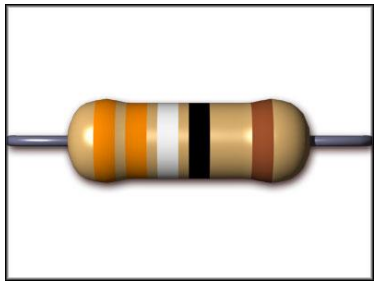
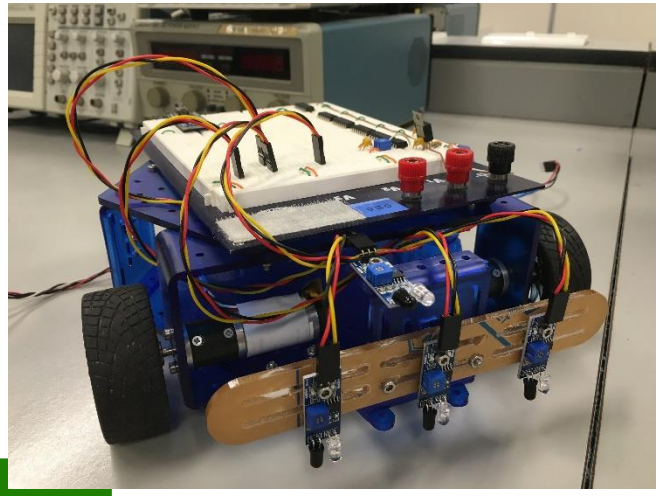
Tutorial 1

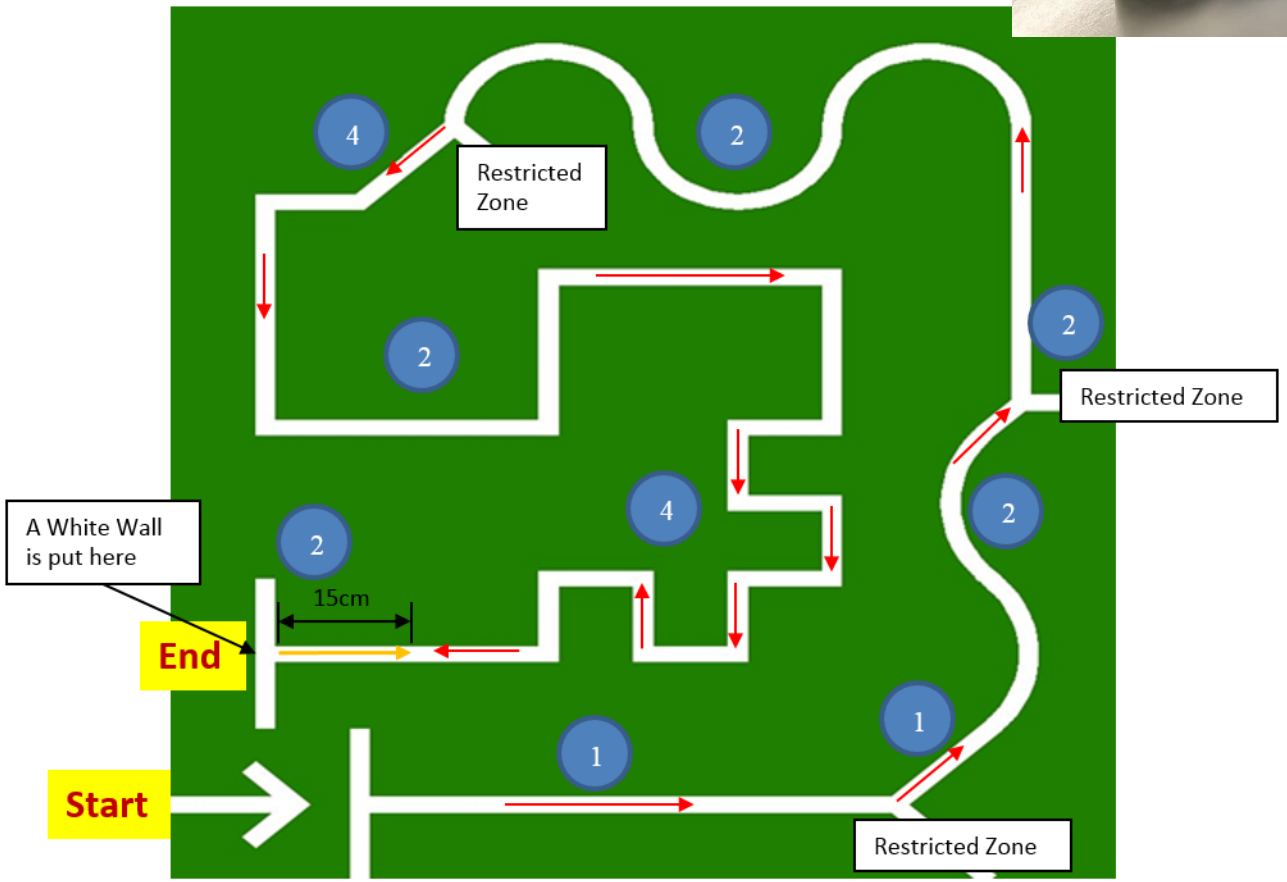
Basic components and Breadboard



ELEC 1100

General Information





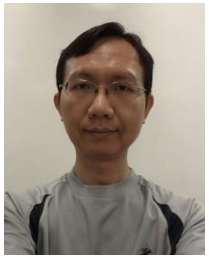
Course Instructors

Give lectures, decide course grades, make decisions on the course

Instructional Assistant

Give tutorials, handle administrative matters,
Suggest course grades and post them

Technical Officer

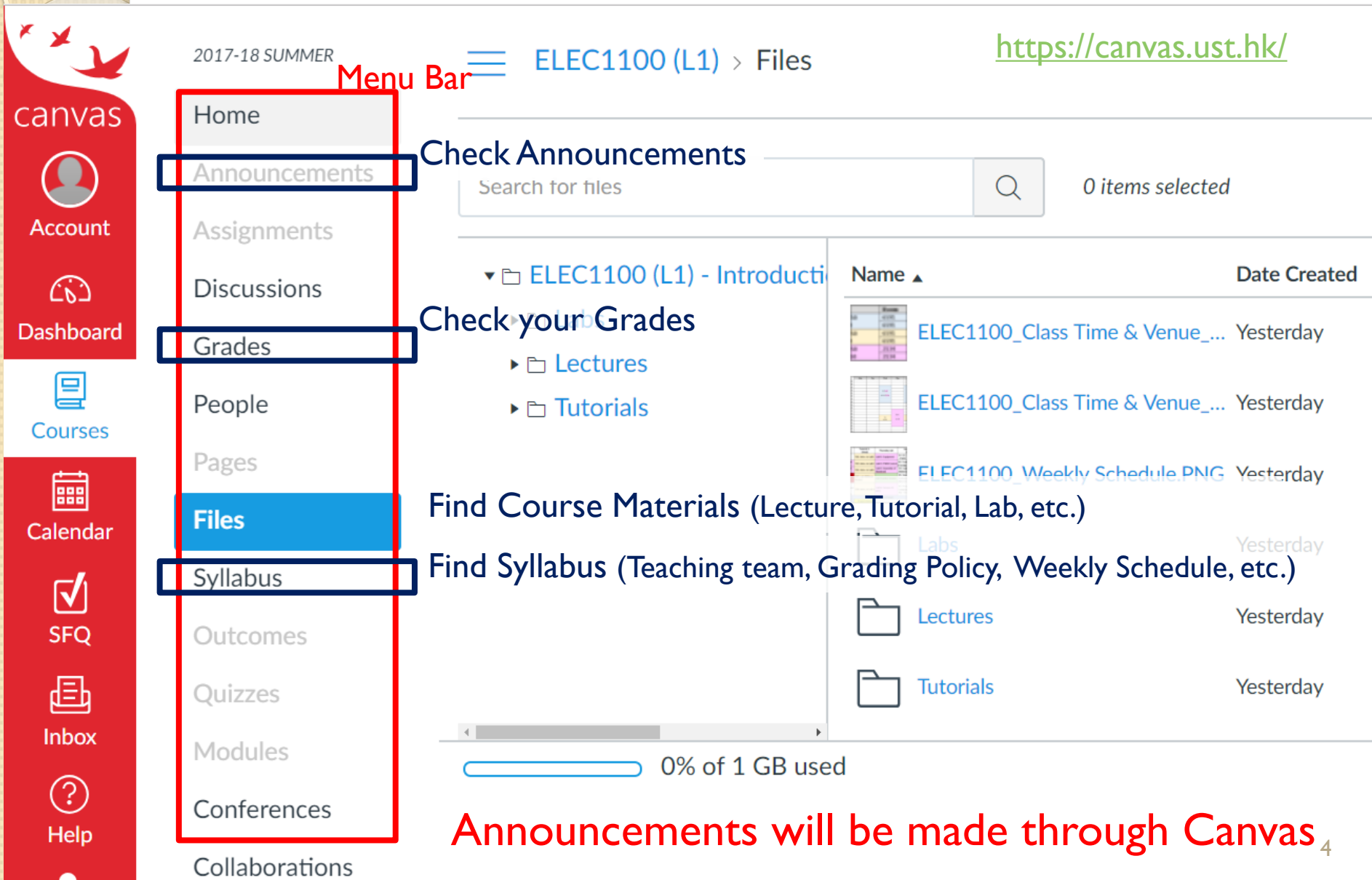


In charge of the lab and equipment

Teaching Assistants

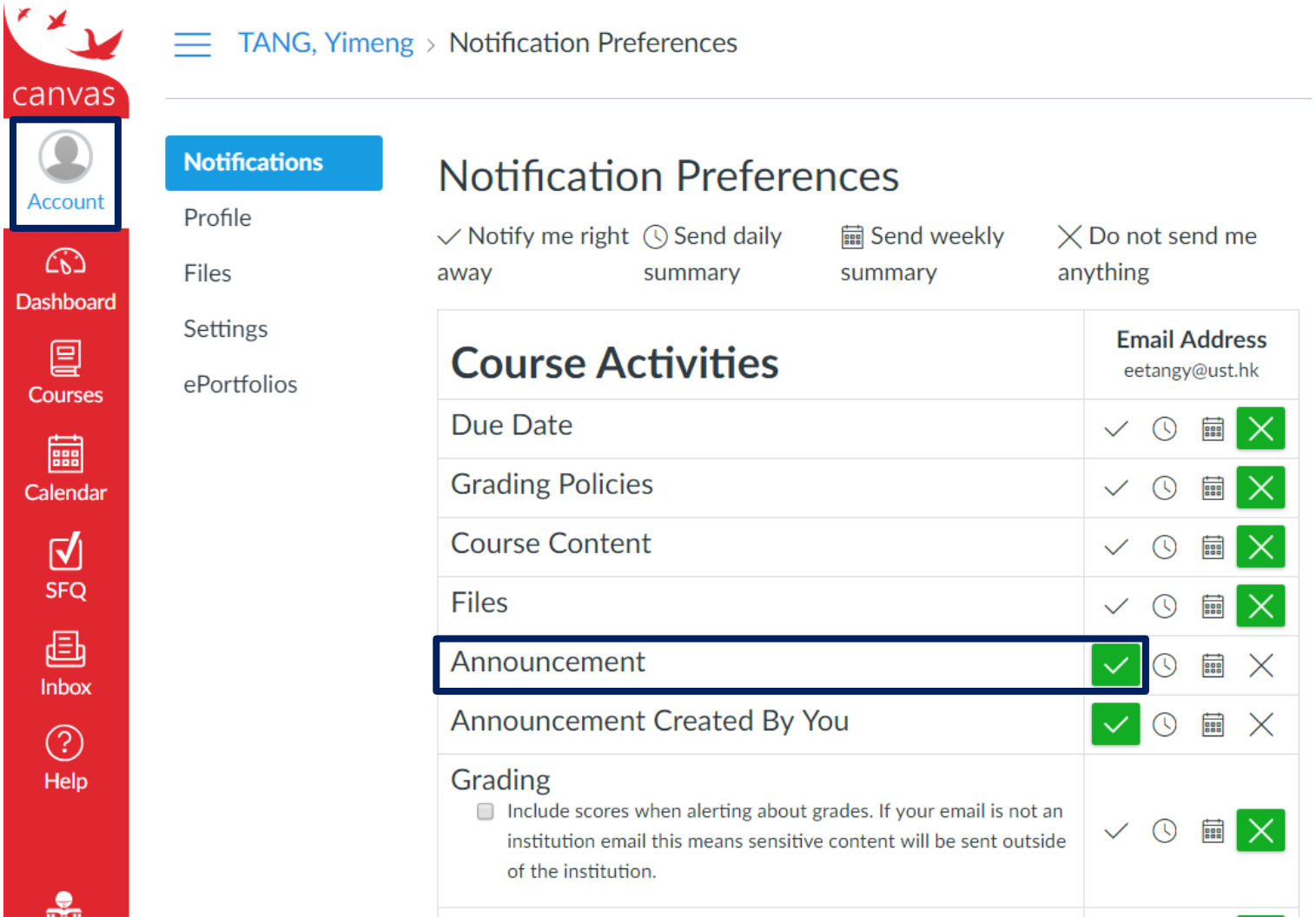
See your lab demo, collect lab sheets,
Invigilate exams & final project demo

Course Website --- Canvas



Configure announcement setting

Able to receive announcement via emails



Midterm Arrangements

- **Written midterm**

  July 11 (Wed), 10:10-11:50, at Rm6591

- **Lab midterm**

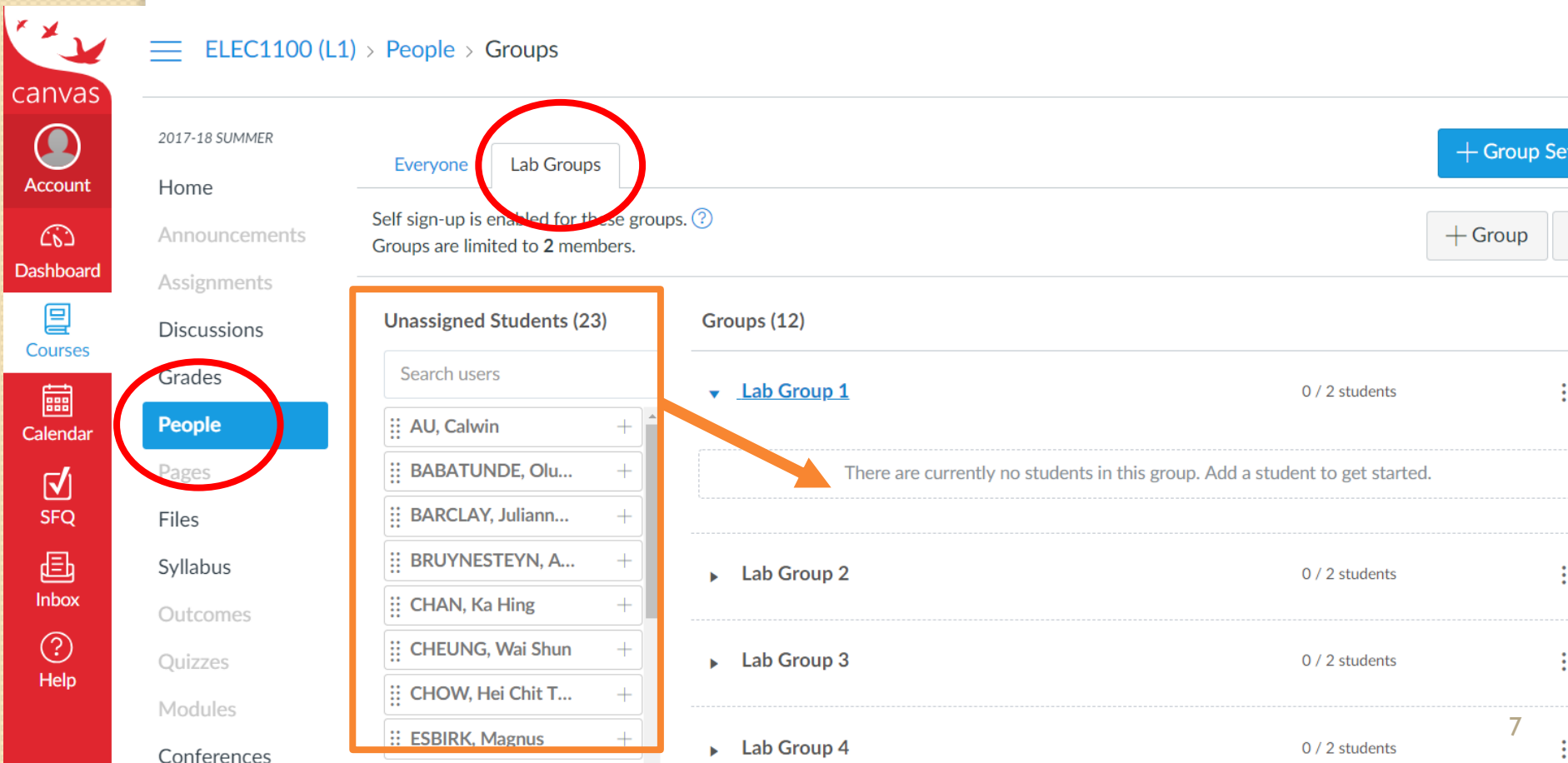
  July 13 (Fri), 15:00-15:50, at Rm2134

Lab Arrangements

Every Thursday
+
Wednesday
(Week 2&3)

- Two students form a group

Canvas → People → Lab Groups →



Lab Arrangements

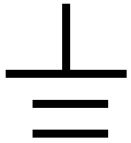
- Preparation (before the lab)
  - Read over the lab manual and try pre-lab questions
  - Print out summary sheet by YOURSELF

- Lab tasks
  - Ask TAs for signature if necessary

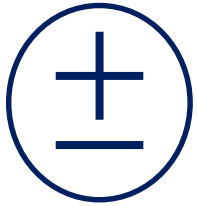
Remark: Finish at least 4 labs in order to do project demo

Basic Components

Power



Ground

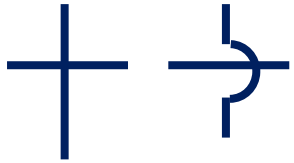


Voltage Source

Resistor

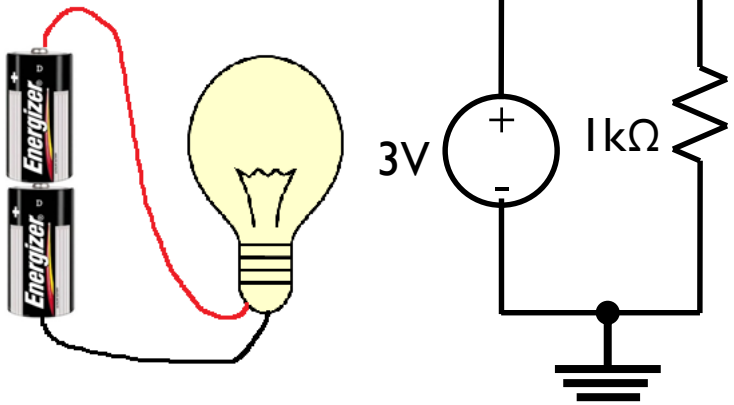
Capacitor

Connection

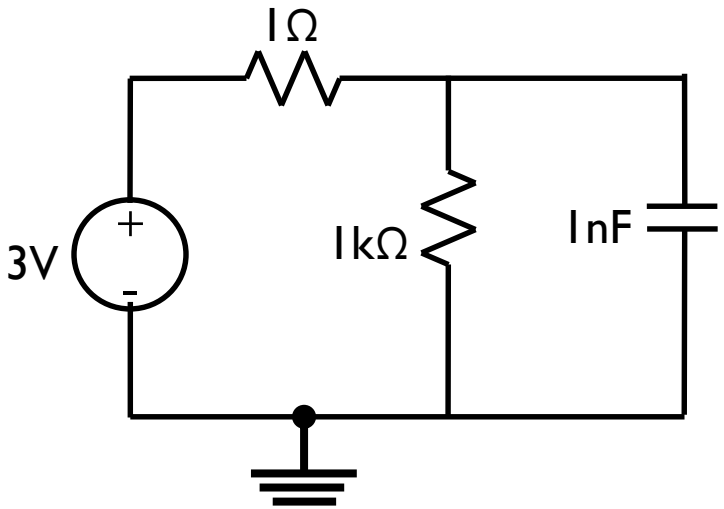


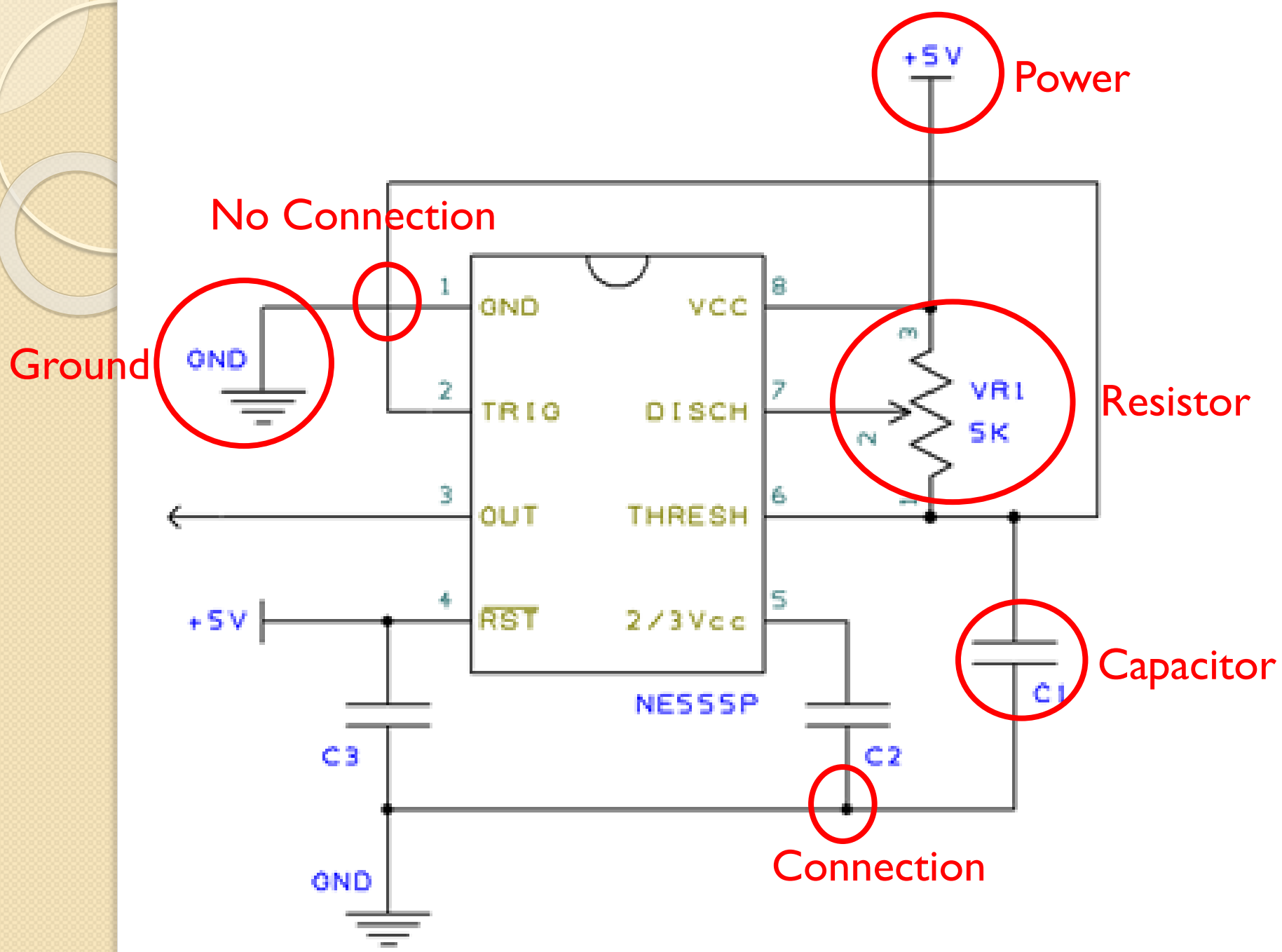
No Connection

Example 1



Example 2




+5V
Power
No Connection
Ground
GND
1
GND
VCC
8
2
TRIG
DISCH
7
3
OUT
THRESH
6
4
RST
2/3Vcc
5
VR1
5K
Resistor
+5V
C1
Capacitor
NE555P
C3
C2
GND
Connection

Resistor 5-band Color Code

COLOR	1st BAND	2nd BAND	3rd BAND	MULTIPLIER	TOLERANCE	
Black	0	0	0	1Ω		
Brown	1	1	1	10Ω	± 1%	(F)
Red	2	2	2	100Ω	± 2%	(G)
Orange	3	3	3	1KΩ		
Yellow	4	4	4	10KΩ		
Green	5	5	5	100KΩ	±0.5%	(D)
Blue	6	6	6	1MΩ	±0.25%	(C)
Violet	7	7	7	10MΩ	±0.10%	(B)
Grey	8	8	8		±0.05%	
White	9	9	9			
Gold				0.1	± 5%	(J)
Silver				0.01	± 10%	(K)

2 3 7 1 1%

R = 237 × 1 = 237Ω ± 1%

Gold

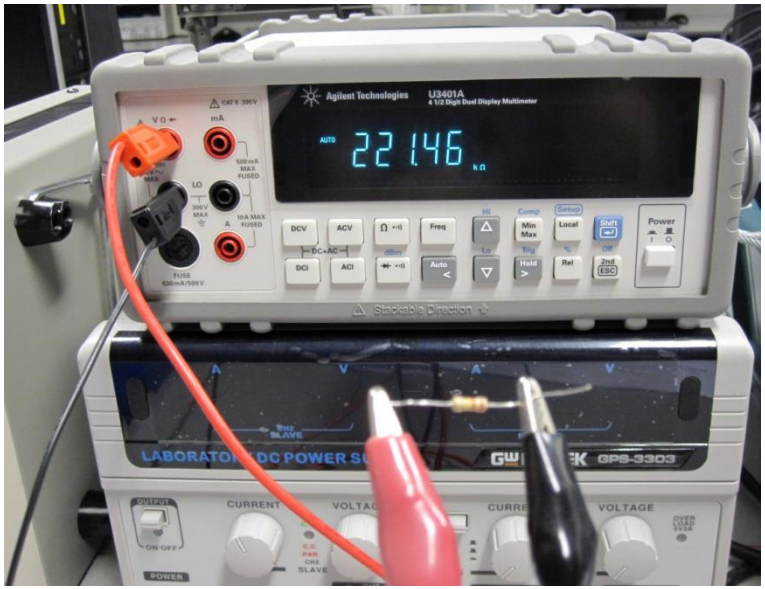
R = ?

R = 324 × 1k = 324kΩ ± 5%

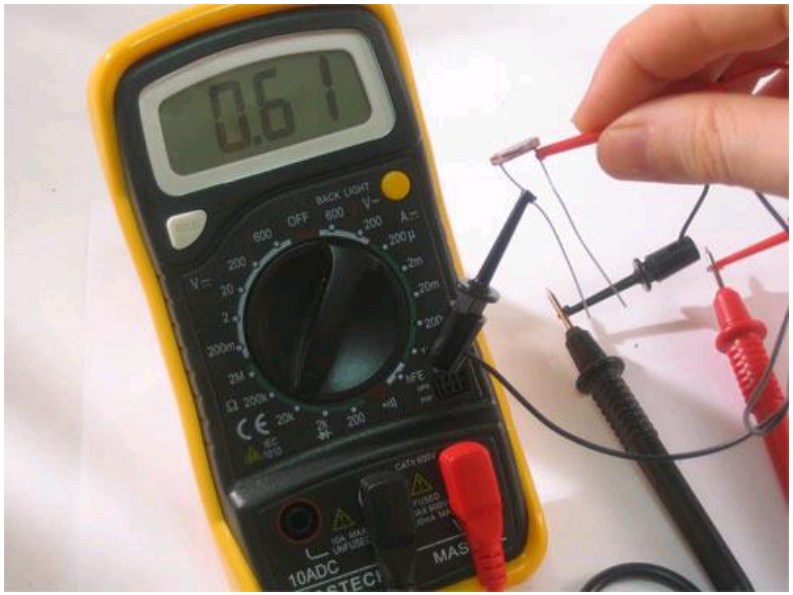
Digital Multimeter

- You may also use a digital multimeter to measure resistor values

This type is used in our Lab

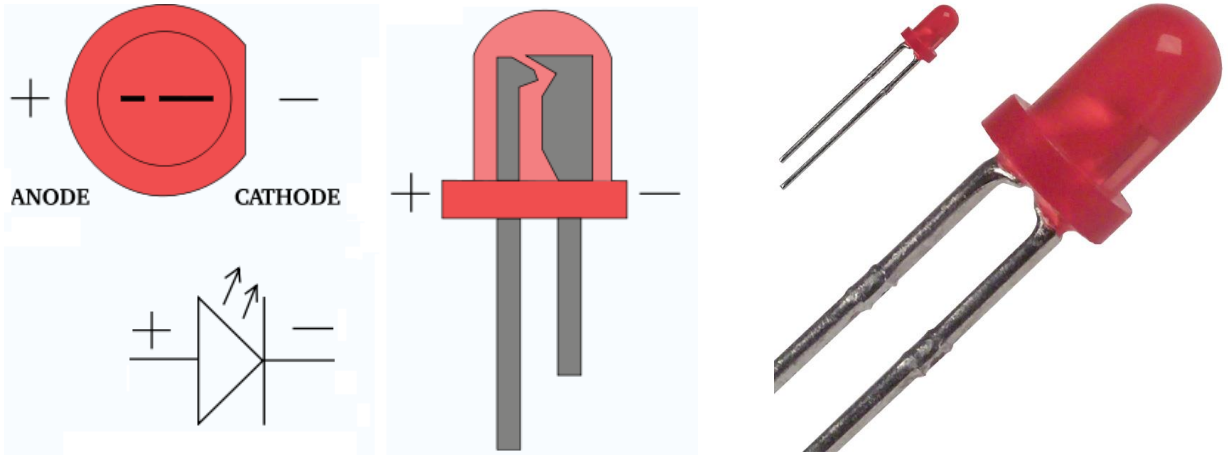


This is portable one

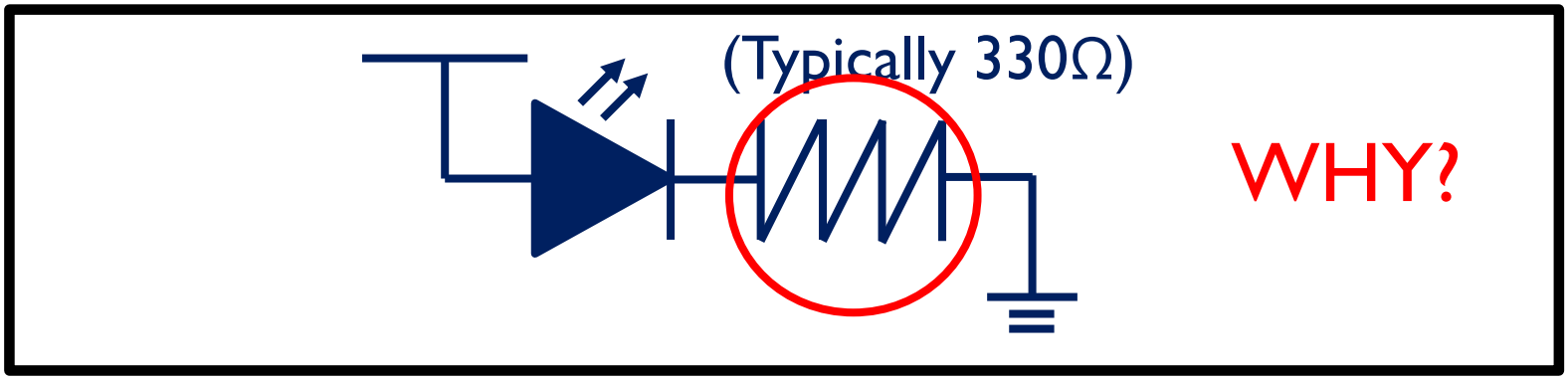


Light-Emitting Diode (LED)

- An LED is a semi-conductor light source



- How to make it work? Draw figure below:



Equipment in our Lab Room

Can you name them?

Fig. 1: DC Power Supply

Fig. 2: Digital Multimeter

Fig. 3: Signal Generator

Fig. 4: Digital Storage Oscilloscope

Fig. 5: Breadboard

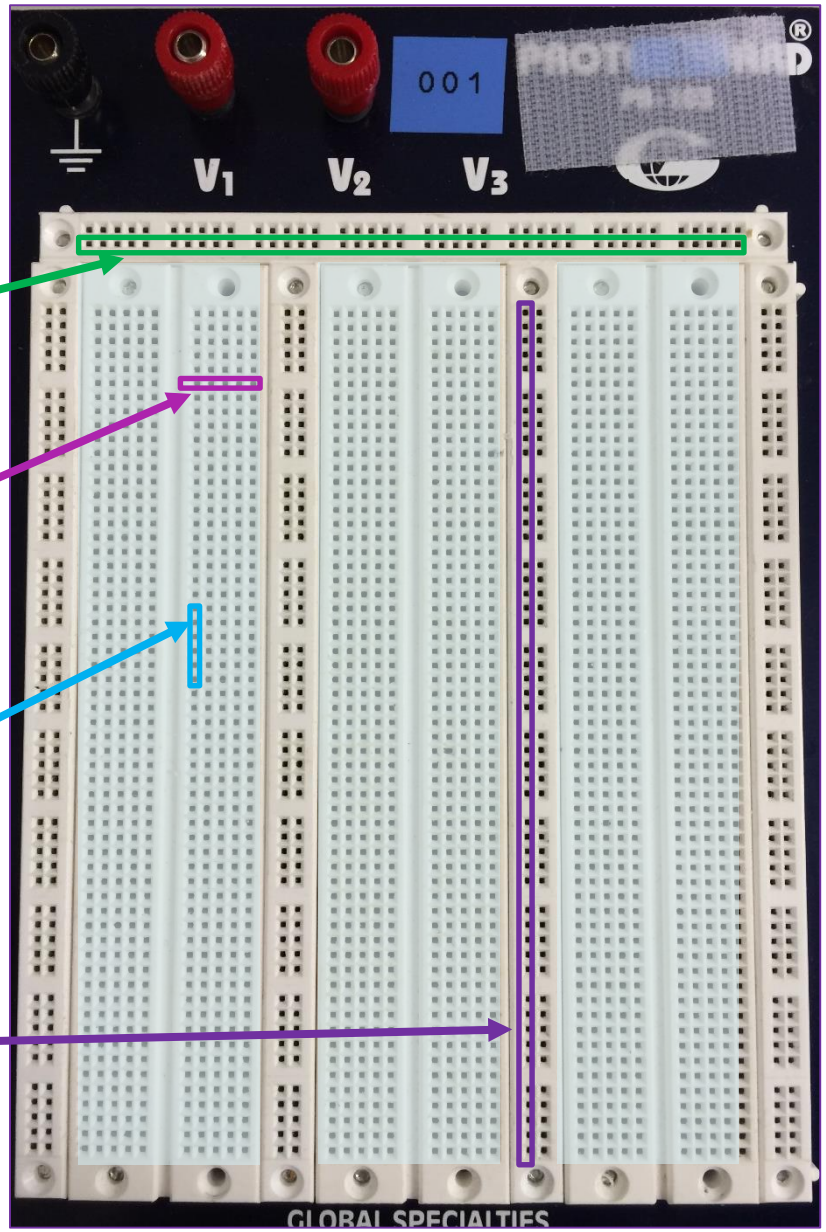
Breadboard

Row holes internally connected together

Row holes (5 holes) internally connected together

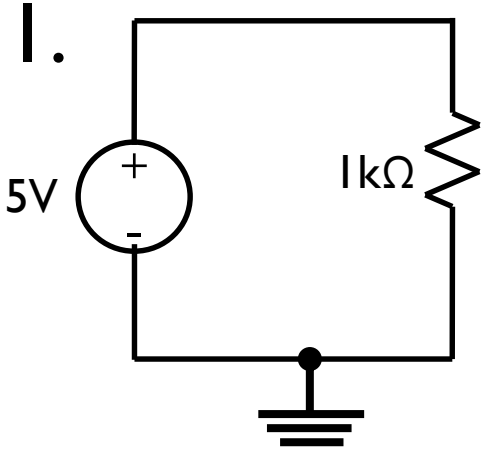
Column holes NOT connected

Column holes internally connected together

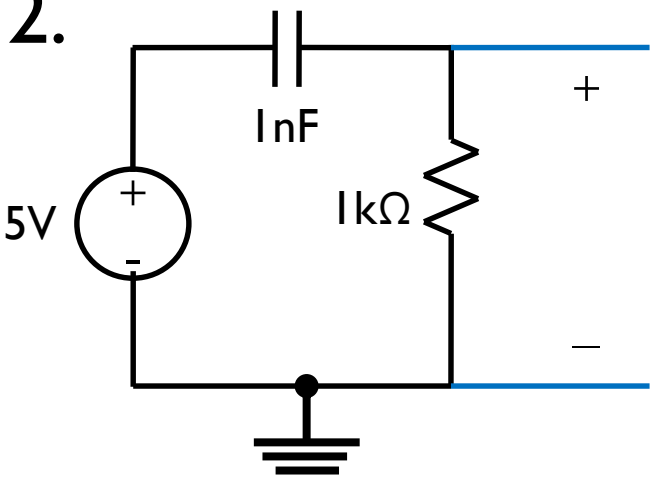


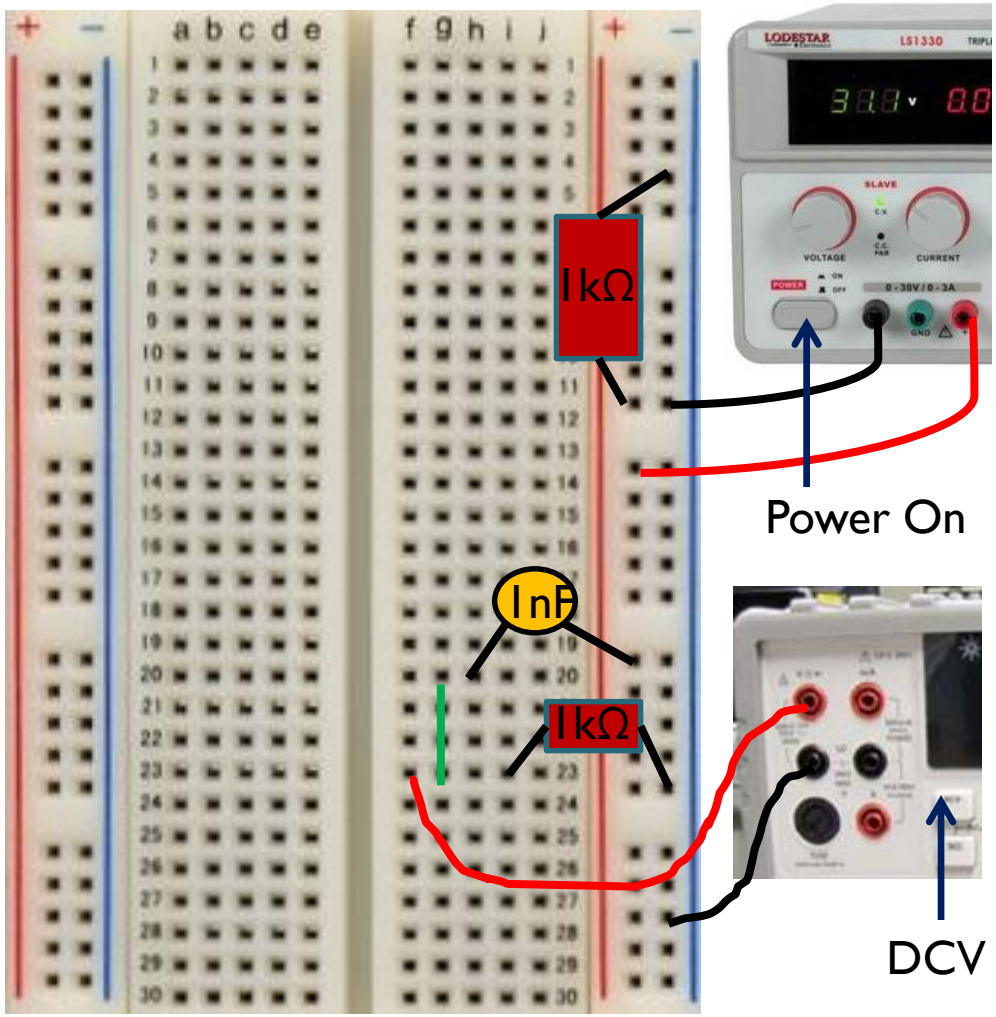
Breadboard Exercise

- How will you connect the circuits below?
- 1.

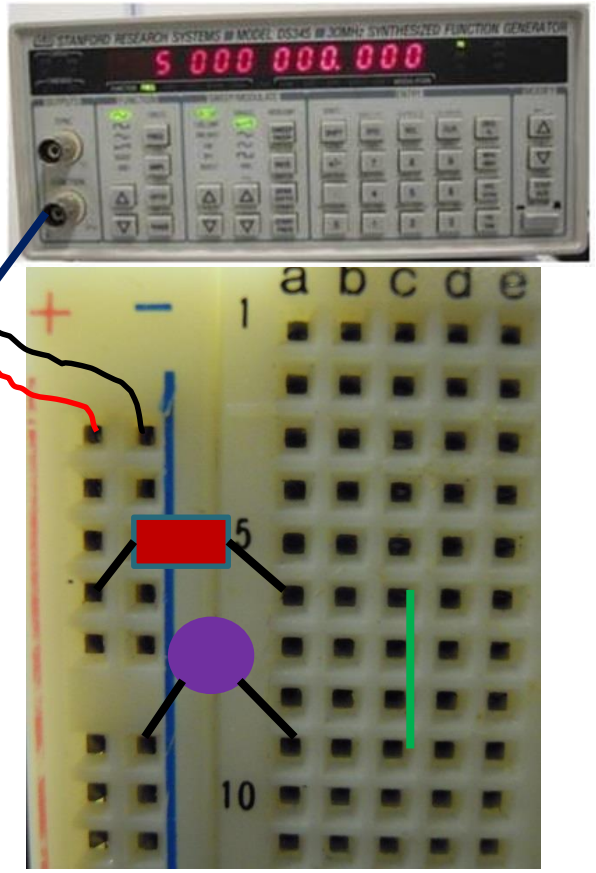


- 2.





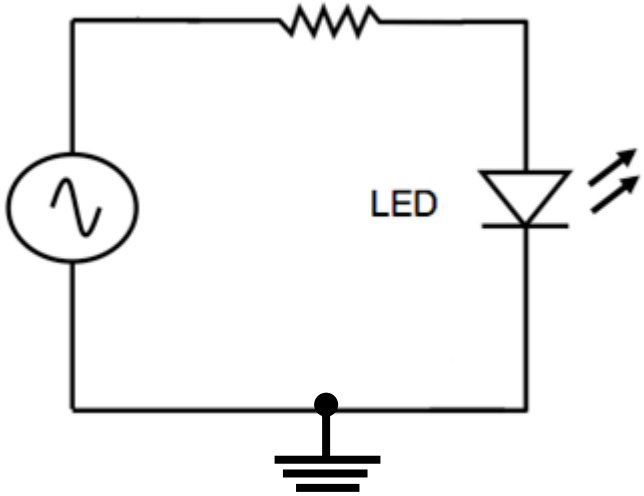
Lab#01 Experiment 5



- 3.

Resistor:
To limit the current

AC Voltage Source



General Warnings:

DO NOT turn on the power supply until the circuit is complete.

DO NOT reverse the power and ground!