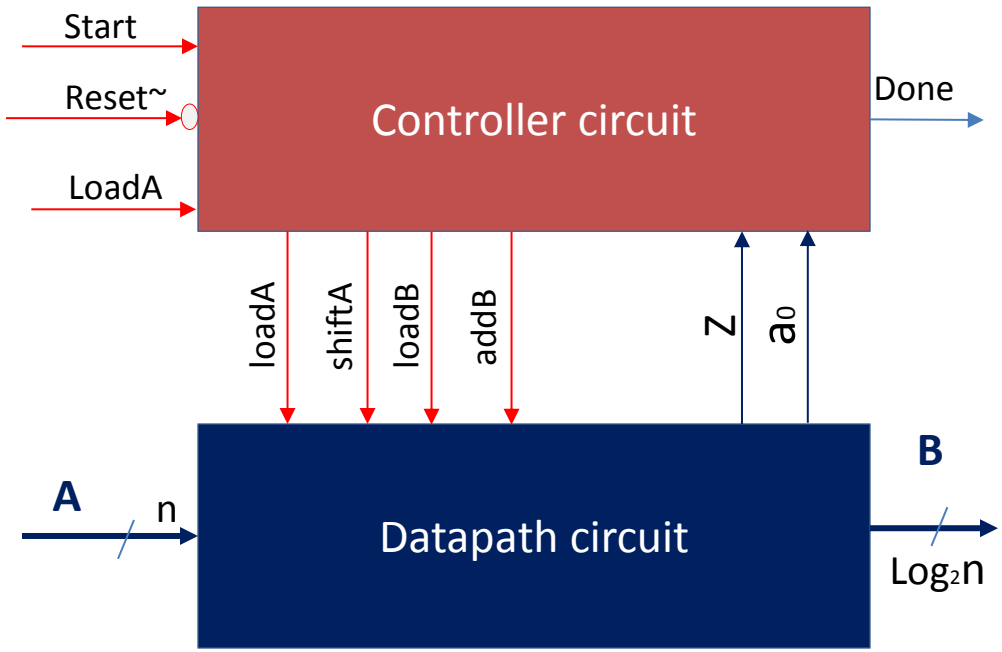




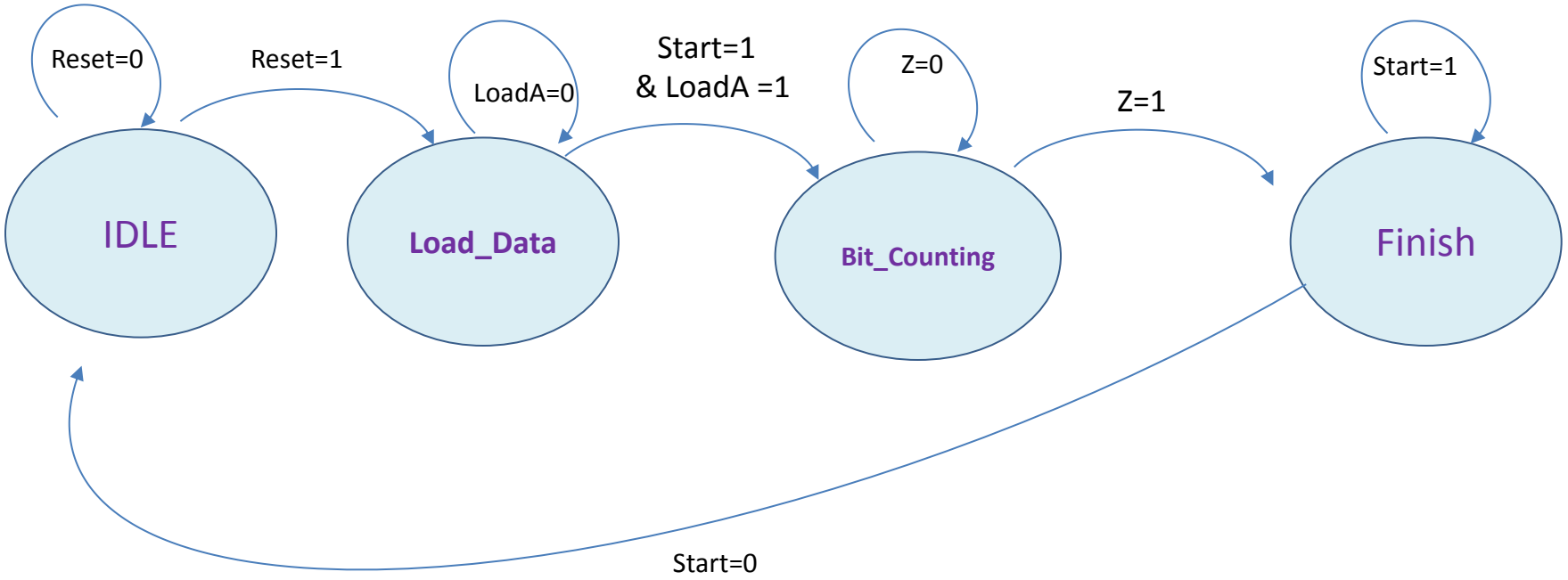
Bit Counting Circuit



Bit Counting Circuit_2



FSM of Bit Counting Circuit



Exercise Bit_Counting_Circuit

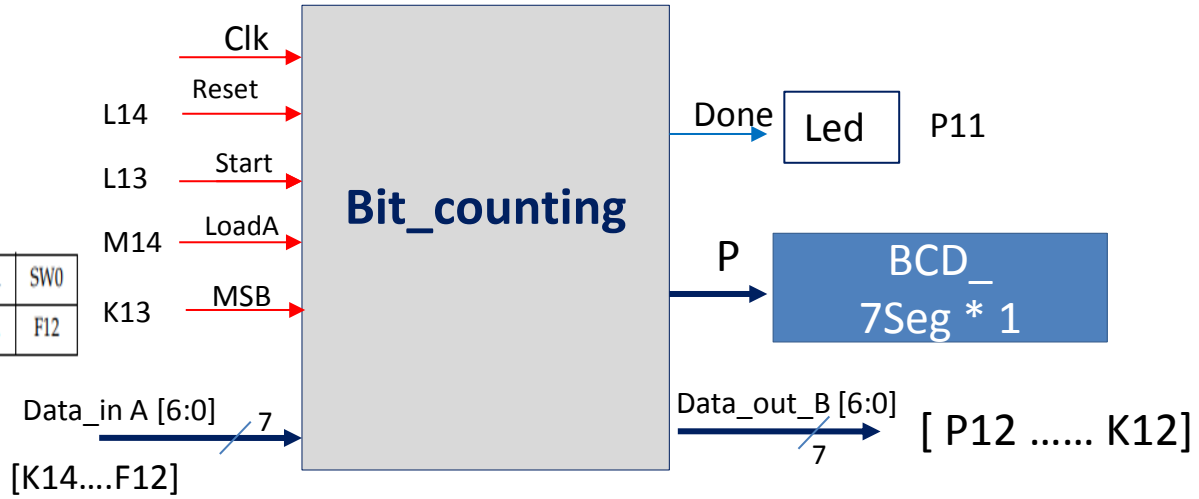


Table 4-1: **Slider Switch Connections**

Switch	SW7	SW6	SW5	SW4	SW3	SW2	SW1	SW0
FPGA Pin	K13	K14	J13	J14	H13	H14	G12	F12

Table 4-2: **Push Button Switch Connections**

Push Button	BTN3 (User Reset)	BTN2	BTN1	BTN0
FPGA Pin	L14	L13	M14	M13

Table 4-3: **LED Connections to the Spartan-3 FPGA**

LED	LD7	LD6	LD5	LD4	LD3	LD2	LD1	LD0
FPGA Pin	P11	P12	N12	P13	N14	L12	P14	K12