```
Contents
                                                         }
                                                   25
                                                   26
                                                   27
                                                         // input and union
                                                         for(i = 0; i < M; i++){</pre>
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1 Graph Theory
                                                   29
                                                            cin >> a >> b;
 1.1 DFS . . . .
                                                 1
                                                            Uni(a, b);
  1.2 BFS . . .
                                                   30
  1
                                                   31
                                                   32 }
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2 Number Theory
  2.1 thm . . . .
```

## 1 Graph Theory

#### 1.1 DFS

```
1  vector < int > G[N];
2  bitset < N > vis;
3  void dfs(int s) {
4   vis[s] = 1;
5  for (int t : G[s]) {
6   if (!vis[i])
7   dfs(i);
8  }
9 }
```

#### 1.2 BFS

```
1 vector<int> G[N];
2 bitset < N > vis;
3 void bfs(int s) {
    queue<int> q;
    q.push(s);
    vis[s] = 1;
     while (!q.empty()) {
      int v = q.front();
9
       q.pop();
10
      for (int t : G[v]) {
         if (!vis[t]) {
11
12
           q.push(t);
13
           vis[t] = 1;
         }
14
15
       }
16
    }
17 }
```

### 1.3 Disjoint Set

```
1 int Find(int x) {
2
       if (x == p[x])
3
            return x;
       return p[x] = find(p[x]);
4
5 }
  void Uni(int a, int b){
8
       a = Find(a);
9
10
       b = Find(b);
11
       if (a == b)
12
13
           return;
       if (p[a] < p[b]){</pre>
14
15
           p[a] = p[a] + p[b];
16
17
       p[b] = a;
18 }
19
20 int main(){
21
22
       // initial
       for(i = 0; i < N; i++){</pre>
23
24
           p[i] = -1;
```

# 2 Number Theory

### 2.1 thm

- · 中文測試
- $\cdot \sum_{i=1}^{n} i^2 = \frac{n(n+1)(2n+1)}{6}$