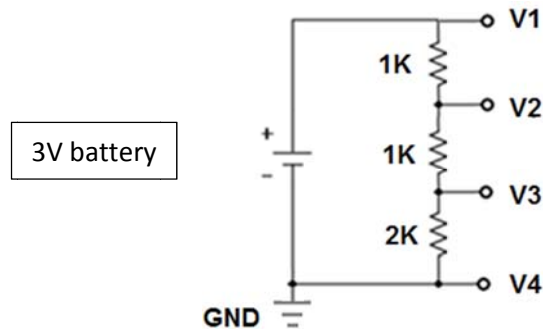


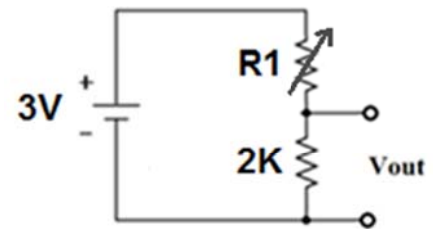
GE1354 Tutorial 1 (Sem B, 2018/19)

- Q1.** A battery of 3V is connected with 3 resistors in series, as shown below. Determine the voltage of V_1 , V_2 , V_3 and V_4 .



- Q2.** Consider the left figure, where R_1 is a variable resistor and its resistance can be varied from 1K to 10K. Answer the following questions (Correct your answer to 2 decimal places).

- What is smallest possible value of V_{out} ?
- What is the largest possible value of V_{out} ?



R_1 varies from 1K to 10K

- Q3.** The circuit in Fig. 3(a) is to measure temperature using a micro:bit. R_1 is a temperature sensor for which its resistance changes with temperature as shown in Fig. 3(b). R_2 is a fixed resistor of $8K\Omega$.

Assuming that the temperature to be measured is from 0°C to 80°C , what is the range of input of V_{in} ? (in Volt).

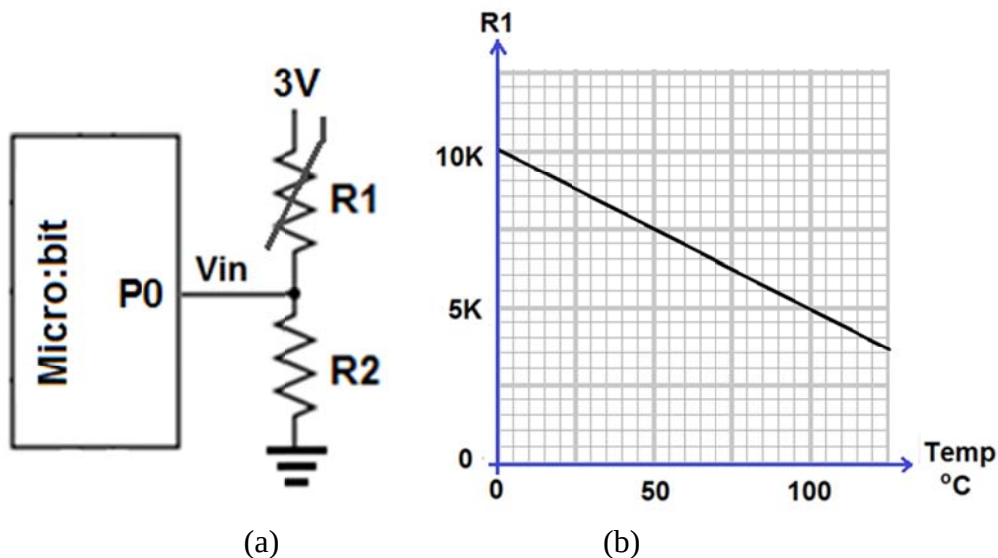


Figure 3. (a) circuit (b) characteristics of the thermistor R_1

Q4. For each of the following cases, which LED(s) is turned on after A is pressed and released?

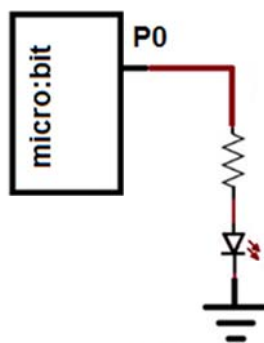


(a)

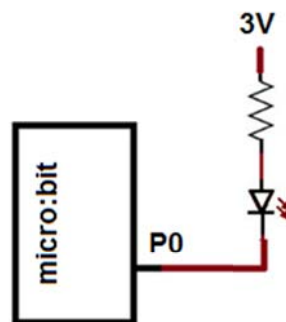


(b)

Q5. Give the command that can turn on the LED in each case.



(a)



(b)

Q6. Write a program with the use of FOR-loop to light up the diagonal LEDs on the LED screen in turn [(0,0)→(1,1) →... → (4,4)], and then **repeat continuously** (i.e. loop back to (0,0) and repeat). Each LED is ON for 0.5 sec, then OFF. Only 1 line of your programs can contain the plot command.

Q7. Modify your answer in Q8 by using WHILE-loop.

Q8. Write a program using while loop to turn on the LEDs in sequence as shown below and repeat the sequence forever. Each LED is on for 200ms; then wait for 200ms, and next LED is on etc. Maximum 2 lines of your programs can contain plot command.

