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# Building

Problem

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Status: **Accepted**

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✓	Test Case #18				

## Submitted Code

Language: C++20

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```
1 #include <bits/stdc++.h>
2 using namespace std;
3
4 #define pii pair<int, pair<int, int>>
5 int n, m;
6 vector<pii> ans;
7
8 // DSU_UNION_BY_SIZE
9 const int N = 1e5 + 5;
10 int parent[N];
11 int parentSize[N];
12
13 void dsu_set(int n)
14 {
15     for (int i = 1; i <= n; i++)
16     {
17         parent[i] = i;
18         parentSize[i] = 1;
19     }
20 }
21
22 int dsu_find(int node)
23 {
24     while (parent[node] != node)
25     {
26         node = parent[node];
27     }
```

```
28     return node;
29 }
30
31 // This is union by size
32 void dsu_union(int a, int b)
33 {
34     int leaderA = dsu_find(a);
35     int leaderB = dsu_find(b);
36     if (leaderA != leaderB)
37     {
38         if (parentSize[leaderA] > parentSize[leaderB])
39         {
40             // Leader is 'A'
41             parent[leaderB] = leaderA;
42             parentSize[leaderA] += parentSize[leaderB];
43         }
44         else
45         {
46             // Leader is 'B'
47             parent[leaderA] = leaderB;
48             parentSize[leaderB] += parentSize[leaderA];
49         }
50     }
51 }
52 }
53
54 int main()
55 {
56     cin >> n >> m;
57
58     priority_queue<pii, vector<pii>, greater<pii>> pq;
59
60     dsu_set(n);
61
62     for (int i = 1; i <= m; i++)
63     {
64         int u, v, w;
65         cin >> u >> v >> w;
66         pq.push({w, {u, v}});
67     }
68
69     // Kruskal's Algorithm
70     while (!pq.empty())
71     {
72         auto el = pq.top();
73         pq.pop();
74
75         int w = el.first;
76         int u = el.second.first;
77         int v = el.second.second;
78
79         int leaderU = dsu_find(u);
80         int leaderV = dsu_find(v);
81         if (leaderU == leaderV)
82             continue;
83         ans.push_back({w, {u, v}});
84
85         dsu_union(u, v);
86     }
87
88     long long int cost = 0;
89     for (auto e : ans)
90     {
91         // cout << e.second.first << " " << e.second.second << " " << e.first << endl;
92         cost += (long long int)(e.first);
93     }
```

```
94     if(ans.size()==n-1)
95     {
96         cout<<cost<<endl;
97     }
98     else
99     cout<<"-1"<<endl;
100
101
102
103     return 0;
104 }
```

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