

一、Pseudo code

```
Read input
Create graph(G)
Dijkstra(G, s){
    For each vertex v,
        Mark v as unvisited, and set  $d(v) = \infty$ 
    Set  $d(s) = 0$ 
    while (there is unvisited vertex){
        v= unvisited vertex with smallest  $d(v)$ 
        Visit v, and Relax all its outgoing edges
    }
    Return d;
    max_weight = most weighted edge in shortest path to destination
    Ans =  $d(v) - \text{max\_weight}$ 
```

二、Description

我使用 Adjacency list 來儲存 graph，再用 binary heap 實作 Dijkstra algorithm 部分

三、Time complexity

用 Adjacency list 建立 graph 花  $O(V+E)$  時間，在 Dijkstra algorithm 用 binary heap 實作花  $O((E+V)\log V) = O(E\log V)$  時間  
所以總共 time complexity 為  $O(E\log V)$