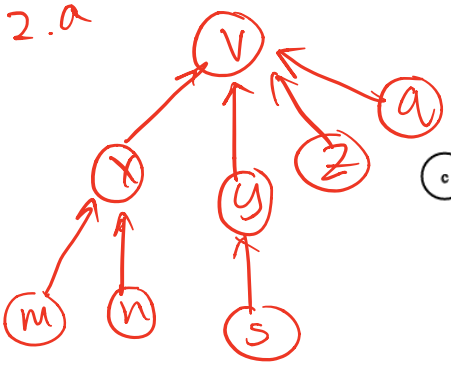
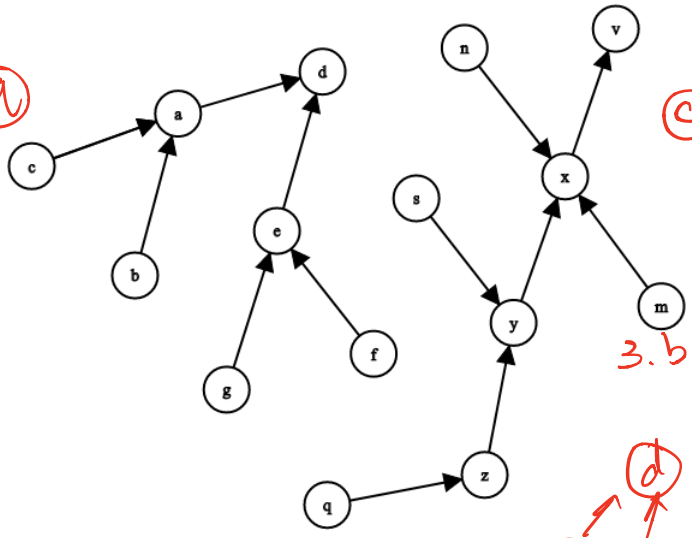
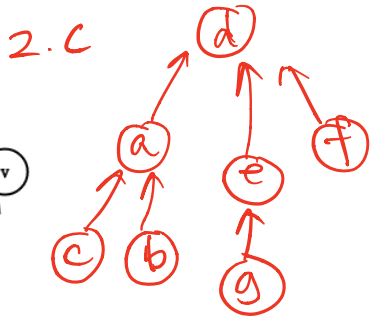
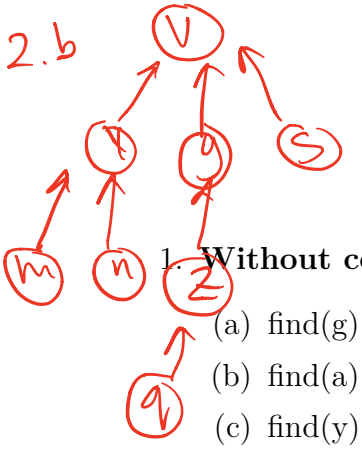
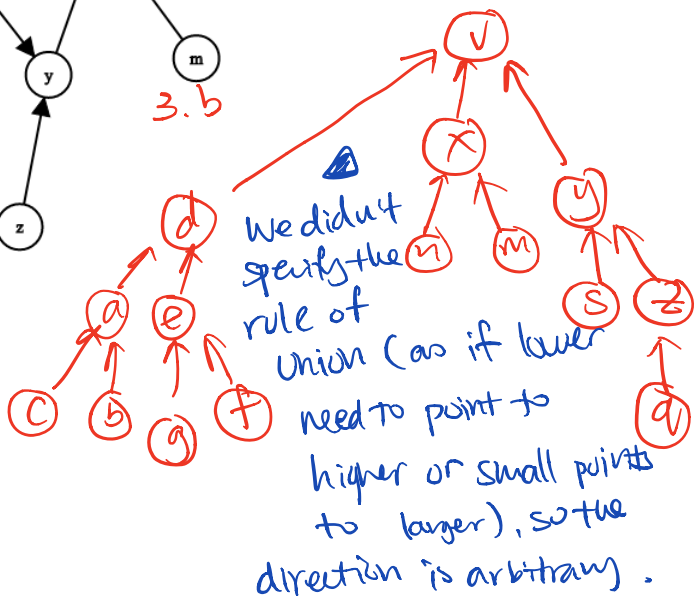
1 Disjoint Set





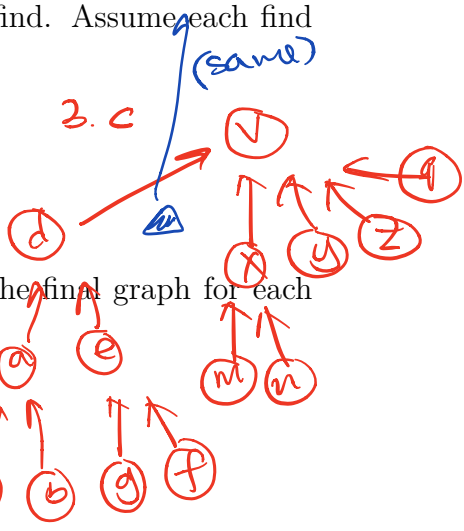






1. **Without compression** Show the result of :
   (a) find(g) d
   (b) find(a) d
   (c) find(y) v

2. **With compression**, show the result and the final graph for each find. Assume each find starts with a fresh graph above.
   (a) find(q) v
   (b) find(s) v
   (c) find(~~r~~) d
   f



3. **With compression and quick union**, perform union and show the final graph for each union. Assume each find starts with a fresh graph above.
   f
   (a) union(~~r~~, c) same group, no result
   (b) union(y, e) no output, but perform.
   (c) union(q, d) performed.

4. **With compression and quick union**, write a pseudo-code for union(q, e).

```
union(q, e){
    rootq = find(q);
    roote = find(e);
    if(rootq not the same as roote){
        Let rootq be the children of roote; // or opposite
    }
}
```