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1  /*
2      Author:Frozenscode
3  */
4  #include <bits/stdc++.h>
5  using namespace std;
6  #define pb push_back
7  #define mp make_pair
8  #define fi first
9  #define se second
10 typedef long long ll;
11 typedef pair<ll,ll> pii;
12 const ll maxn = 100010;
13 const ll INF = 2147483647;
14 ll n, m, s, t, tot = 1, head[maxn], now[maxn], dis[maxn], nxt[maxn];
15 ll res, r_cost, vol, cost, x, y;
16 bool vis[maxn];
17 struct e{
18     ll to, vol, cost;
19 }edge[maxn];
20 void add_edge(ll x, ll y, ll vol, ll cost){
21     nxt[++tot] = head[x];
22     edge[tot].to = y;
23     edge[tot].vol = vol;
24     edge[tot].cost = cost;
25     head[x] = tot;
26     return;
27 }
28 bool spfa(){
29     memset(vis, 0, sizeof(vis));
30     for(int i = 1; i <= n; i++) dis[i] = INF;
31     queue <ll> q;
32     dis[s] = 0;
33     now[s] = head[s];
34     vis[s] = 1;
35     q.push(s);
36     while(!q.empty()){
37         ll tem = q.front();
38         q.pop();
39         vis[tem] = 0;
40         for(int i = head[tem]; i; i = nxt[i]){
41             if(dis[edge[i].to] > dis[tem] + edge[i].cost && edge[i].vol){
42                 dis[edge[i].to] = dis[tem] + edge[i].cost;
43                 if(!vis[edge[i].to]){
44                     now[edge[i].to] = head[edge[i].to];
45                     vis[edge[i].to] = 1;
46                     q.push(edge[i].to);
47                 }
48             }
49         }
50     }

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51     return dis[t] != INF;
52 }
53 ll dfs(ll x, ll sum){
54     if(x == t) return sum;
55     vis[x] = 1;
56     ll ans = 0;
57     for(int i = now[x]; i && sum; i = nxt[i]){
58         now[x] = i;
59         if(!vis[edge[i].to] || edge[i].to == t) && edge[i].vol && dis[edge[i].to] == dis[x] +
edge[i].cost){
60             ll k = dfs(edge[i].to, min(sum, edge[i].vol));
61             if(k == 0) dis[edge[i].to] = INF;
62             edge[i].vol -= k;
63             edge[i ^ 1].vol += k;
64             ans += k;
65             sum -= k;
66             r_cost += k * edge[i].cost;
67         }
68     }
69     return ans;
70 }
71 int main()
72 {
73     ios::sync_with_stdio(false);
74     cin >> n >> m >> s >> t;
75     for(int i = 1; i <= m; i++){
76         cin >> x >> y >> vol >> cost;
77         add_edge(x, y, vol, cost);
78         add_edge(y, x, 0, -cost);
79     }
80     while(spfa()){
81         vis[t] = 1;
82         while(vis[t]){
83             memset(vis, 0, sizeof(vis));
84             res += dfs(s, INF);
85         }
86     }
87     cout << res << " " << r_cost << endl;
88     return 0;
89 }

```