

The background features abstract green geometric shapes. On the left, a solid green trapezoid points upwards. On the right, a complex arrangement of overlapping translucent green triangles and polygons creates a layered, crystalline effect. The colors range from a vibrant lime green to a muted sage green.

# CSC258 Project

By Brendan Neal and Filip Tomin

# Project Description - Logic Gate Quiz

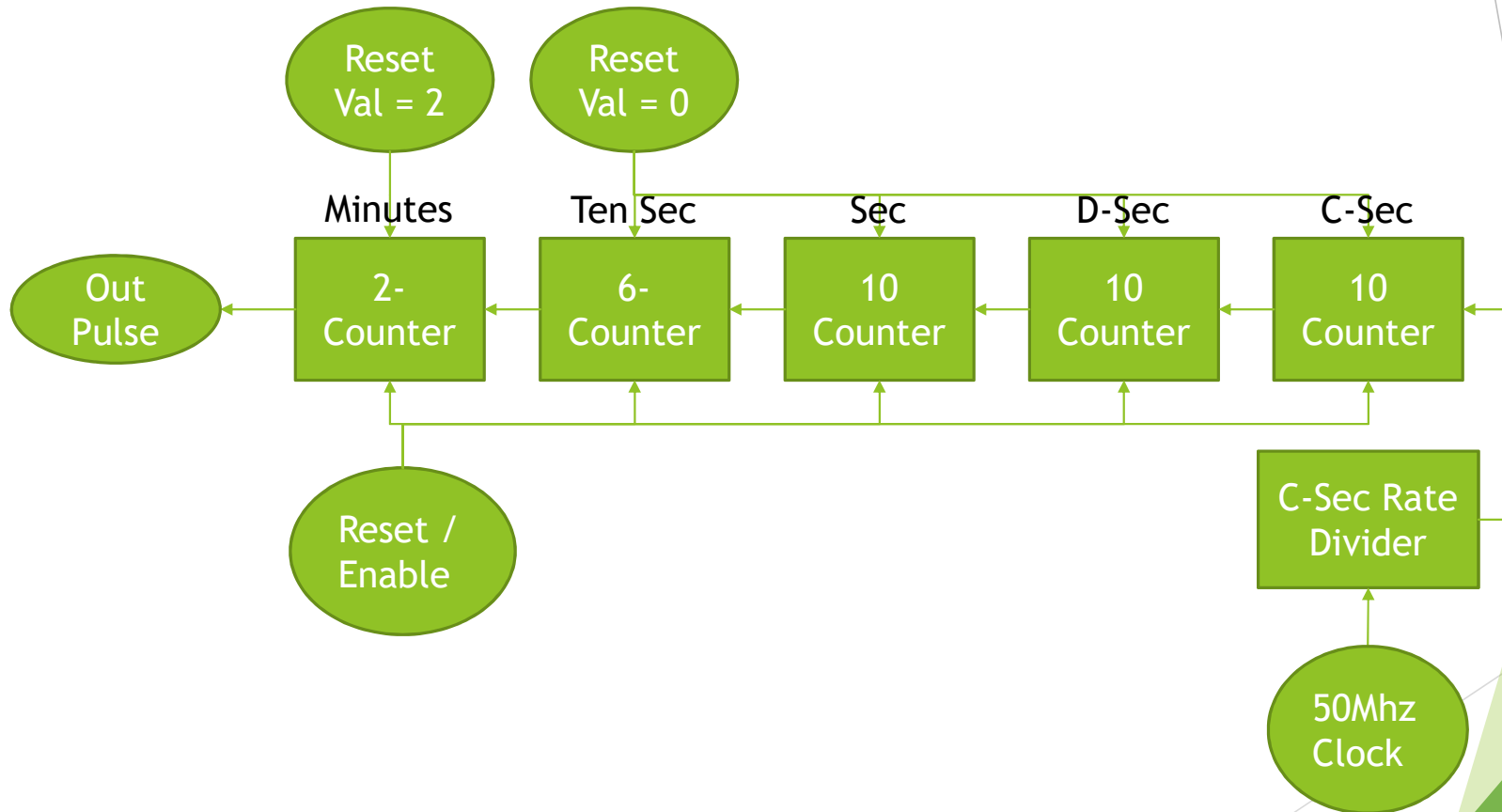
- ▶ Win Condition

- ▶ Solve all 9 gates in 2 minutes

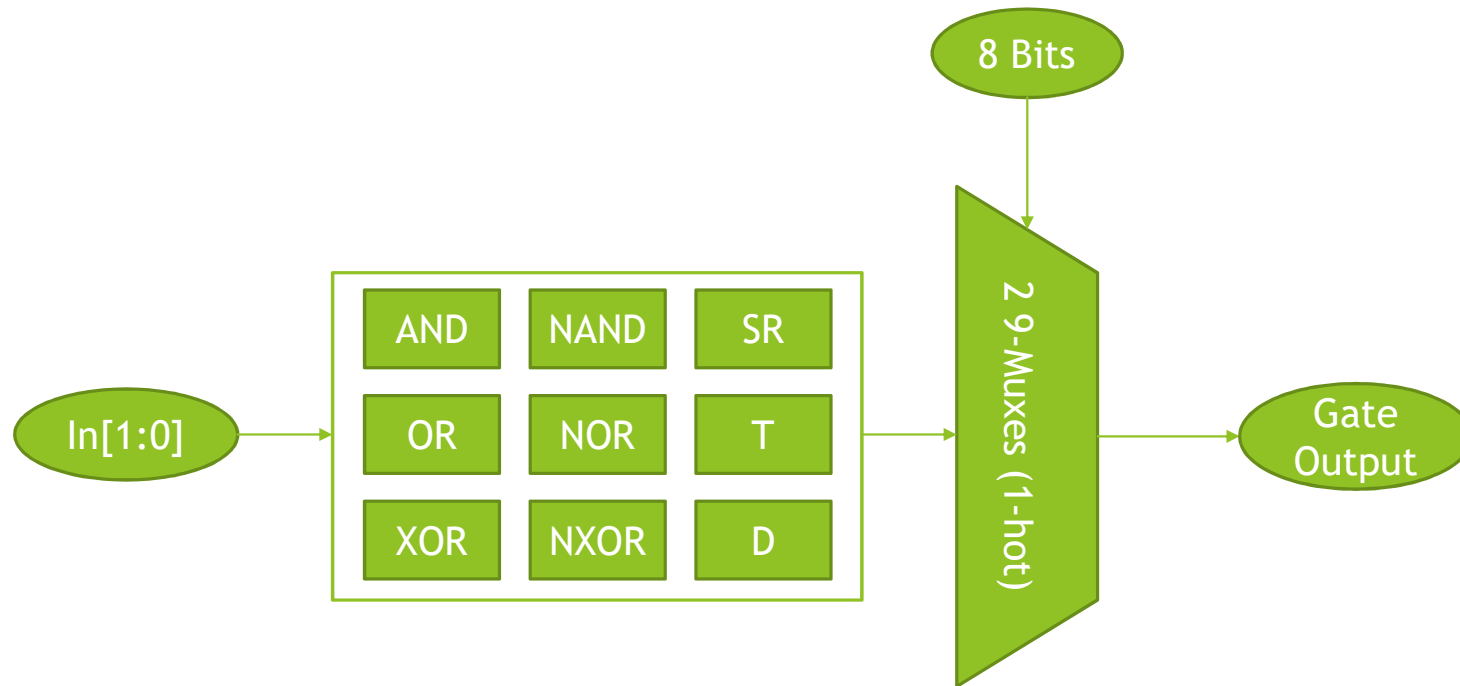
- ▶ Rules

- ▶ Logic gates are given randomly
  - ▶ Player uses board switches to test the IO of the gate
  - ▶ Player inputs a number corresponding to the gate
  - ▶ Right number -> move on to next gate
  - ▶ Wrong number -> player must select another gate number (with no IO support!)

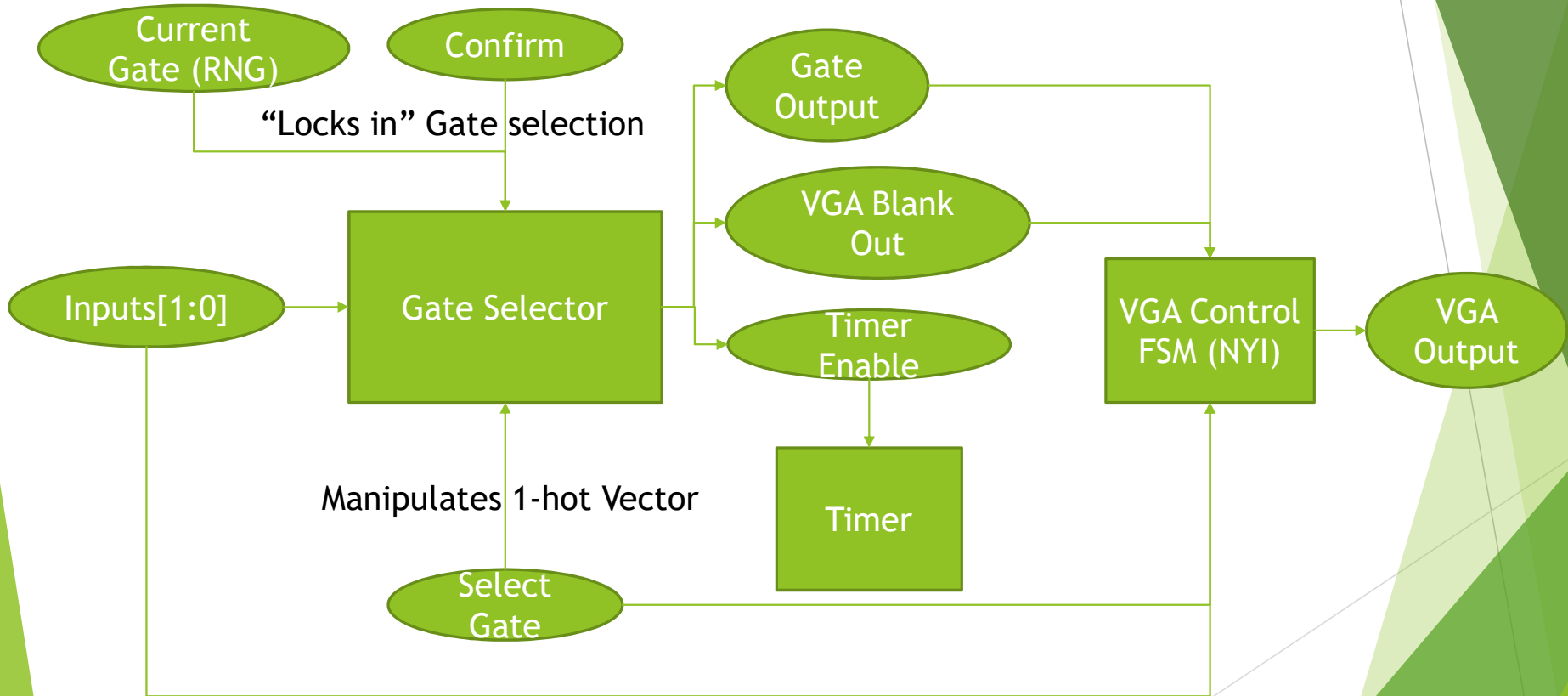
# Block Diagram - Timer



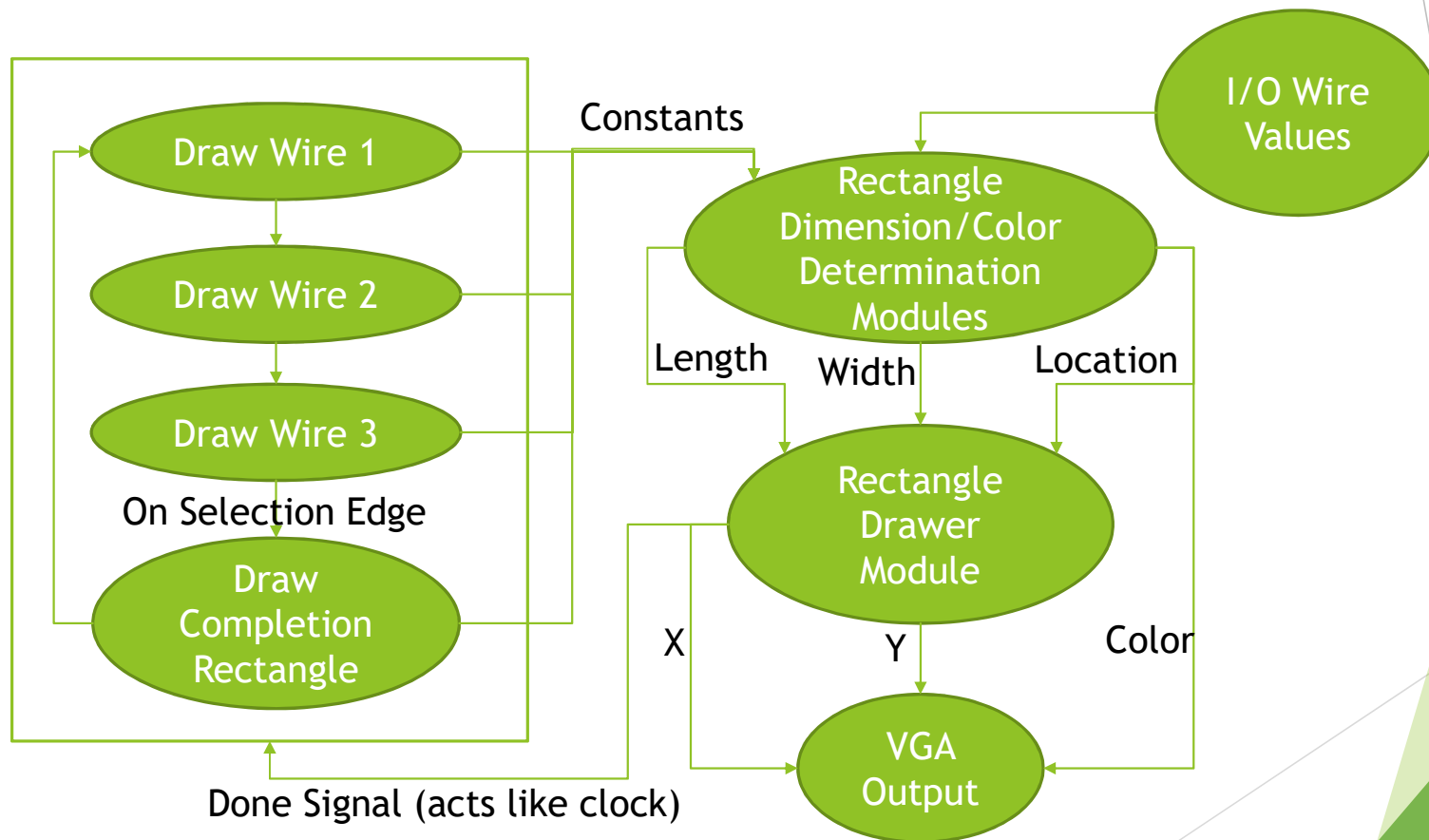
## Block Diagram - Gate Selector



# Block Diagram - Gate Control



## Block Diagram - VGA FSM (NYI)



## Interesting Aspects

- ▶ Two minute timer (not hex!)
  - ▶ Looks cool
  - ▶ Harder to get working than we thought
- ▶ Gate Selector
  - ▶ Works flawlessly
  - ▶ Easy to incorporate in the final design

# Difficulties

- ▶ Board switches were inconsistent
- ▶ Timer odd-second skip issue ( $\leq$  vs.  $=$  assignment)
- ▶ Getting our background on the VGA
- ▶ Having to edit code to work on QP even though it worked on MS
- ▶ Not being able to simulate certain things on MS
- ▶ Uncertain MS simulations that work fine on the board



# Lessons Learned

- ▶ MS compiles differently than QP
- ▶ Things that work on MS may not work on QP and vice versa
- ▶  $\leq$  may not always be appropriate for an always block
- ▶ Sometimes the board is the source of your problems
- ▶ Sometimes uncertain things in ModelSim work on the board