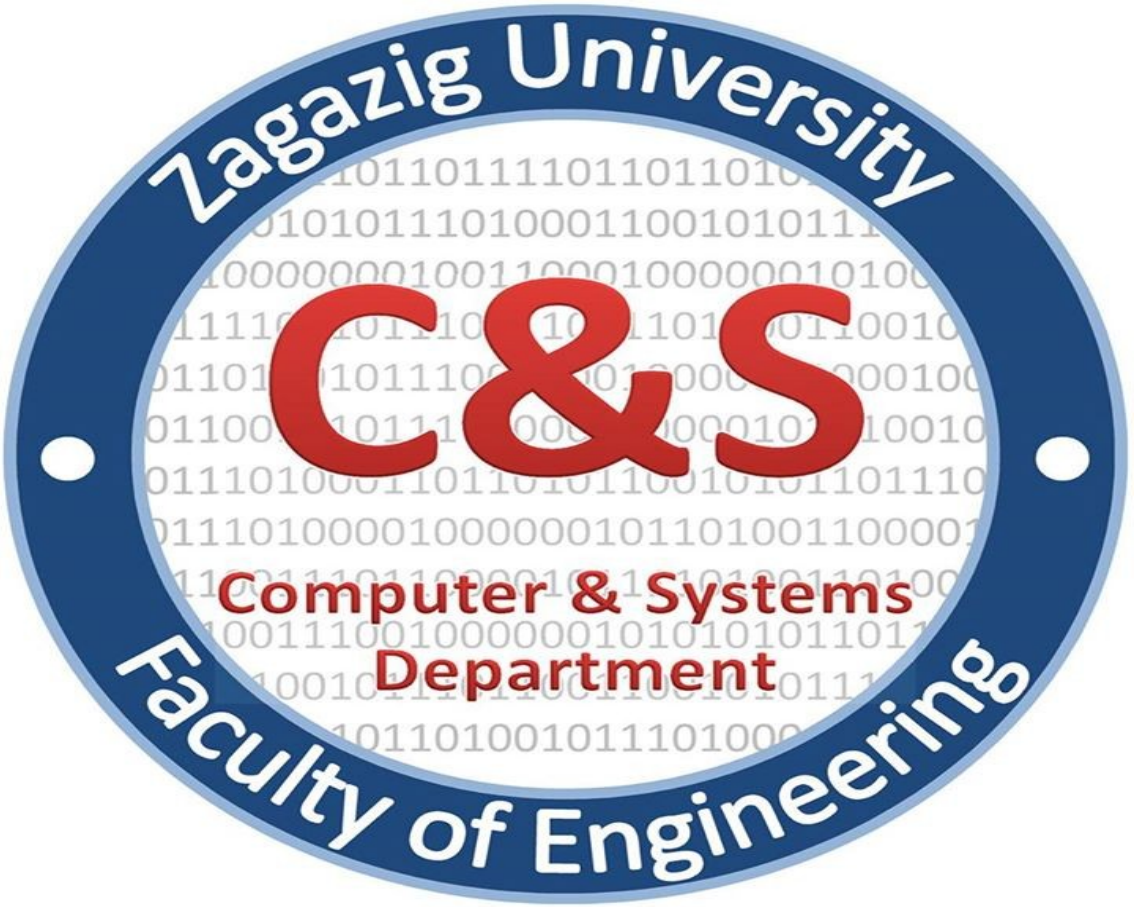
Temperature control Project



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Overflow

We control in the temperature of a room

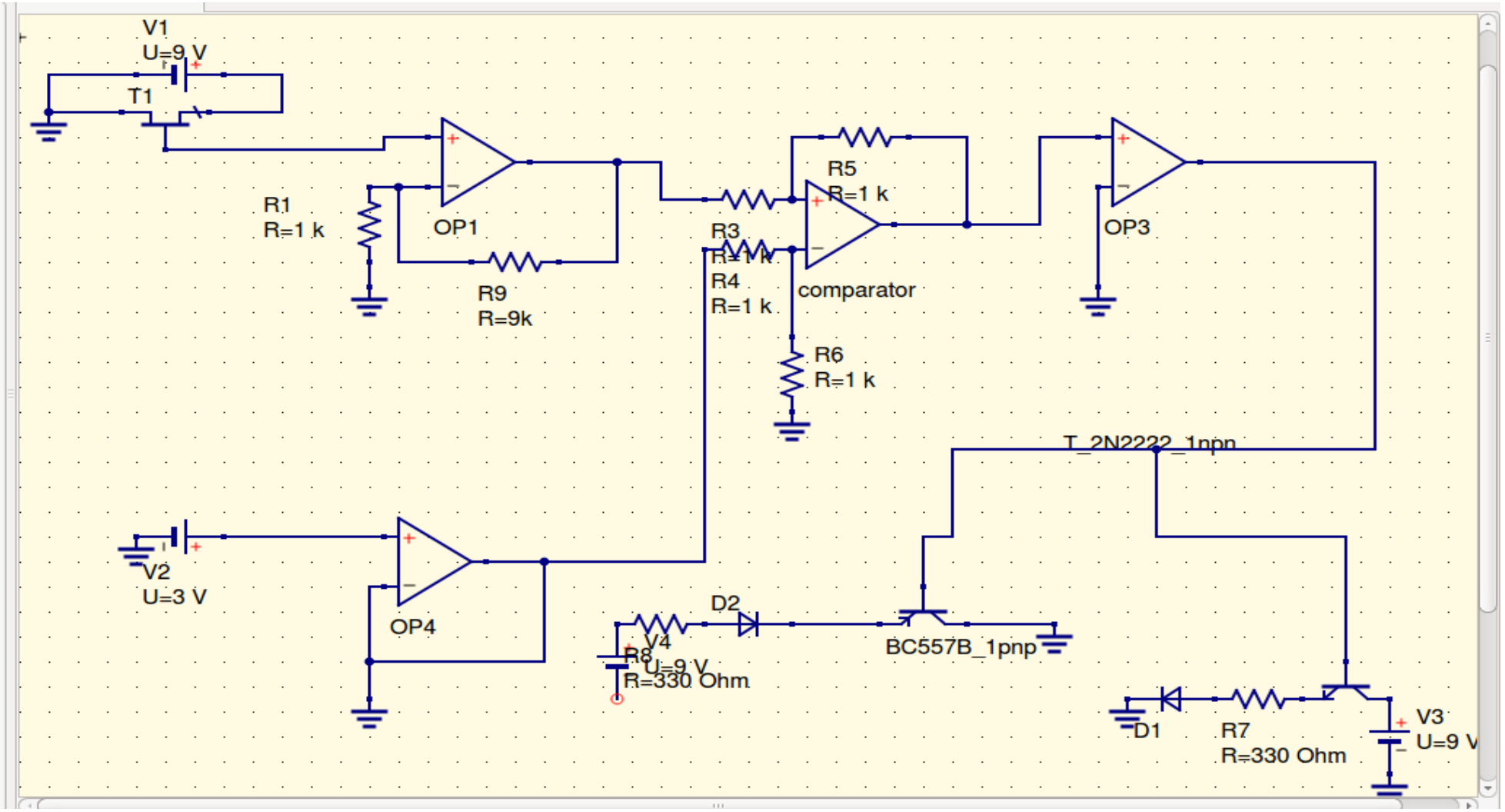
We set a reference temperature and and compare

With the room temperature

If $T_{room} > T_{ref}$ turn on a **fan**

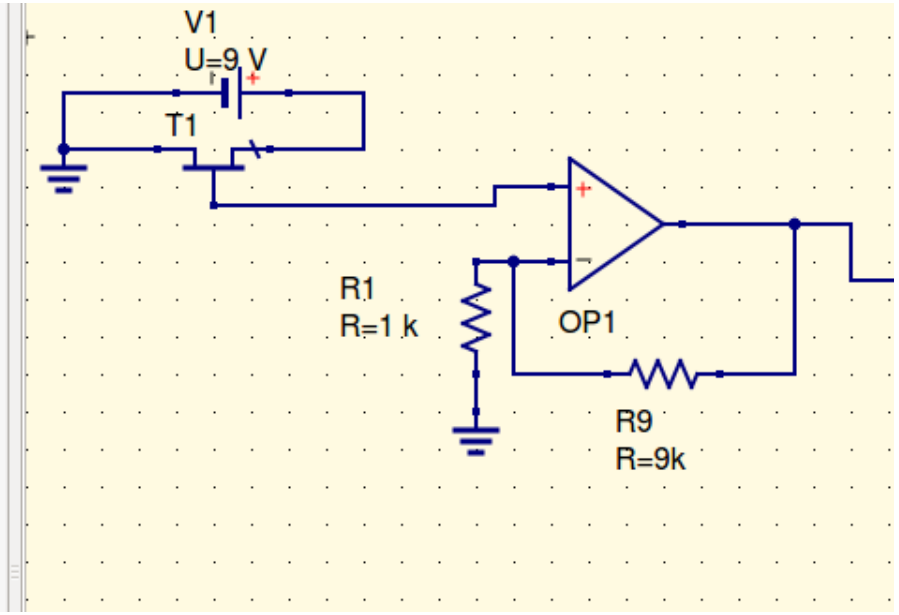
If $T_{room} > T_{ref}$ turn on a **heater**

Simulation


V1
U=9 V
T1
R1
R=1 k
OP1
R9
R=9k
R5
R=1 k
R3
R=1 k
R4
R=1 k
comparator
R6
R=1 k
OP3
T_2N2222_1npn
V2
U=3 V
OP4
D2
V4
R8
U=9 V
R=330 Ohm
BC557B_1pnp
D1
R7
R=330 Ohm
V3
U=9 V

Component

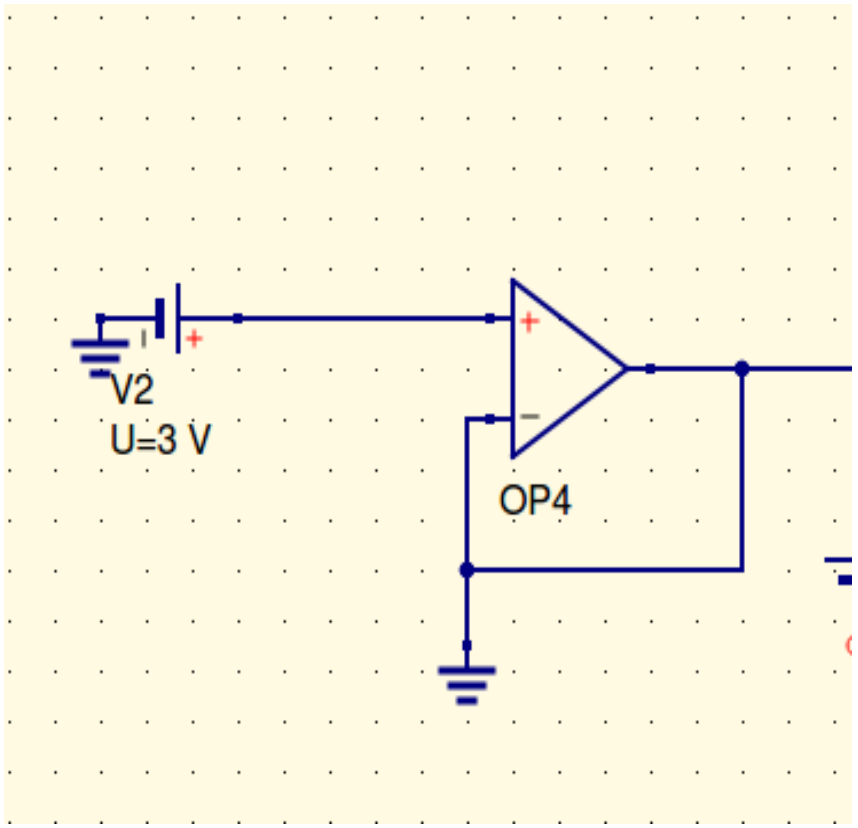
LM35
4 op-amp 471
Dc -motor
potentiometer
Resisters
Transistor 2n 2222
Transistor Bc557



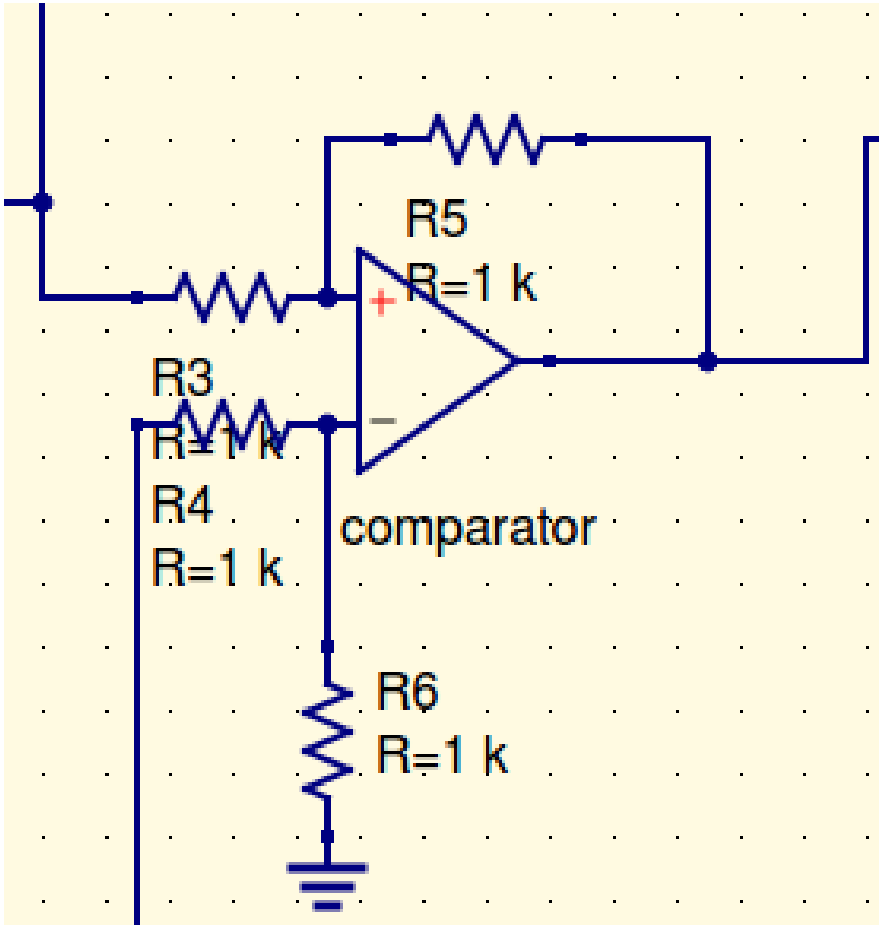
- LM 35

  for every one temperature the sensor out .01 volt

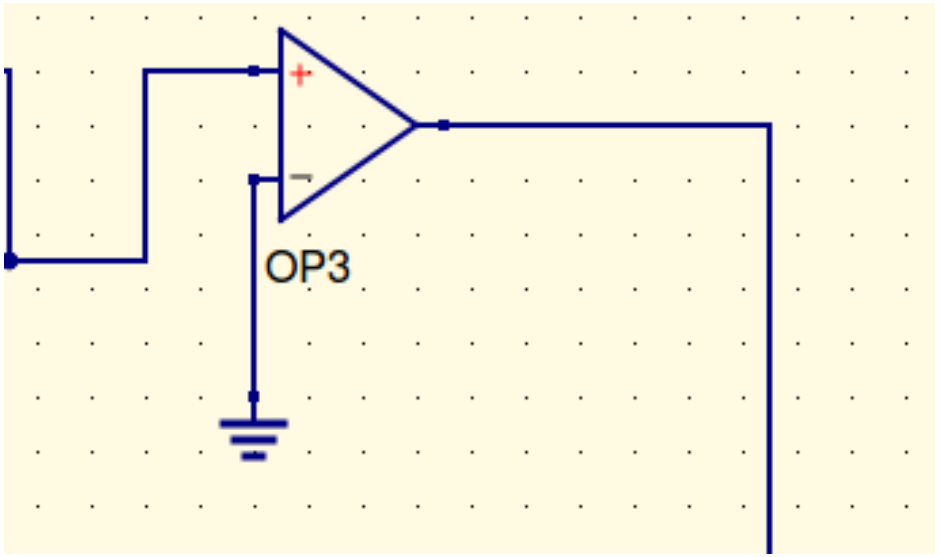
  so we use opAmp with gain 10 to compare it with the reference



- Set the reference Temperature



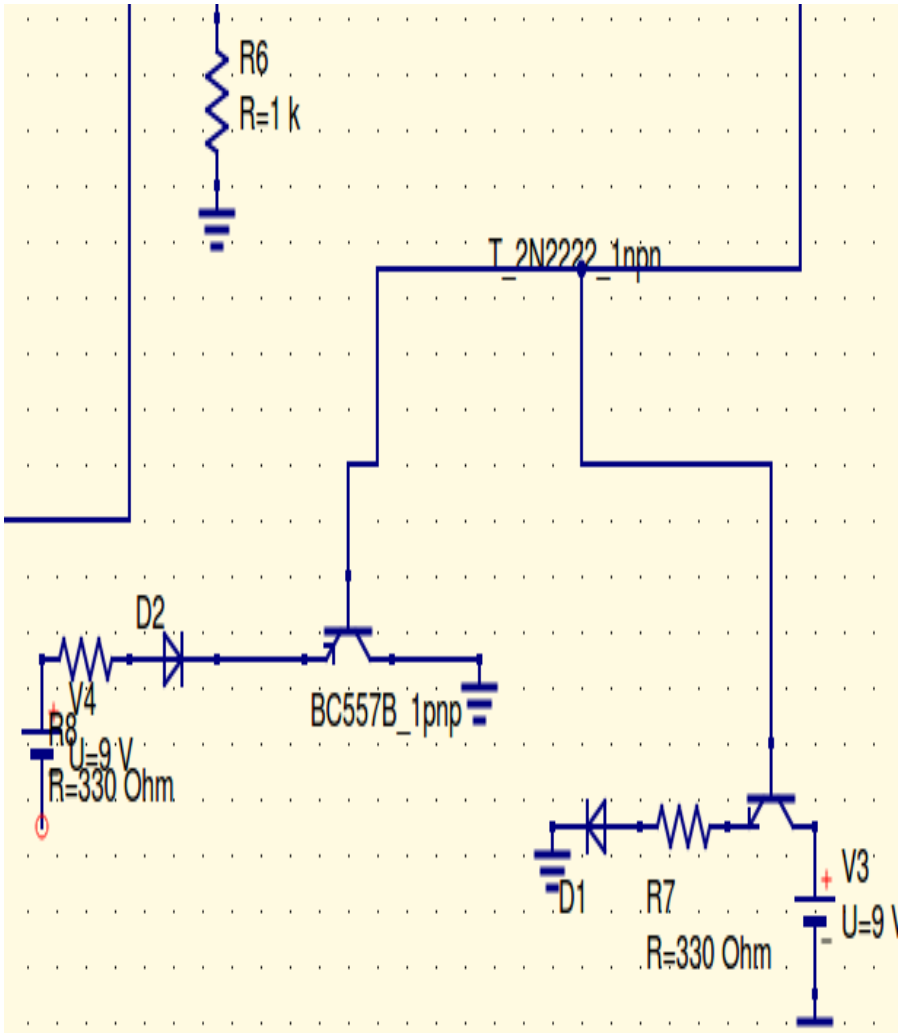
- Compare the reference Temperature with the room temperature



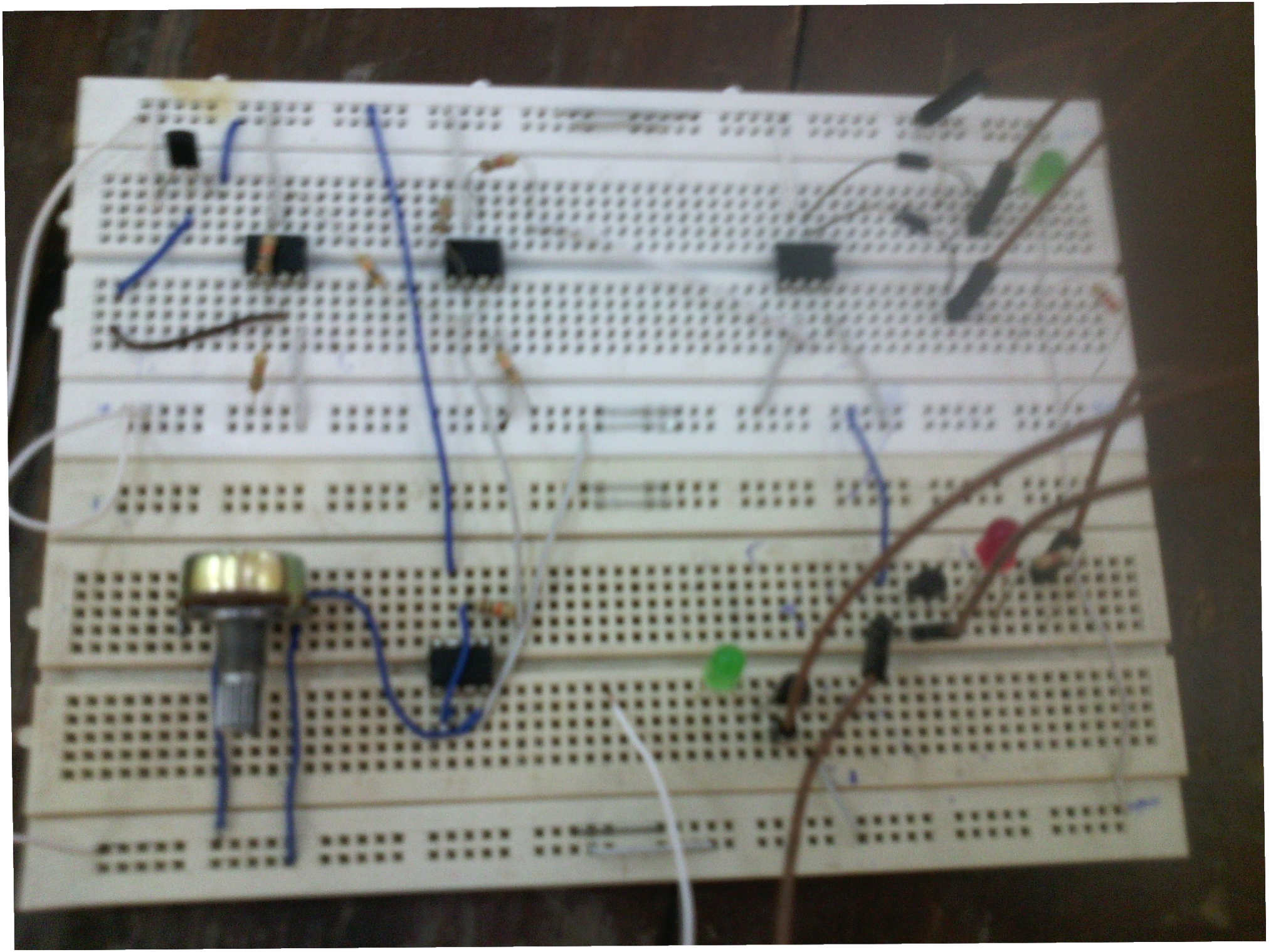
- The output voltage is small so we use anther compartor **but**

  with reference **0** and the output become

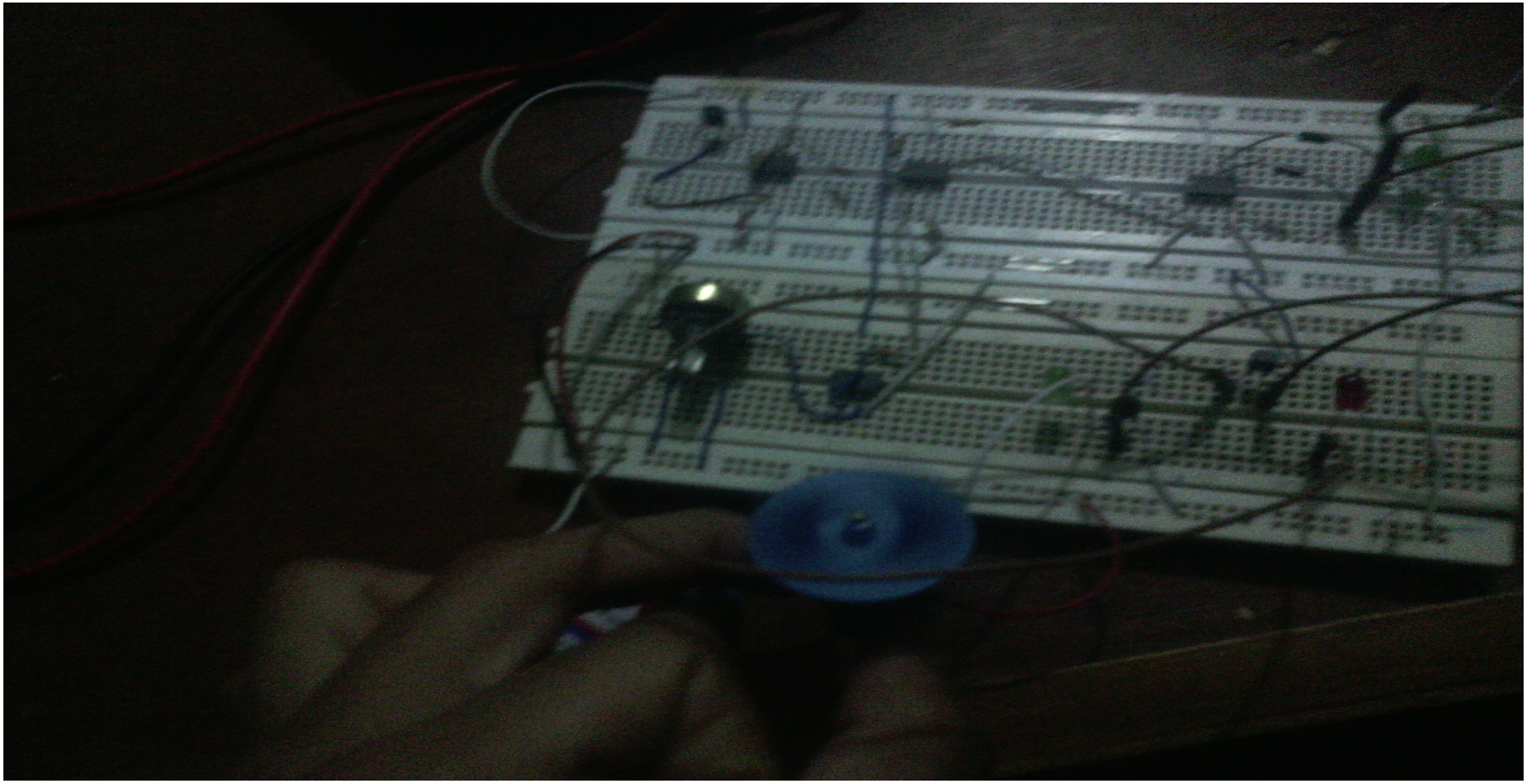
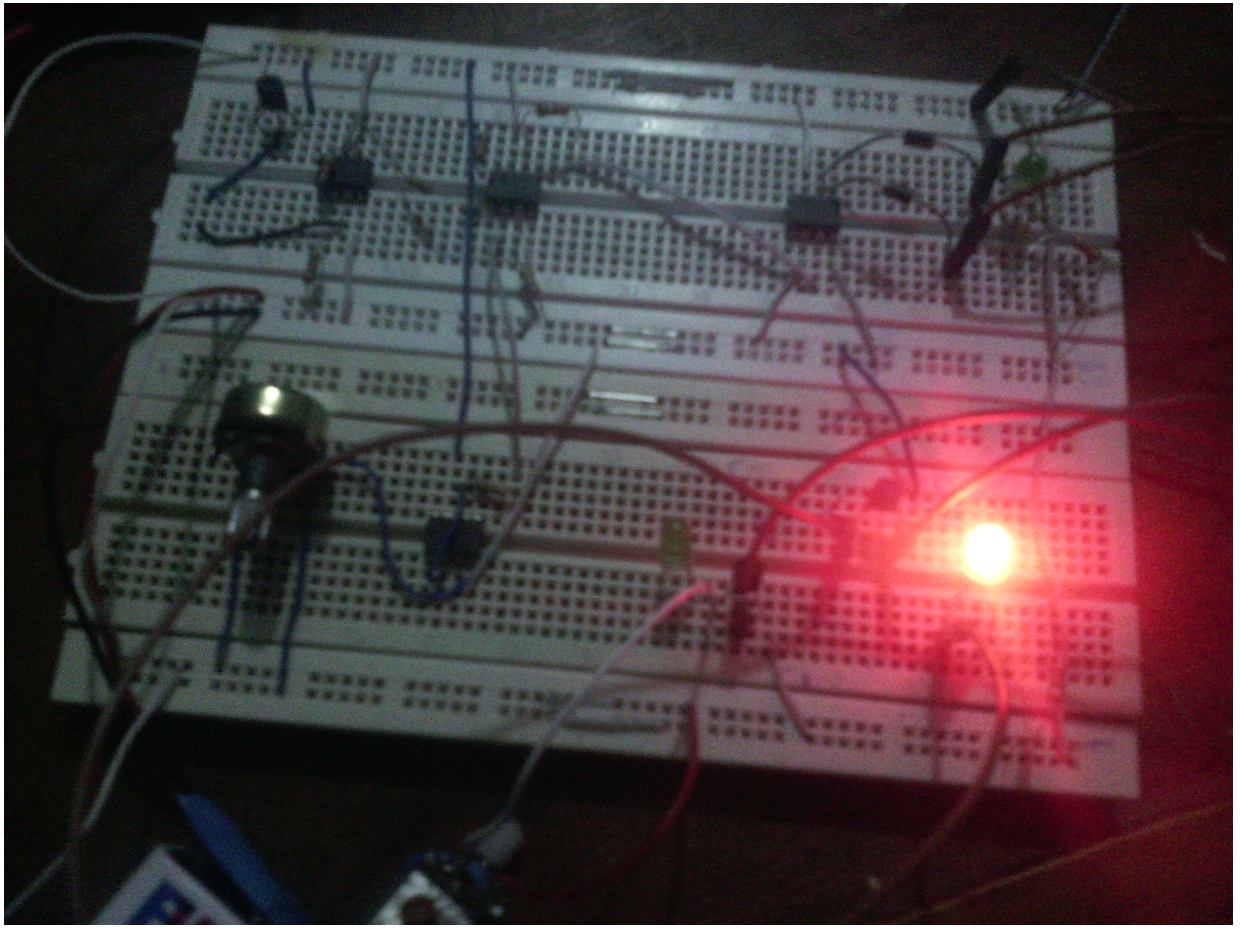
  +V_{cc} or **-V_{cc}**



- In case $+v_{cc}$ the **npn** transistor work as closed switch and the **fan** work
- In case $-v_{cc}$ the **pnp** transistor work as closed switch and the **heater** work



The fan



The heater