**Trigger Detection Module Requirements**

* The Trigger Detection module shall have a one-bit input called i\_trigger\_in.
* The Trigger Detection module shall have a one-bit input called i\_reset\_n.
* The Trigger Detection module shall have a one-bit input called i\_sys\_clk.
* The Trigger Detection module shall have a one-bit output called o\_latch\_count.
* The Trigger Detection module shall have a one-bit output called o\_count\_init.
* The Trigger Detection module shall have a one-bit output called o\_count\_enb.
* o\_latch\_count, and o\_count\_enb shall always output low signals when i\_reset\_n is active low.
* o\_count\_init shall always generate a high signal when i\_reset\_n is active low.
* o\_count\_init shall always generate a low signal when i\_reset\_n is high.
* o\_latch\_count and o\_count\_enb shall be toggled when a rising edge signal is sent to the i\_trigger\_in input.
* i\_sys\_clk shall take input from the system clock.