CS232 : Digital Logic Design and Computer Architecture
Lab 1 (10 points)

Setup Instructions:

1. Download roll_number.zip from drive and unzip it, enter the Digital folder
2. Execute `bash Digital.sh` to start the application
3. **Please go through the tutorial triggered to learn how to build a circuit**

Tip: For each component, hover over the pins to know the usage
Tip2: For a component, right clicking allows you to change its parameters

Q1 (2 points):

1. Create a combinatorial circuit to map the output of the 2-bit counter to the control pins of the 7-edge display
    a. replace the 2bitdisplay_component with your combinatorial circuit
    b. construct the other components i.e, input, clock, counter and display as shown in the

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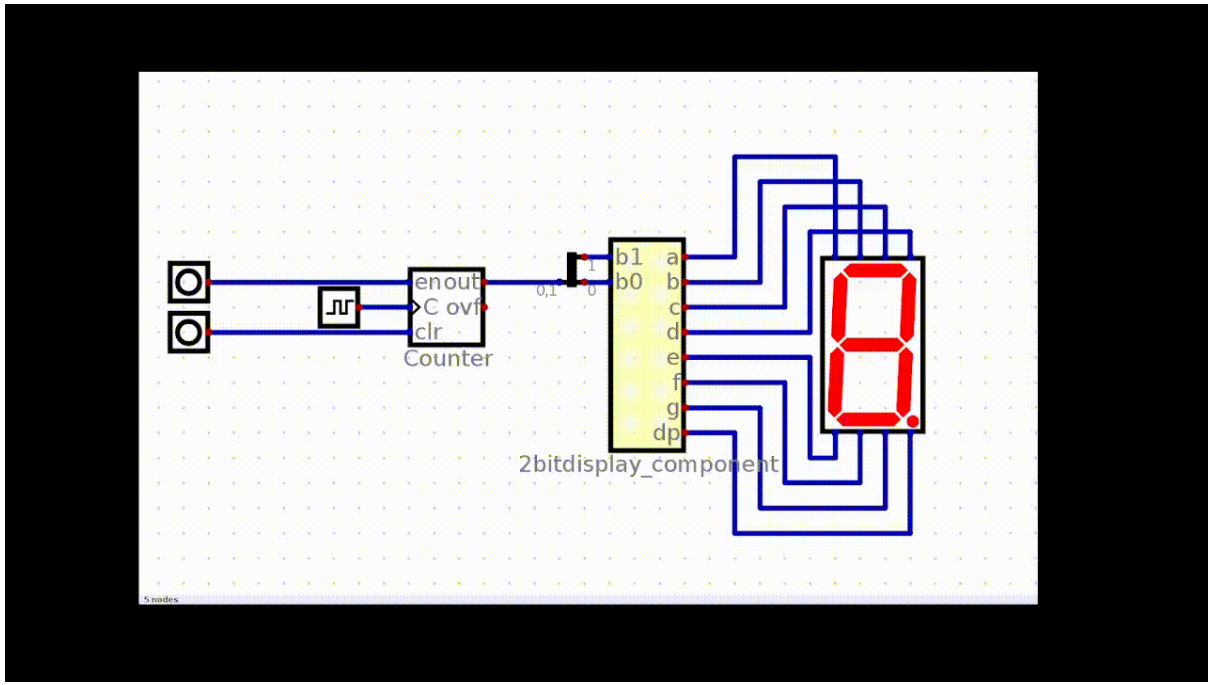


Grading Policy:

- 2 points for a complete working solution
- 0 points for the rest

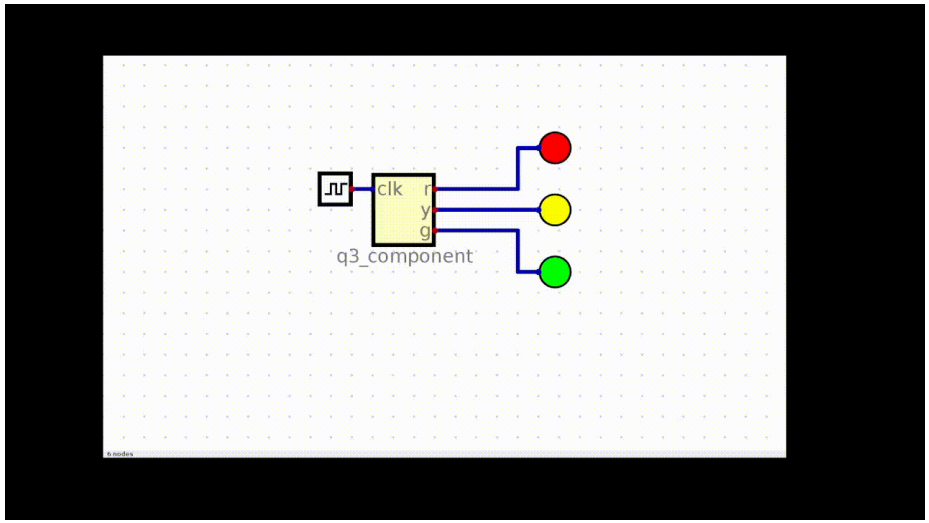
Q2 (3 points):

1. Create a 2-bit up down counter using D-Flip flops. A 2-bit up-down counter's output varies as given: 0->1->2->3->2->1->0 and repeat.
2. You are allowed to use at most 3 D-Flip flops and NOT gate along with any 2-input logic gates

- 0 points for the rest

Q3 (5 points):

1. Implement a traffic light system which pauses for 2 seconds on red light, 1 second on yellow light and 2 seconds on green light.
2. You are again allowed to use at most 3 D-Flip flops, and NOT gate along with 2-input logic gates and LED components (under IO section).
3. Save the final file as q3.dig



Grading Policy:

- Full 5 point for < 5 gates used
- 3 points for any working solution
- 0 for any other case

`roll_number.zip roll_number` and submit roll_number.zip on moodle.
Incorrect submission formats will result in no marks.

Note: Replace roll_number used throughout with your roll number.

Late submission policies:

1. –10% for each day of late submission