LAB A-01(Week1)

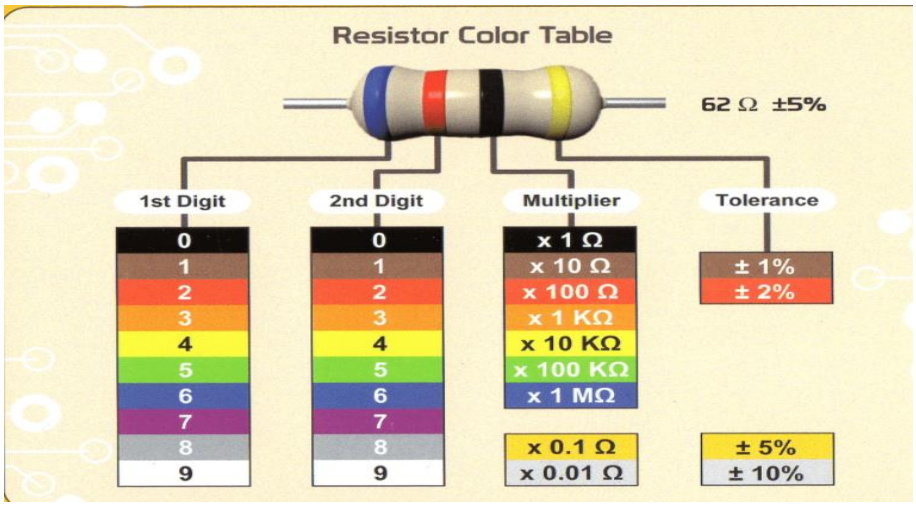
Objectives:

- To get familiarity with the basic operation/function of resistors, LEDs, and breadboard by performing the following experiments.
- To get familiarity with digital system simulator -- CircuitVerse.

I. RESISTORS:

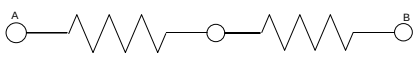
1. Identification of the value of Resistor with color codes

Color	First Stripe	Second Stripe	Third Stripe	Fourth Stripe (Tolerance)
Black	0	0	x1	
Brown	1	1	x10	
Red	2	2	x100	
Orange	3	3	x1,000	
Yellow	4	4	x10,000	
Green	5	5	x100,000	
Blue	6	6	x1,000,000	
Violet	7	7		
Grey	8	8		
White	9	9		
Gold				5%
Silver				10%



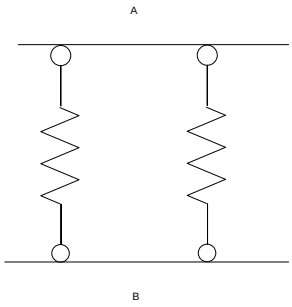
2. Rule for Series Connection of Resistors:

When two resistors are connected in series, the new resistance between points A and B will be (R1 + R2).



3. **Rule for Parallel Connection of Resistors:**

When two resistors are connected in parallel, the new resistance between points A and B is (R1 x R2) / (R1 + R2).



II. LEDs (Light Emitting Diodes):

1. Identification of the sides of an LED:

The leg that is longer is positive side of the LED.

2. Need for a resistance:

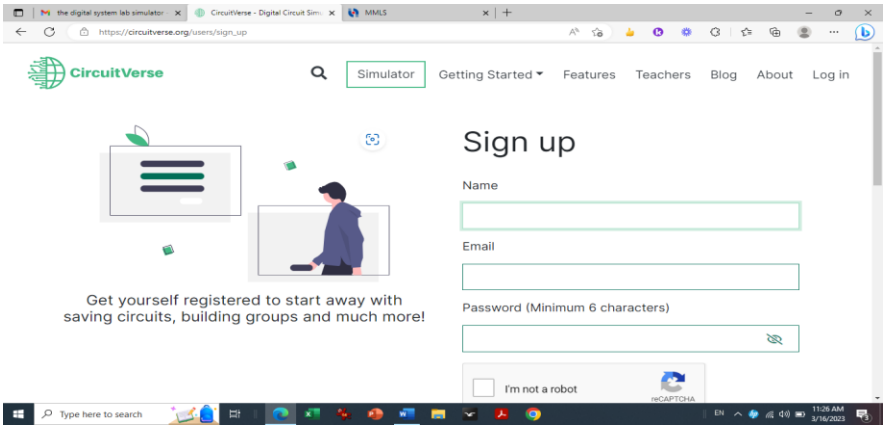
In a diode, current can flow in only one direction. When the LED is on, there is a 1.4 volt drop across it. Since LED has very little resistance, an external resistor is needed to limit the large amounts of current flow through LED else LED will burn out.

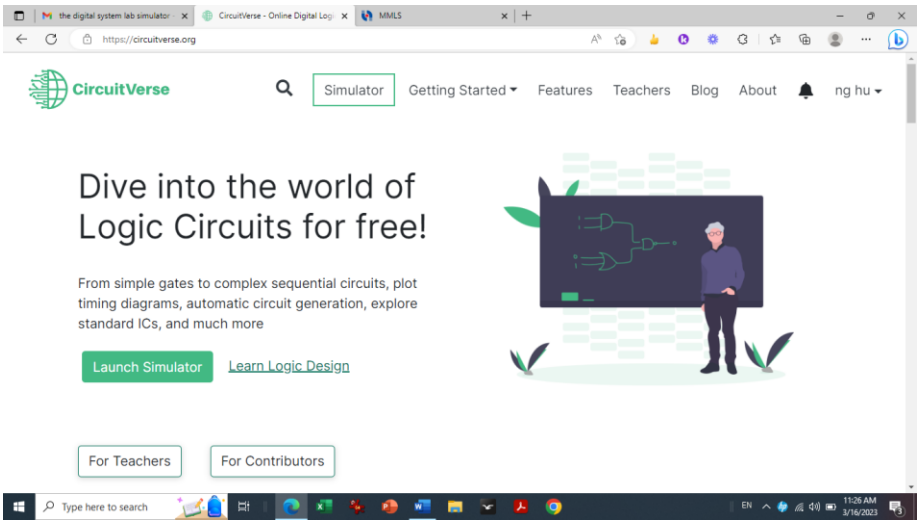
3. How to make the connection:

The positive leg of LED can be connected to a resistor and the other end of the resistor to +5V and the negative leg can be connected to the ground.

4.

a) visit https://circuitverse.org/ . Sign up as new user with MMU student MS email address (example: 112220000@soffice.mmu.edu.my). Do remember your password.



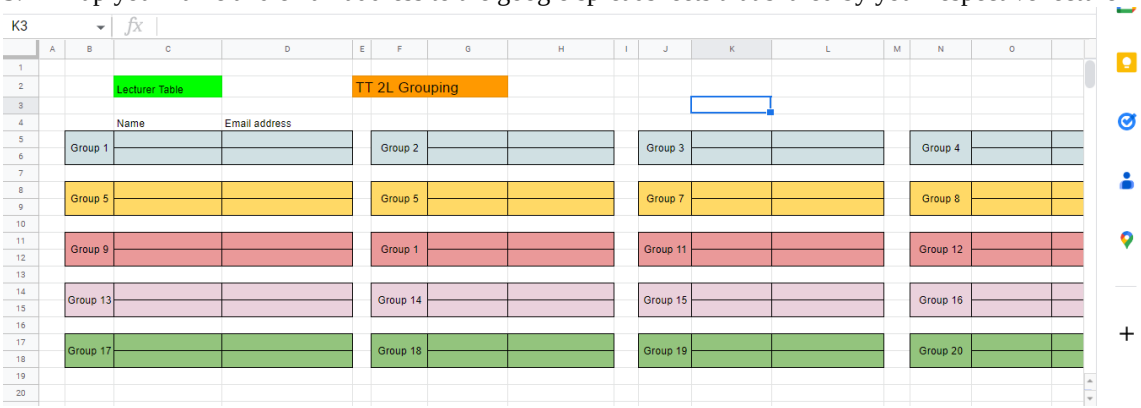


b) Construct the circuit as shown in Figure below. Press the button to turn on the LED.

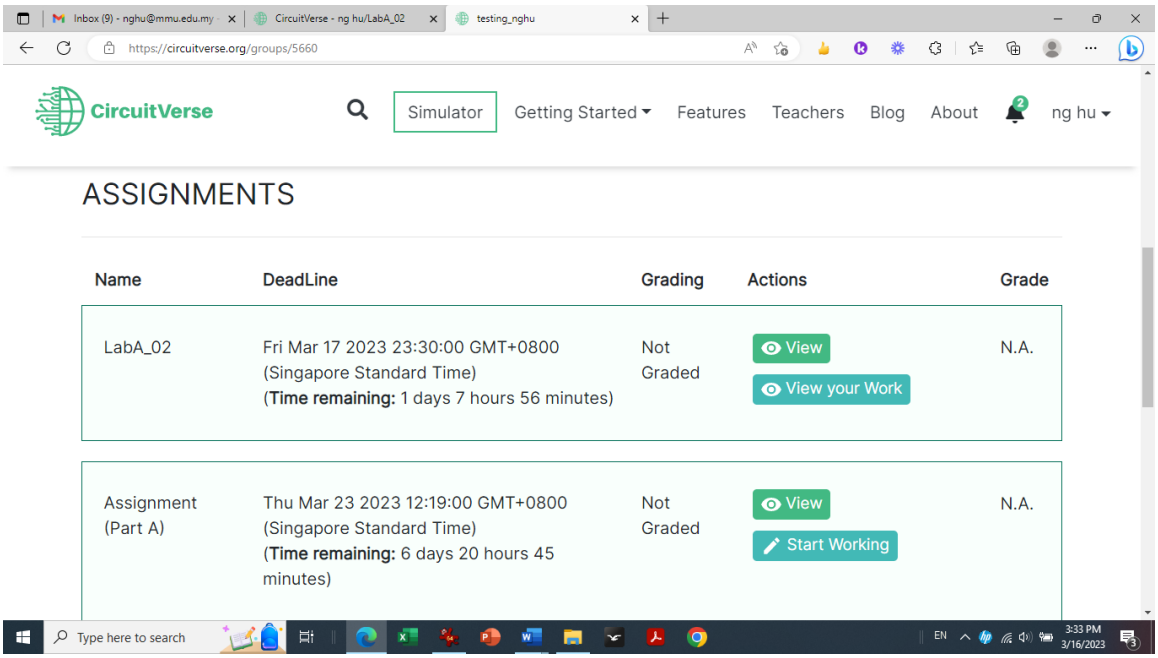
c) Construct the circuit as shown in Figure below. Change the input to "1" to turn on the LED.

d) Construct the circuit as shown in Figure below. The Power source is always turn on the LED.

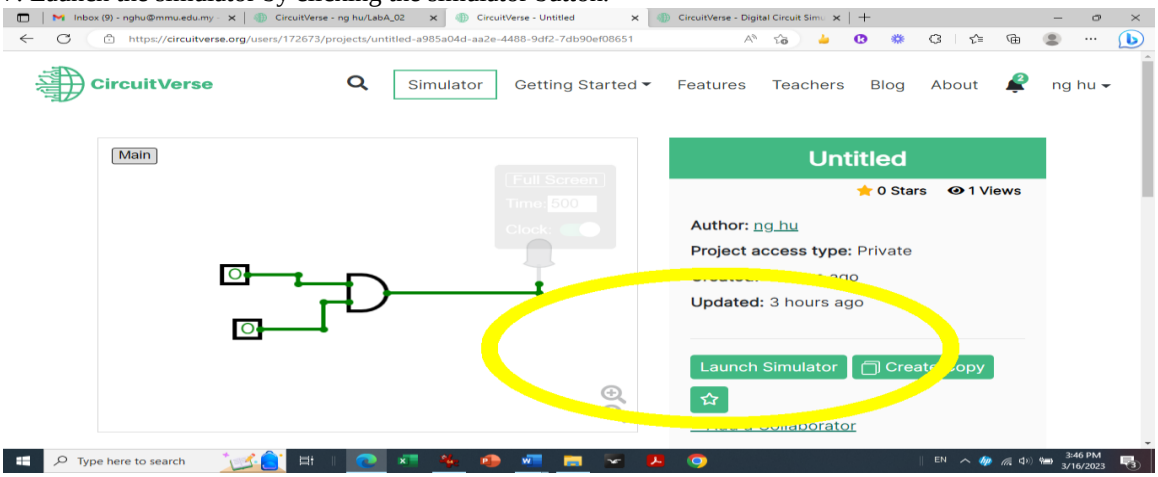
5. Fill up your name and email address to the google spreadsheets that shared by your respective lecturer



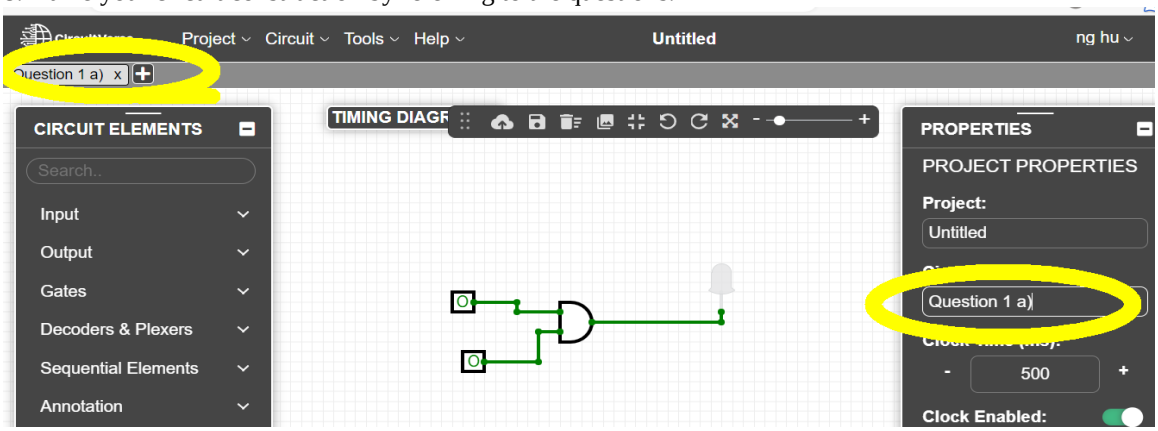
6. In week 2, students can found the assignments as lab report submission the assignment module. Press " start your work" or "view your work" to do circuit construction.



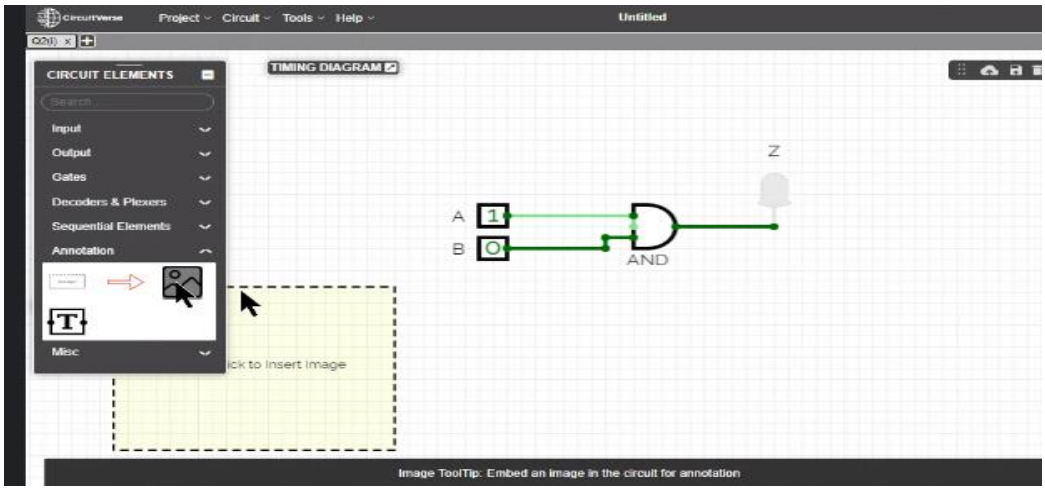
7. Launch the simulator by clicking the simulator button.

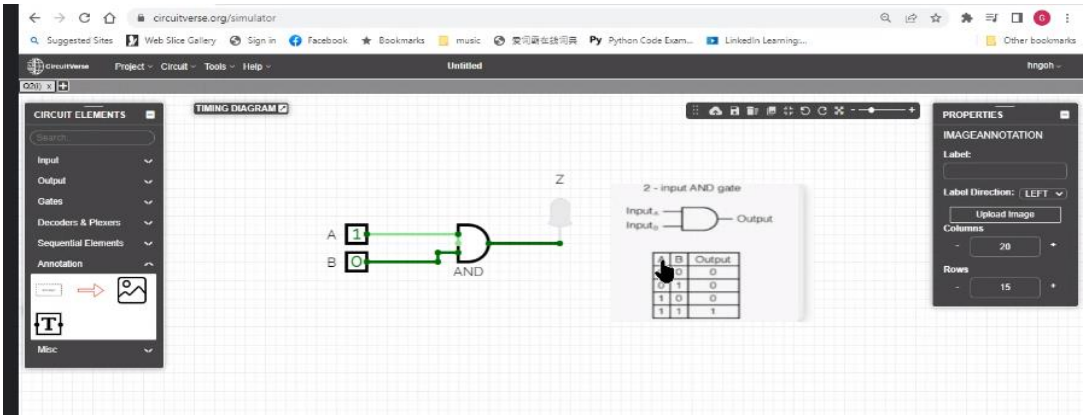


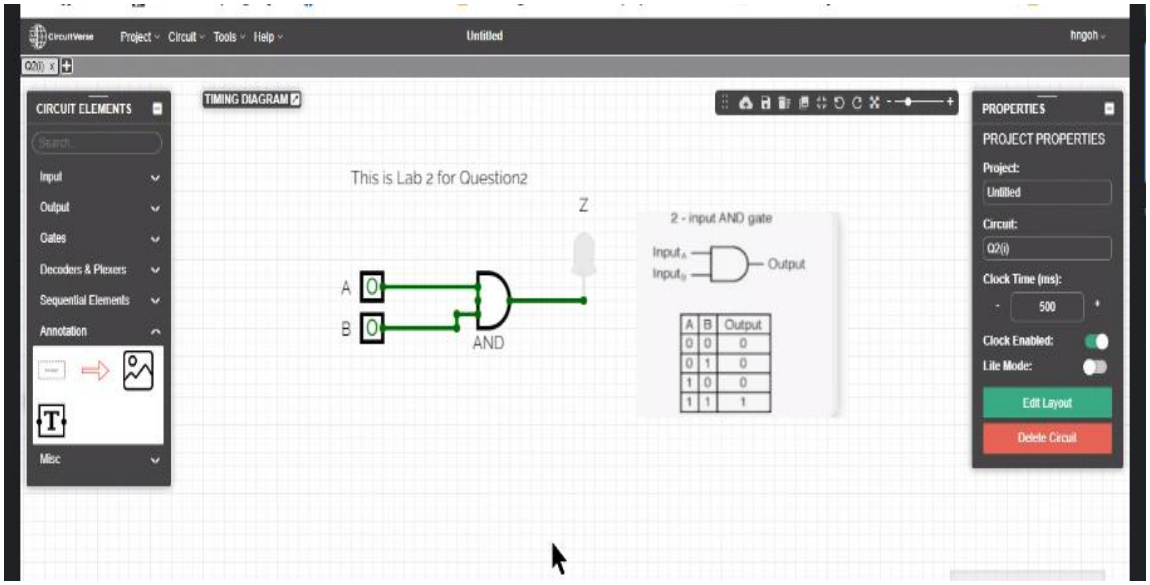
8. Name your circuit construction by referring to the questions.



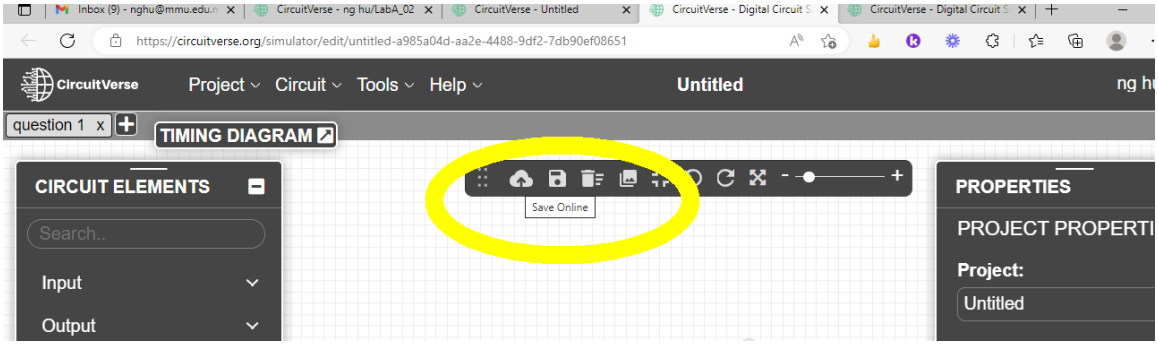
9. For each circuit construction, do label each of the component with tally on the truth table (student attaches it using the tools available).

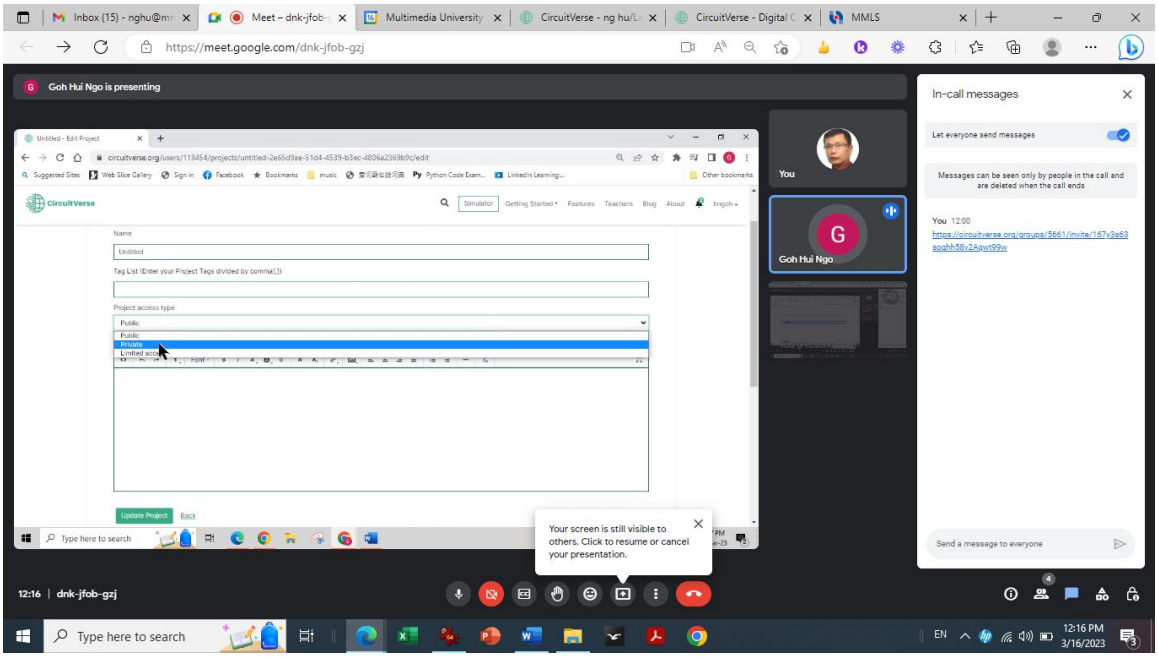


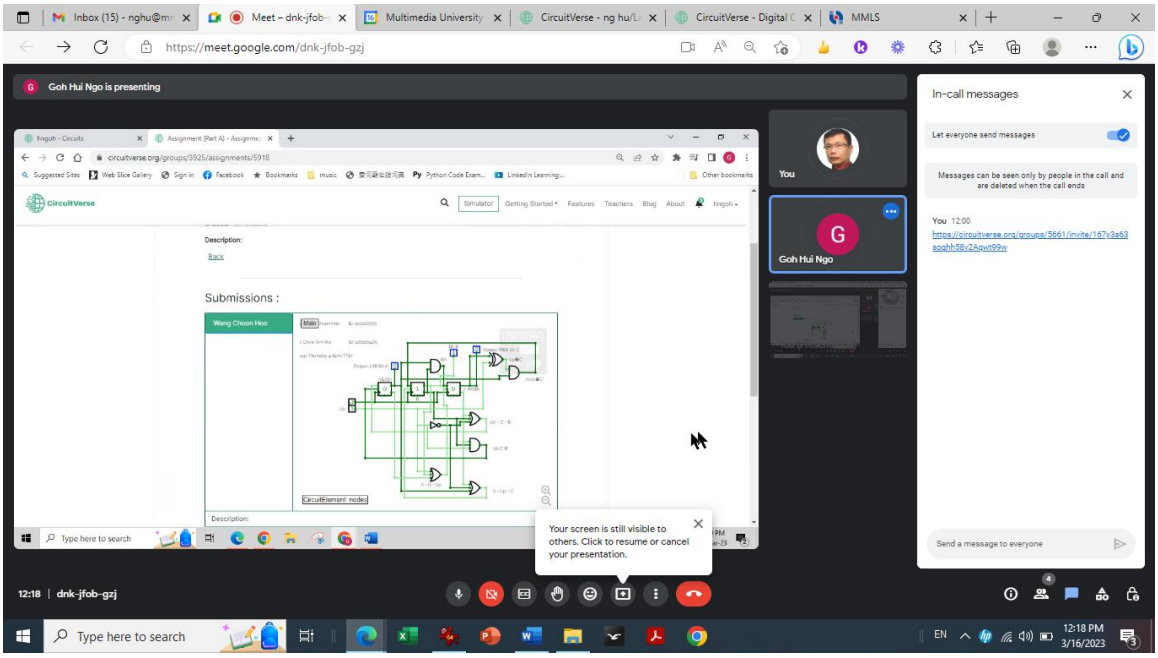




10. Save your work by clicking the “save online” button. Do make sure , it is under “Private”.






Goh Hui Ngo is presenting
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