FY BTech
BEEE Expt No. 5

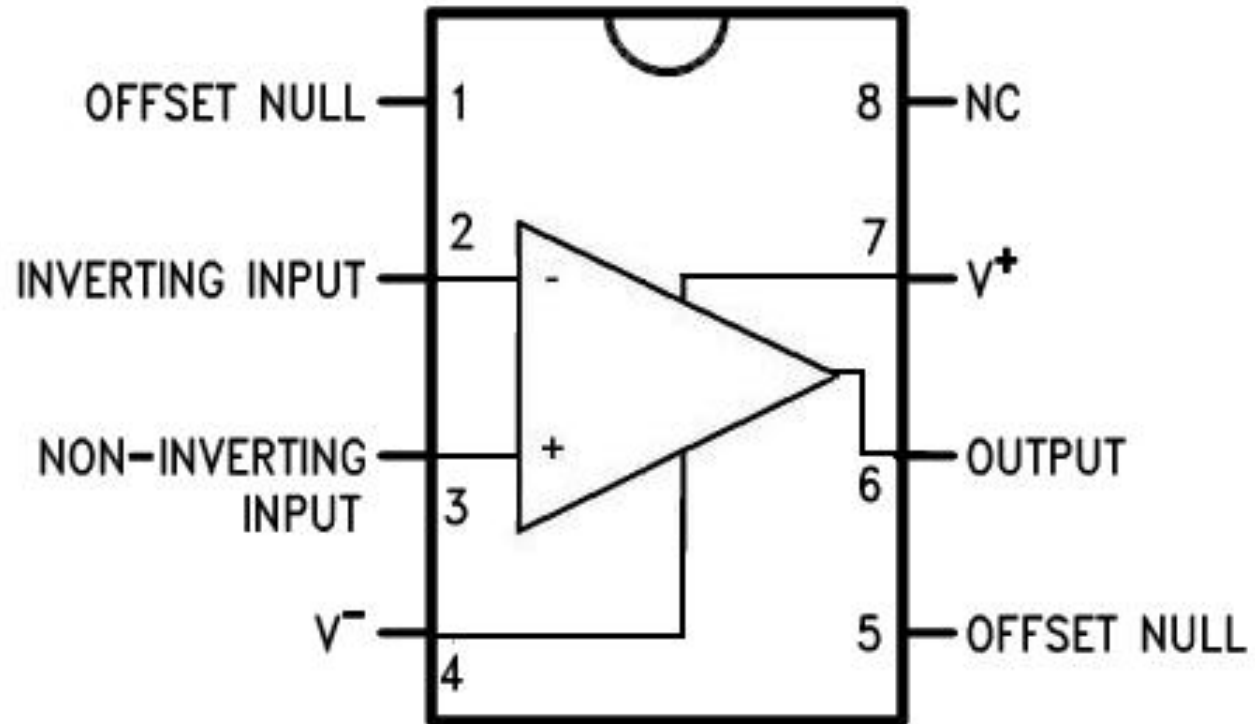# BEEE Expt 5 OPAMP

Tinkercad simulation- Two circuits

- Inverting Amplifier
- Noninverting amplifier

IC 741

LM741 Pinout Diagram

|		
OFFSET NULL — 1		8 — NC
INVERTING INPUT — 2	−	7 — V$^+$
NON-INVERTING INPUT — 3	+	6 — OUTPUT
V$^-$ — 4		5 — OFFSET NULL

Dual power supply- +Vs and -Vs
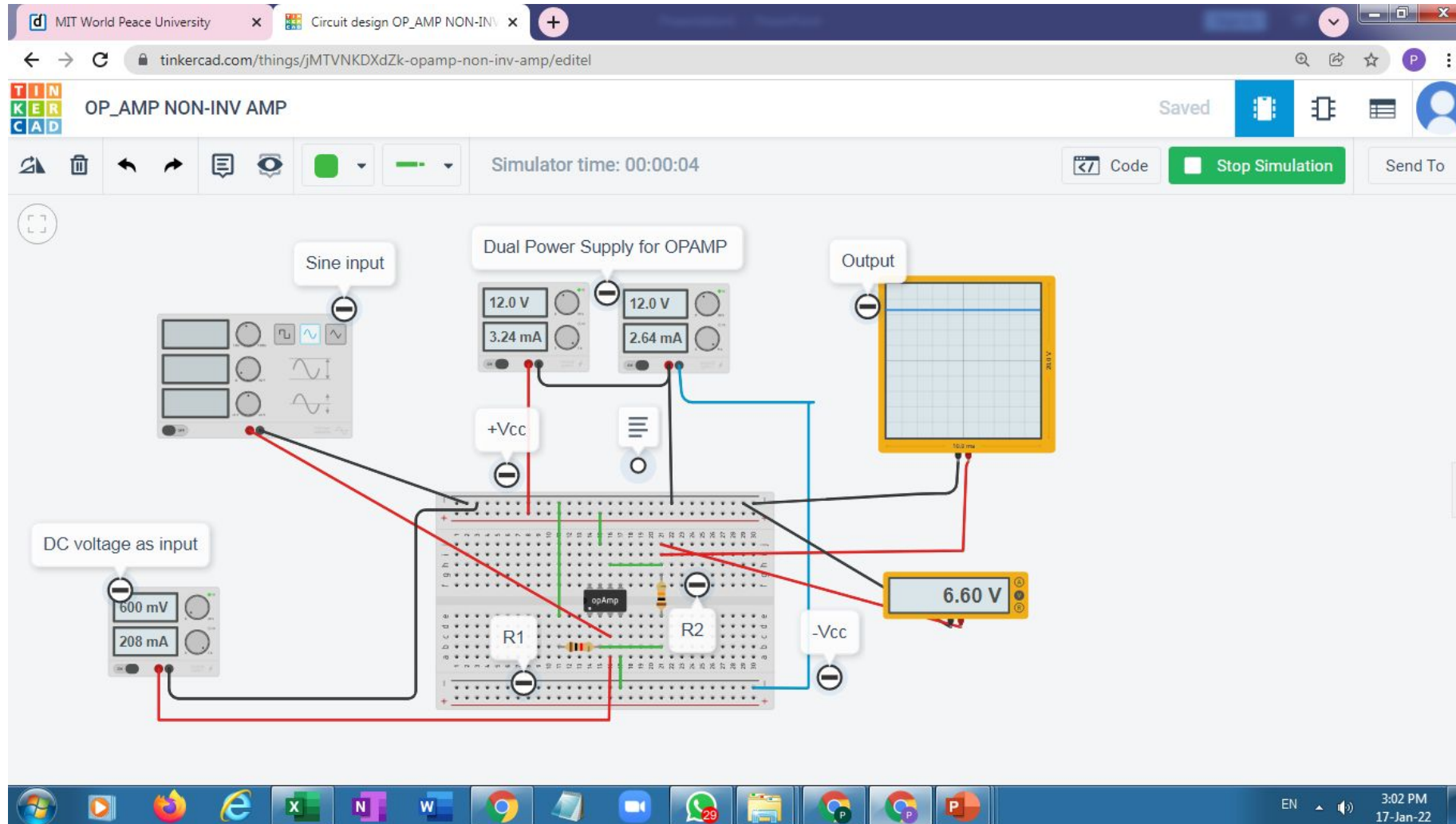
- 12 V and -12 V

Noninverting Amplifier

- An op-amp connected in a closed-loop configuration as a noninverting amplifier with a controlled amount of voltage gain is shown in Figure.
- The input signal is applied to the noninverting (+) input.
- The output is applied back to the inverting input through the feedback circuit (closed loop) formed by the input resistor Ri and the feedback resistor Rf.
- This creates negative feedback as: Resistors Ri and Rf form a voltage-divider circuit, which reduces Vout and connects the reduced voltage Vf to the inverting input.
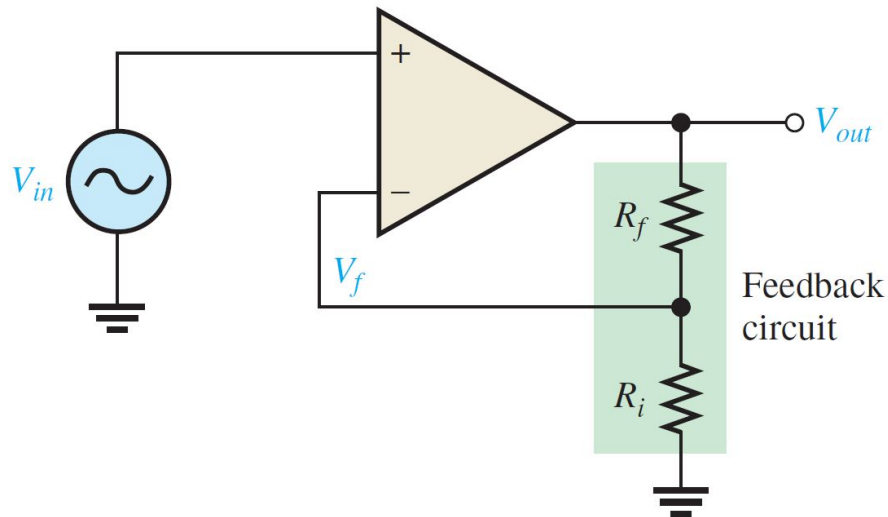
The feedback voltage is expressed as

$$V_f = \left(\frac{R_i}{R_i + R_f} \right) V_{out}$$

Noninverting amplifier with DC input

Non inverting amplifier with AC input

Gain= 10
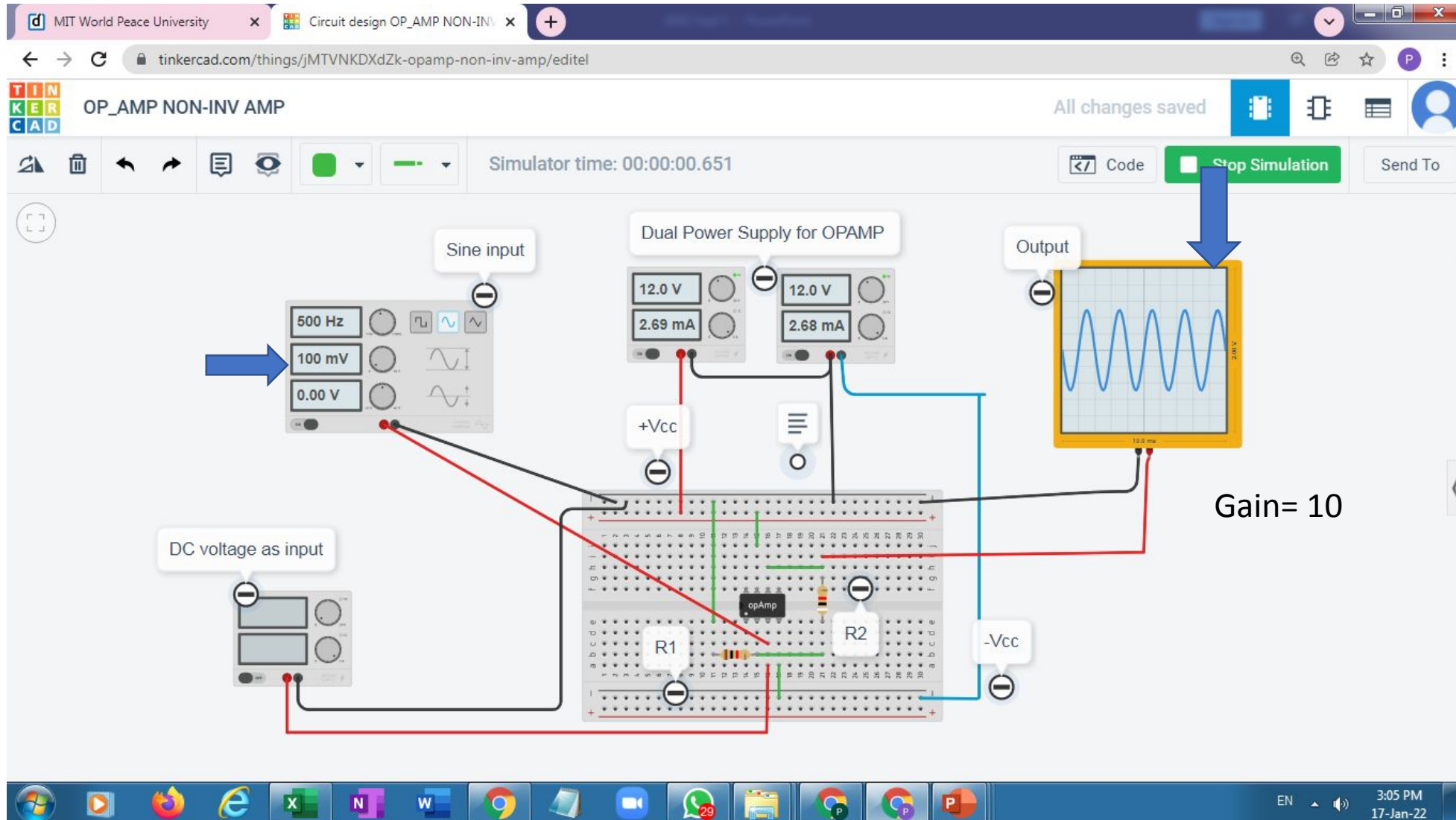
Inverting Amplifier

- An op-amp connected as an inverting amplifier with a controlled amount of voltage gain is shown in Figure

- The input signal is applied through a series input resistor Ri to the inverting (-) input.

- Also, the output is fed back through Rf to the same input. The noninverting (+) input is grounded.

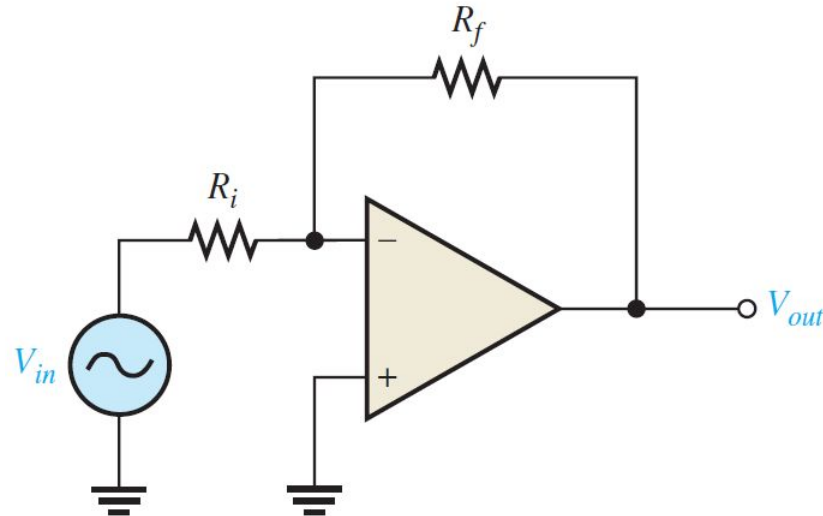Copy of OP_AMP INV AMP

All changes saved

Simulator time: 00:02:57

Code   Stop Simulation   Send To

Dual Power supply +Vs and - Vs

ne wave input using Function Generator

12.0 V
1.84 mA

12.0 V
2.64 mA

-Vs

+Vs

GND

-8.00 V
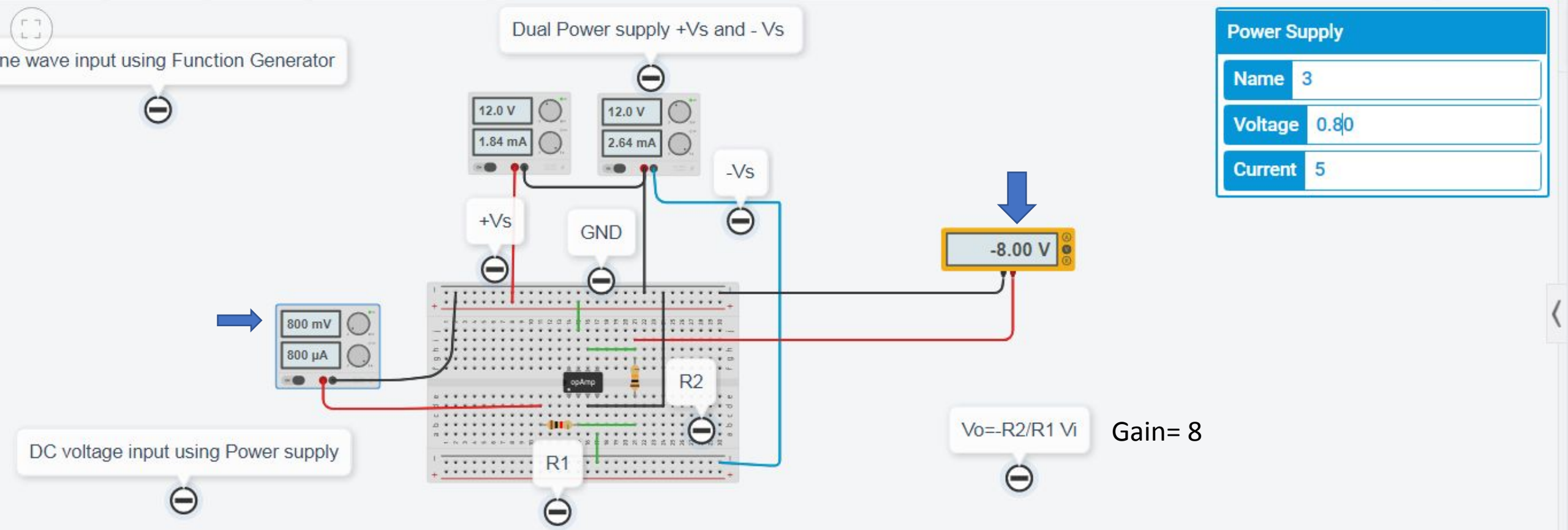
Power Supply

Name	3
Voltage	0.80
Current	5

800 mV
800 µA

opAmp

R2

R1

DC voltage input using Power supply

Vo=-R2/R1 Vi   Gain= 8

EN   2:59 PM
17-Jan-22

Observation table

1. Inverting Amplifier(AC input)

Sr. No.	Input Voltage V_{in}	R_1	R_2	Output Voltage V_o	Gain (Practical) V_o / V_{in}	Gain (Theoretical) $-R_2 / R_1$
1						
2						
3						

2. Inverting Amplifier(DC input)

Sr. No.	Input Voltage V_i (DC)	R_1	R_2	Output Voltage V_o	Gain (Practical) V_o / V_{in}	Gain (Theoretical) $-R_2 / R_1$
1						
2						
3						
4						
5						

Observation Table

.Non-Inverting Amplifier (AC Input)

Sr. No.	Input Voltage $V_{in\,(AC)}$	R_1	R_2	Output Voltage V_o	Gain (Practical) V_o / V_{in}	Gain (Theoretical) $1+ (R_2 / R_1)$
1						
2						
3						

4.Non-Inverting Amplifier (DC Input)

Sr. No.	Input Voltage V_{in}	R_1	R_2	Output Voltage V_o	Gain (Practical) V_o / V_{in}	Gain (Theoretical) $1+ (R_2 / R_1)$
1						
2						
3						

Conclusion