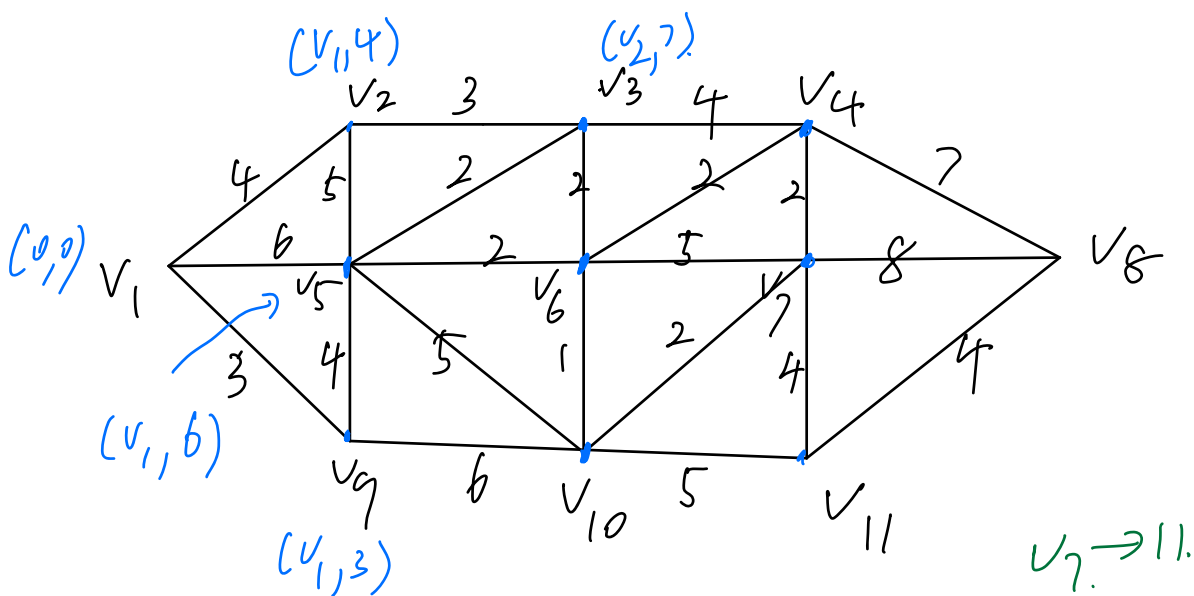
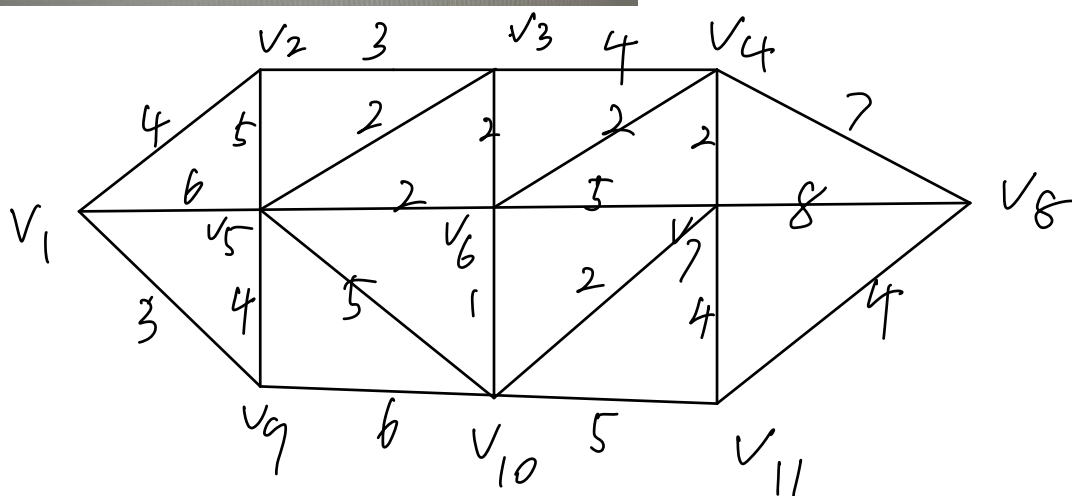


用标号法求
 v_1 至各点, 最短距离
 与最短路径.



$v_1 \rightarrow v_2$ $(v_2, 4)^*$

$v_1 \rightarrow v_2 \rightarrow v_3 \rightarrow v_4$ $(v_4, 11)$

$$v_1 \rightarrow v_9 \quad (v_1, 3)^*$$

$$v_1 \rightarrow v_5 \quad (v_1, 6)^*$$

$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_4 \quad (v_6, 10)^*$$

$$v_1 \rightarrow v_2 \rightarrow v_3 \quad (v_2, 7)^*$$

~~$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_7 \rightarrow v_{10} \rightarrow v_8 \quad (v_{10}, 13)^*$$~~

$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_{10} \rightarrow v_7 \quad (v_{10}, 11)$$

$$v_1 \rightarrow v_5 \rightarrow v_6 \quad (v_5, 8)$$

$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_7 \rightarrow v_{11} \quad (v_7, 17)$$

$$v_1 \rightarrow v_9 \rightarrow v_{10} \quad (v_9, 9)$$

$$v_1 \rightarrow v_5 \rightarrow v_{10} \rightarrow v_{11} \quad (v_{10}, 16)$$

$$v_1 \rightarrow v_6 \rightarrow v_{10} \quad (v_6, 9)$$

$$v_1 \rightarrow v_9 \rightarrow v_{10} \rightarrow v_{11} \quad (v_{10}, 14)^*$$

$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_{10} \rightarrow v_{11} \quad (v_{10}, 14)^*$$

$$v_1 \rightarrow v_4 \rightarrow v_8 \quad (v_4, 17)^*$$

$$v_1 \rightarrow v_7 \rightarrow v_8 \quad (v_7, 21)$$

$$v_1 \rightarrow v_{11} \rightarrow v_8 \quad (v_{11}, 18)$$

距离

$$\therefore v_1 \rightarrow v_2$$

$$v_1 \rightarrow v_2 \rightarrow v_3$$

$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_4$$

$$v_1 \rightarrow v_5$$

$$v_1 \rightarrow v_5 \rightarrow v_6$$

$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_{10} \rightarrow v_7 \quad \left. \vphantom{v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_{10} \rightarrow v_7} \right\}$$

$$v_1 \rightarrow v_9 \rightarrow v_{10} \rightarrow v_7 \quad \left. \vphantom{v_1 \rightarrow v_9 \rightarrow v_{10} \rightarrow v_7} \right\}$$

$$v_1 \rightarrow v_5 \rightarrow v_6 \rightarrow v_4 \rightarrow v_8$$

$$v_1 \rightarrow v_9$$

距离

4

7

10

6

8

11

17

3

$$V_1 \rightarrow V_9 \rightarrow V_{10} \quad \left. \vphantom{V_1 \rightarrow V_9 \rightarrow V_{10}} \right\}$$

$$V_1 \rightarrow V_5 \rightarrow V_6 \rightarrow V_{10} \quad \left. \vphantom{V_1 \rightarrow V_5 \rightarrow V_6 \rightarrow V_{10}} \right\}$$

$$V_1 \rightarrow V_9 \rightarrow V_{10} \rightarrow V_{11} \quad \left. \vphantom{V_1 \rightarrow V_9 \rightarrow V_{10} \rightarrow V_{11}} \right\}$$

$$V_1 \rightarrow V_5 \rightarrow V_6 \rightarrow V_{10} \rightarrow V_{11} \quad \left. \vphantom{V_1 \rightarrow V_5 \rightarrow V_6 \rightarrow V_{10} \rightarrow V_{11}} \right\}$$

9.

14