

Exercise 1

- Draw a RIBS/RIMS compatible synchSM to create a PWM signal on RIMS output B0.
 - 1000 ms PWM period
 - 15% duty cycle
 - 25ms synchSM period; e.g., `TimerSet(25);`

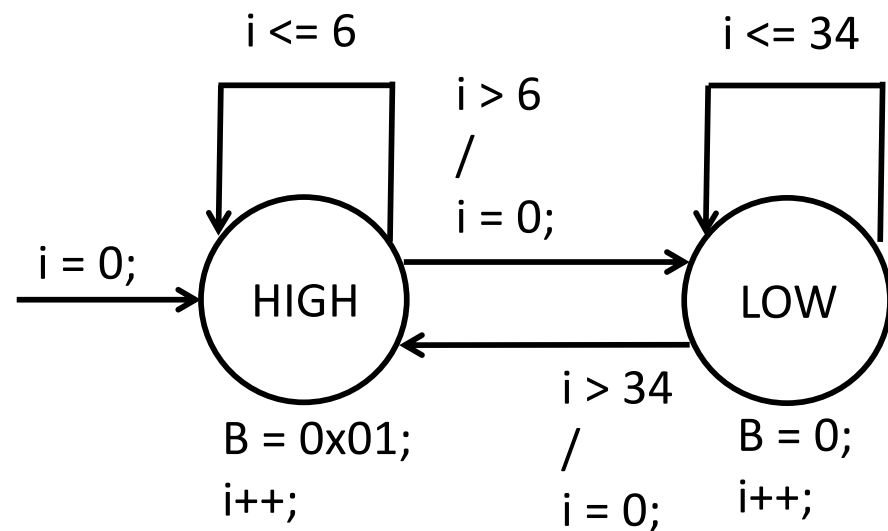
Exercise 1 Solution

- Draw a RIBS/RIMS compatible synchSM to create a PWM signal on RIMS output B0.
 - 1000 ms PWM period
 - 15% duty cycle
 - 25ms synchSM period; e.g., TimerSet(25);

PWM

unsigned char i;

Period = 25 ms



Exercise 2(a)

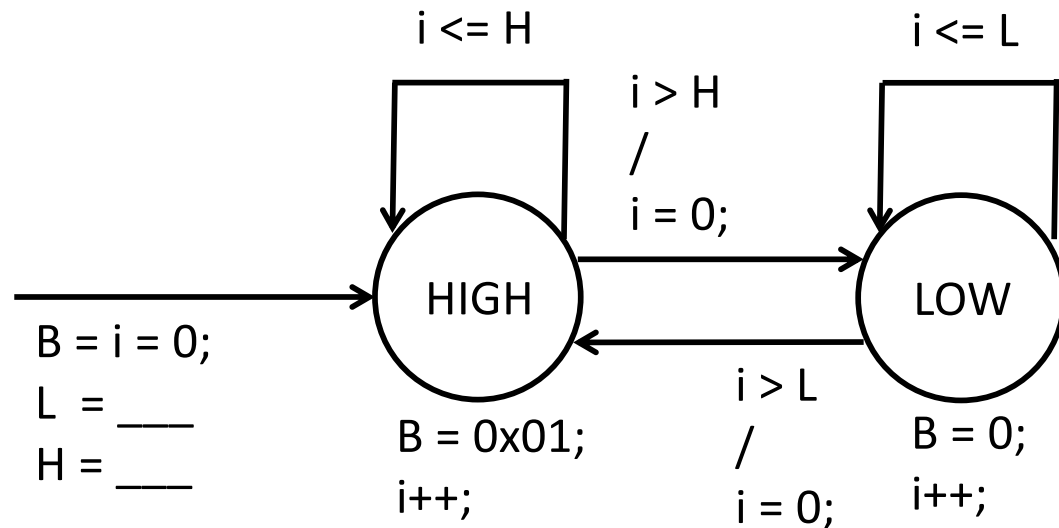
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 20% duty cycle

PWM

unsigned char i;

unsigned char L, H;

Period = _____



Exercise 2(a) Solution

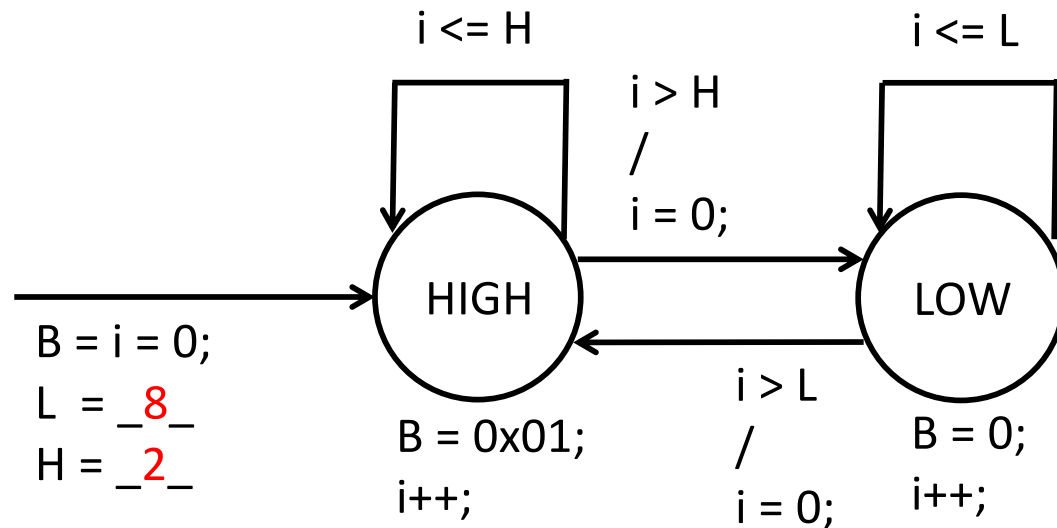
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 20% duty cycle

PWM

unsigned char i;

unsigned char L, H;

Period = 100ms



Exercise 2(b)

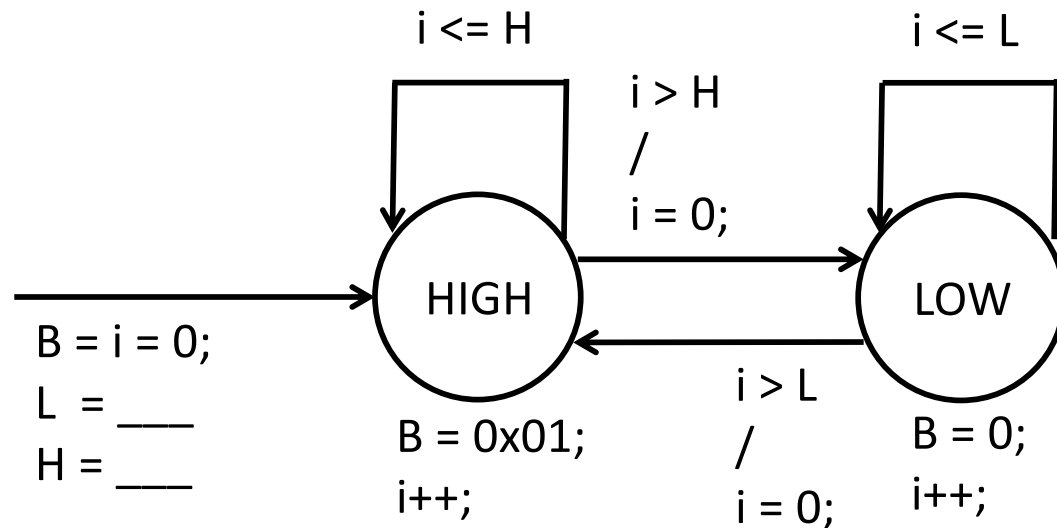
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 60% duty cycle

PWM

unsigned char i;

unsigned char L, H;

Period = _____



Exercise 2(b) Solution

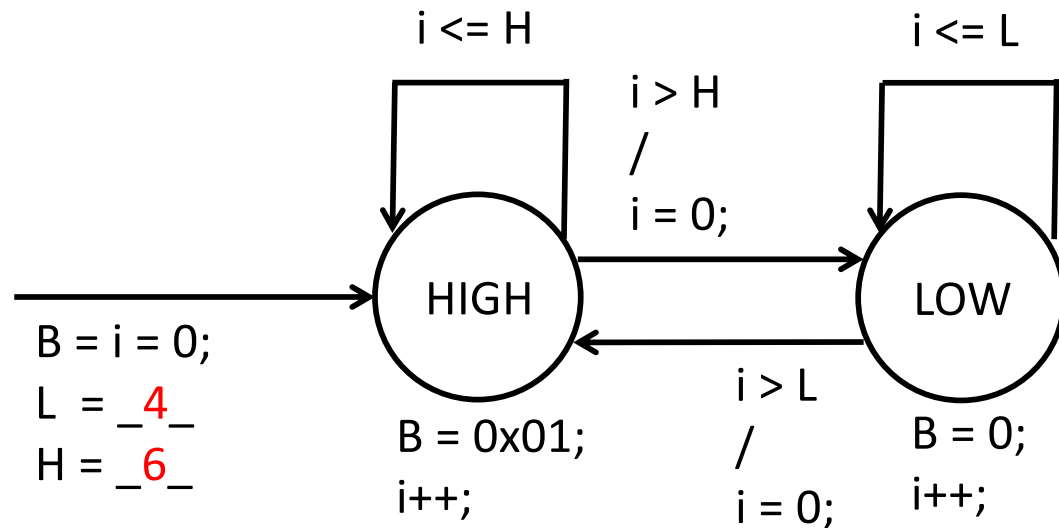
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 60% duty cycle

PWM

unsigned char i;

unsigned char L, H;

Period = 100ms



Exercise 2(c)

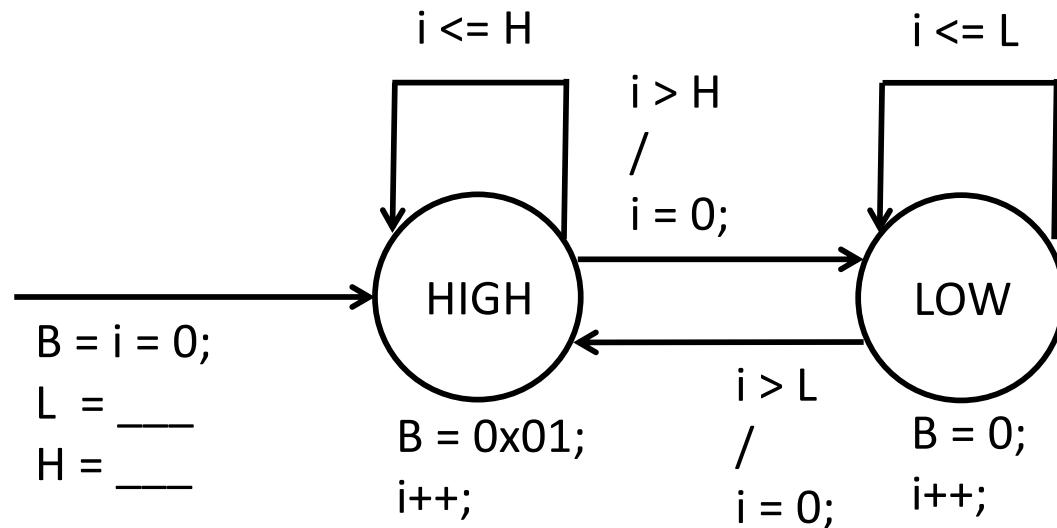
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 20% duty cycle

PWM

unsigned char i;

unsigned char L, H;

Period = **_10ms_**



Exercise 2(c) Solution

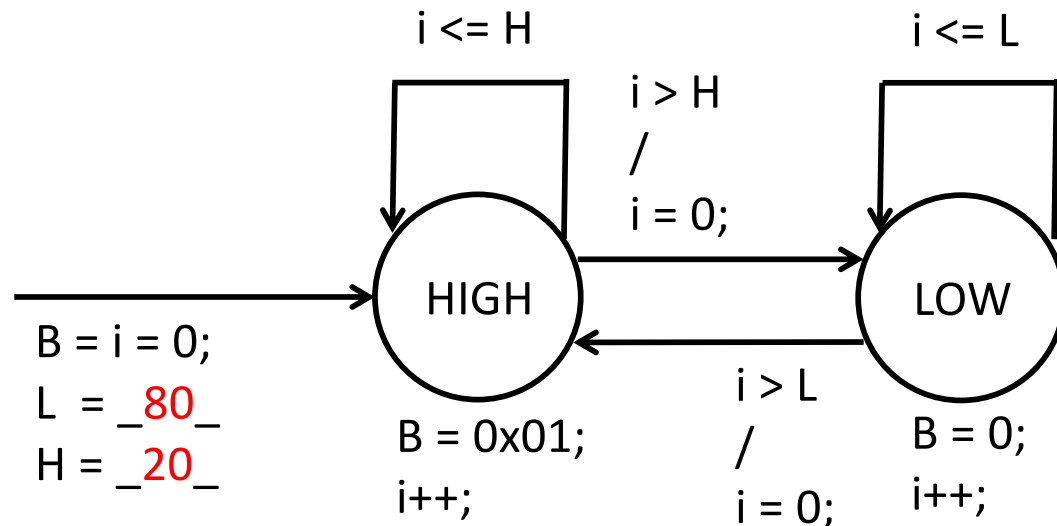
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 20% duty cycle

PWM

unsigned char i;

unsigned char L, H;

Period = **_10ms_**



Exercise 2(d)

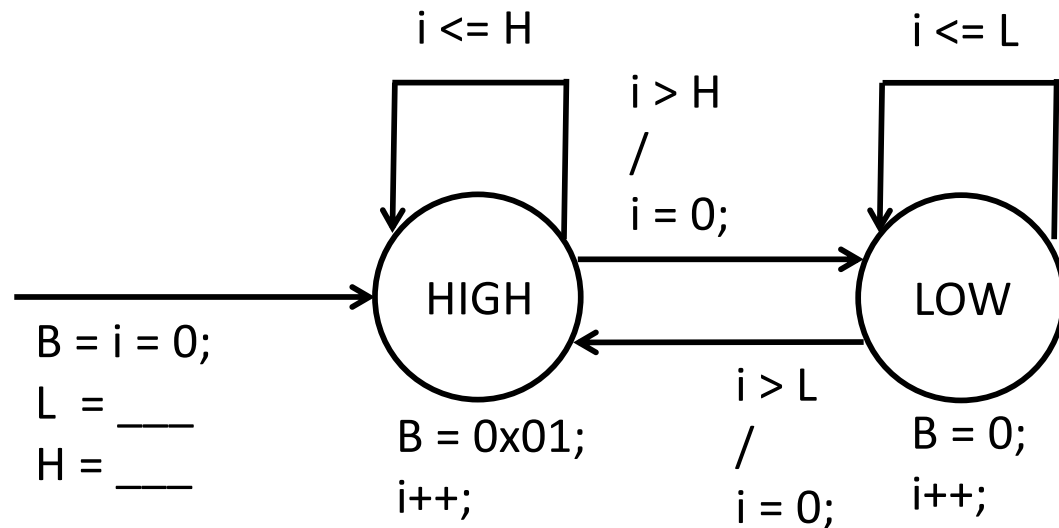
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 43% duty cycle

PWM

unsigned char i;

unsigned char L, H;

Period = _____



Exercise 2(d) Solution

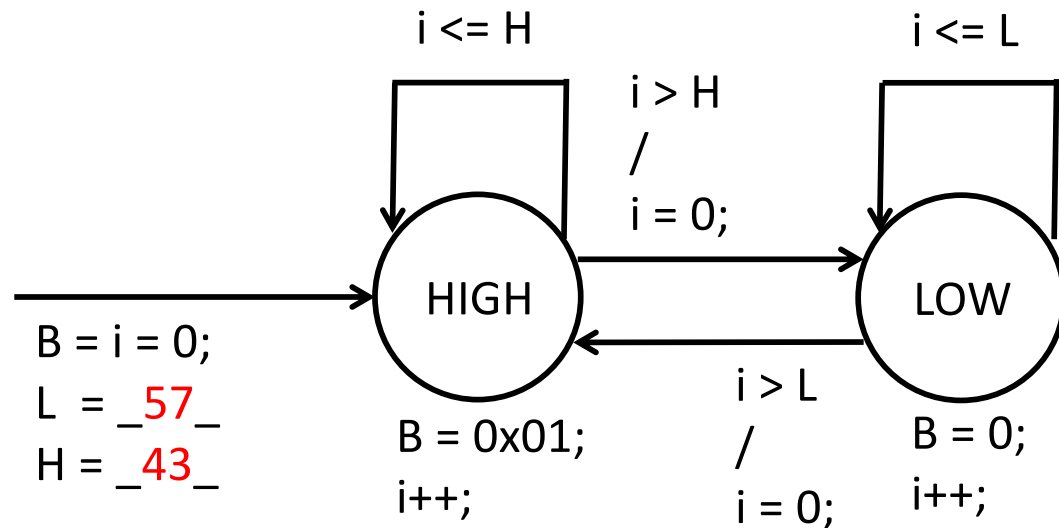
- Draw the template to create a PWM signal on RIMS output B0 that has the following parameters
 - 1000 ms PWM period
 - 43% duty cycle

PWM

unsigned char i;

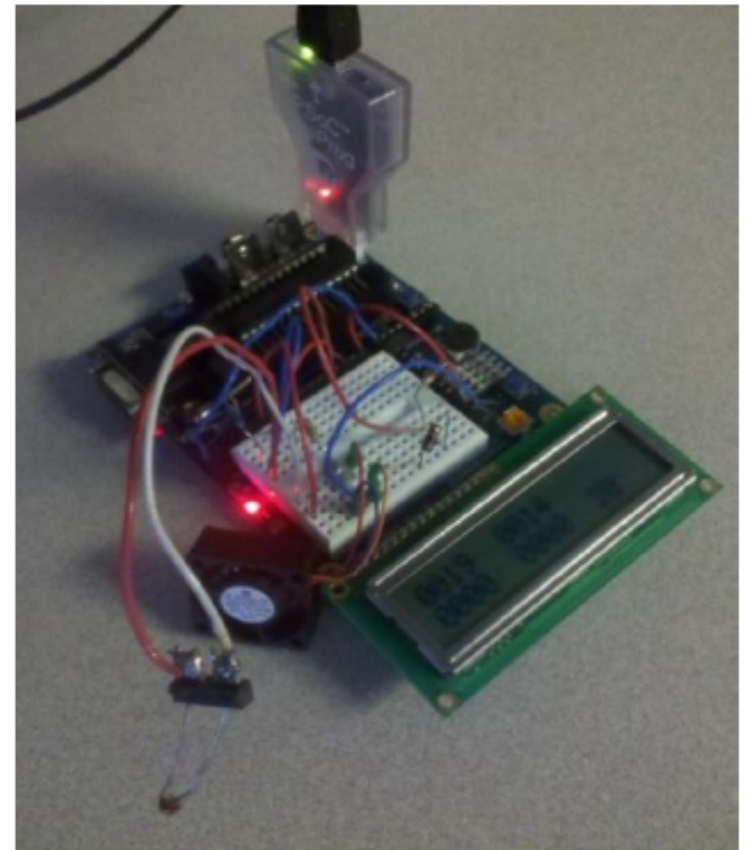
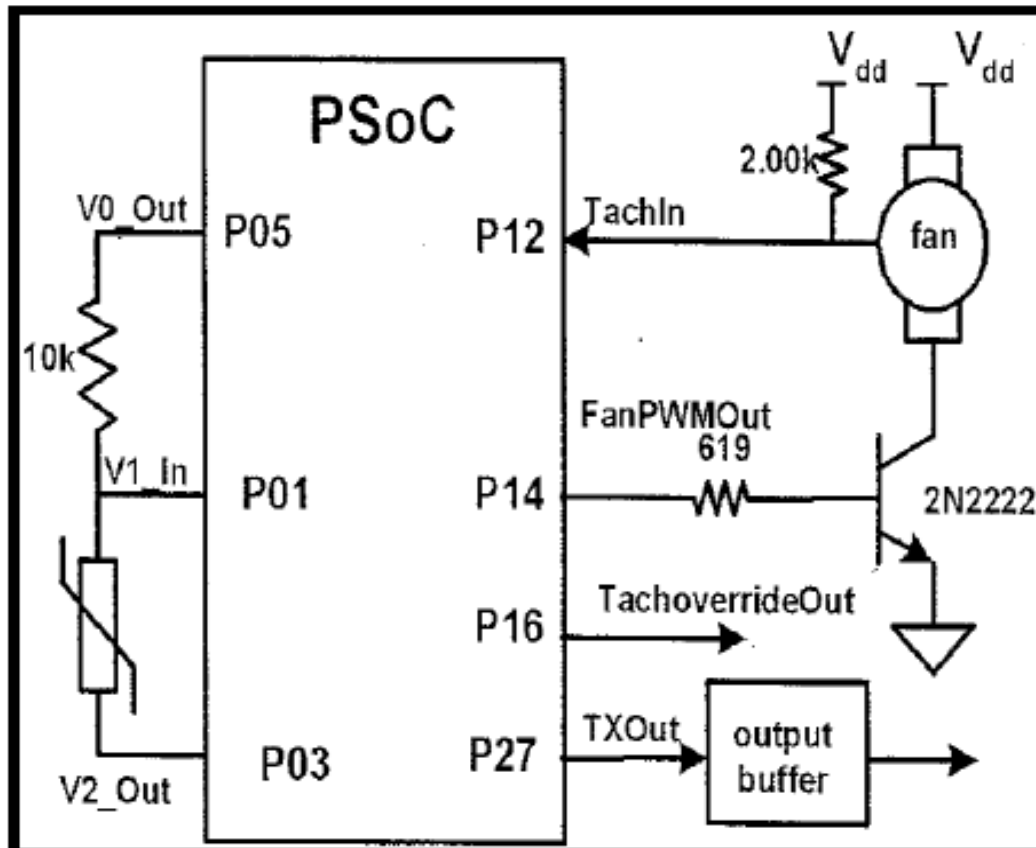
unsigned char L, H;

Period = 10ms



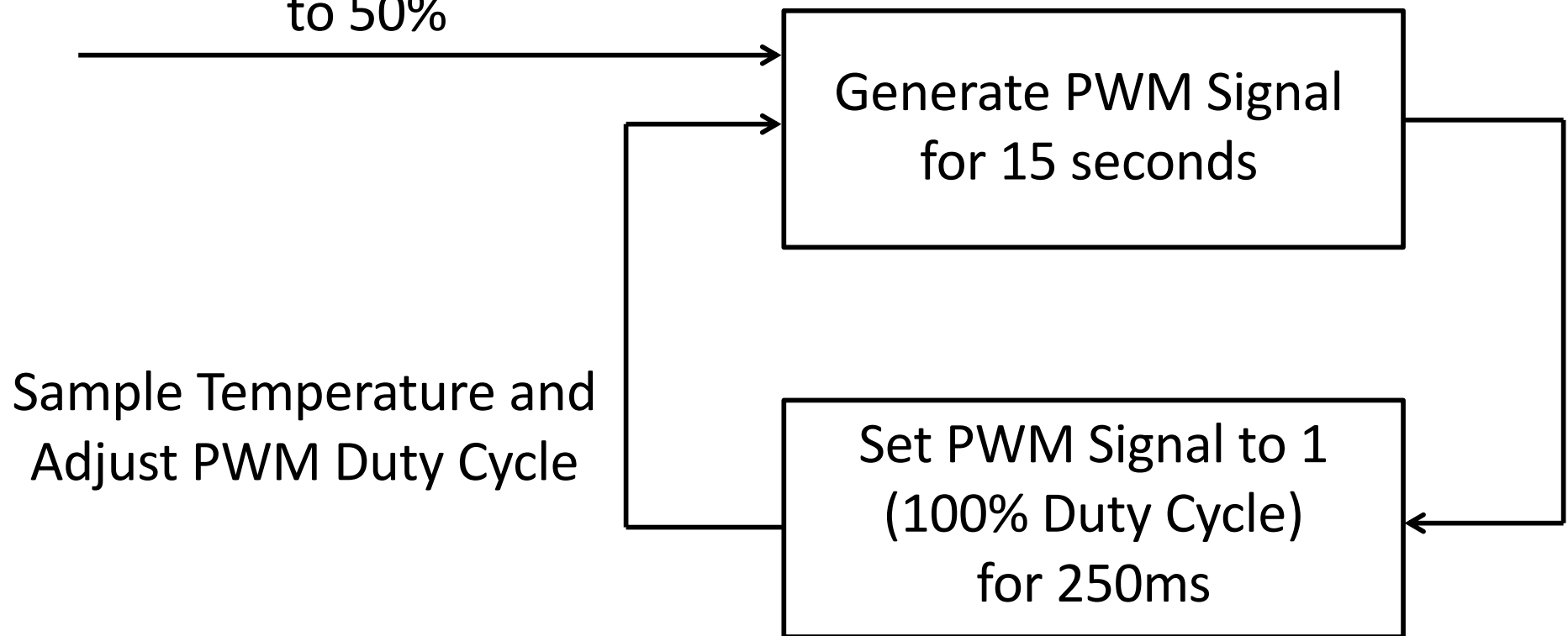
Exercise 3

- PWM Controller for Cooling Fan
- Read the problem statement on your own and design the SynchSM



Exercise 3 Solution (Overview)

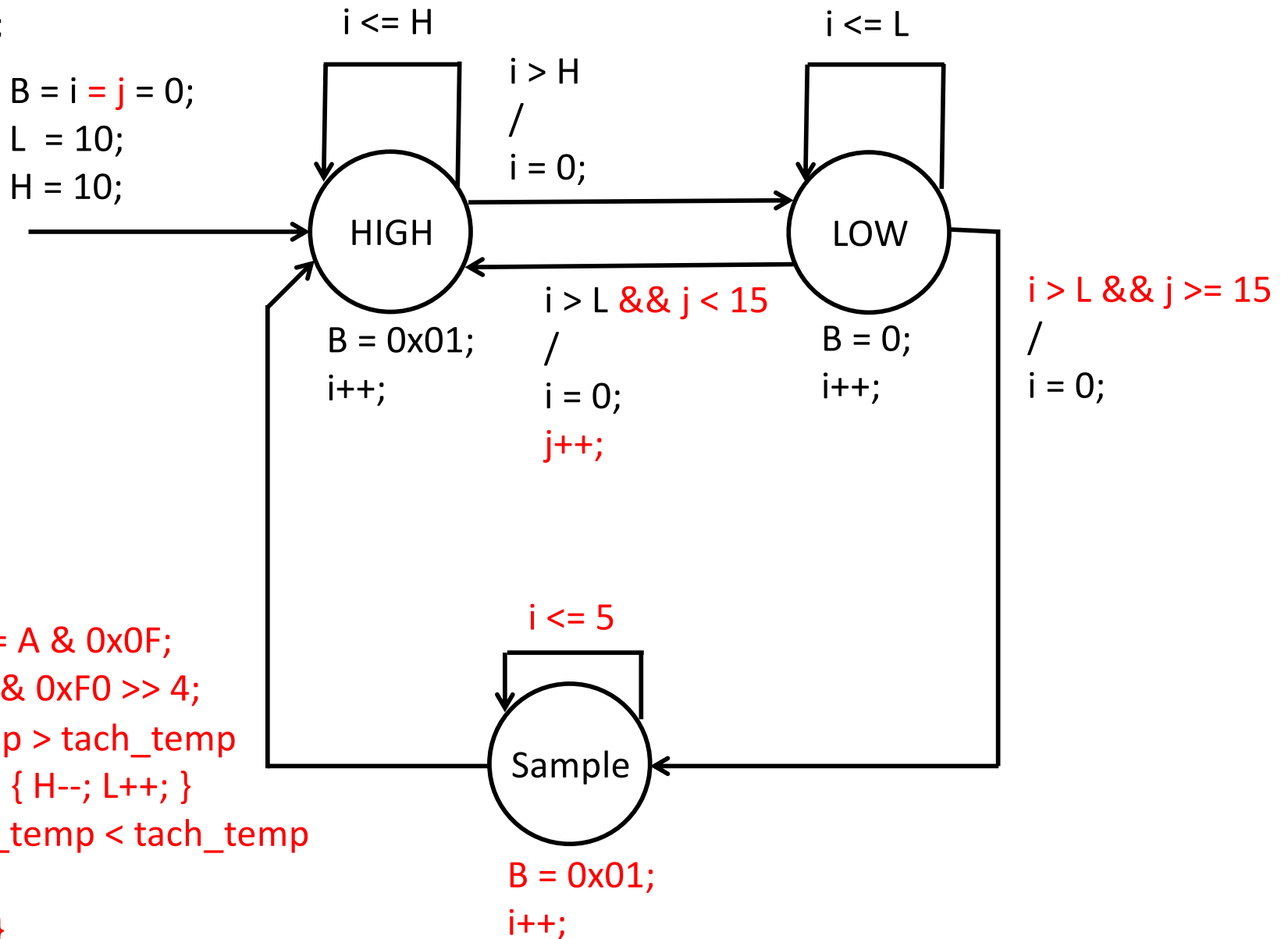
Initialize PWM Duty Cycle
to 50%



PWM

unsigned char i, j, L, H;
unsigned char desired_temp;
unsigned char tach_temp;
Period = 50 ms;

Exercise 3 Solution



$i > 5$
/
 $i = j = 0$;
 $\text{desired_temp} = A \ \& \ 0x0F$;
 $\text{tach_temp} = A \ \& \ 0xF0 \gg 4$;
If($\text{desired_temp} > \text{tach_temp}$
 $\&\& \ H > 6$) { $H--$; $L++$; }
else if($\text{desired_temp} < \text{tach_temp}$
 $\&\& \ L > 0$)
 { $H++$; $L--$; }