**Trigger Detection Module Requirements**

* Trig\_Det\_1. The Trigger Detection module shall have a one-bit input called i\_trigger\_in.
* Trig\_Det\_2. The Trigger Detection module shall have a one-bit input called i\_reset\_n.
* Trig\_Det\_3. The Trigger Detection module shall have a one-bit input called i\_sys\_clk.
* Trig\_Det\_4. The Trigger Detection module shall have a one-bit output called o\_latch\_count.
* Trig\_Det\_5. The Trigger Detection module shall have a one-bit output called o\_count\_init.
* Trig\_Det\_6. The Trigger Detection module shall have a one-bit output called o\_count\_enb.
* Trig\_Det\_7. o\_latch\_count, and o\_count\_enb shall always output low signals when i\_reset\_n is active low.
* Trig\_Det\_8. o\_count\_init shall always generate a high signal when i\_reset\_n is active low.
* Trig\_Det\_9. o\_count\_init shall always generate a low signal when i\_reset\_n is high.
* Trig\_Det\_10. o\_latch\_count and o\_count\_enb shall be toggled when a rising edge signal is sent to the i\_trigger\_in input.
* Trig\_Det\_11. i\_sys\_clk shall take input from the system clock.