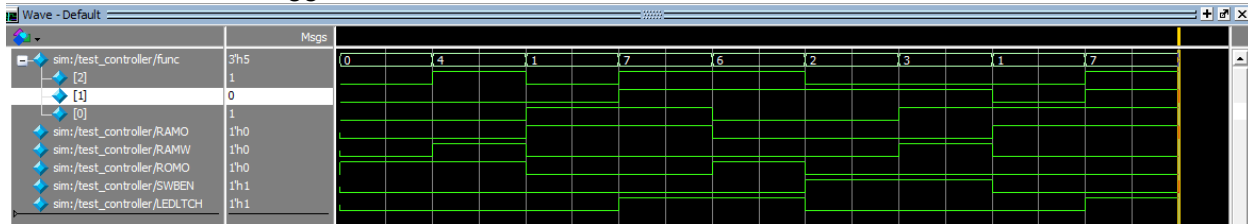


Testing in modelSim I looked at the RAMO, RAMW, ROMO, SWBEN, and LEDLTCH and found that for each switch triggered the correct function.



## 07/12/20 Interrupts

AVR system reset condition - External Pin, Power-on, Brown-out, Watchdog, and JTAG Reset.

Digital Input Interrupts - Interrupts triggered by a signal or a pin change on an input pin.

Timer interrupts - For each counter there are A and B comparator interrupts and an overflow interrupt.

Serial interrupts - Interrupts for serial data transmission being completed.

Analogue interrupts - interrupts for the analogue comparator and for completing a read.

The 'volatile' keyword is a declaration for global variables which stops the compiler removing them in the optimisation stage.

```
sei(); // Enable interrupts
cli(); // Disable all interrupts
```

Interrupts commands are in the header:

```
#include <avr/interrupt.h>
```

An example of an interrupt handler in C that acts on the ADC conversion complete event is:

```
/* Enable Interrupts */
sei();
ADCSRA |= _BV(ADIE);
```

An example of an interrupt service routine is:

```
ISR(ADC_vect)
{
    if (ADC > 650)
        PORTB |= _BV(PB7);
    else
        PORTB &= ~_BV(PB7);
}
```

An interrupt reduces the amount of CPU overhead needed to check if the input has been enabled. An excellent example of an interrupt is a temperature sensor in a nuclear power plant. It is unlikely to reach the threshold temperature so checking it repeatedly will take up a lot of processing time but it is critically important that it is detected if it does occur.