## 1 Disjoint Set

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

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)  
   (b) find(s)  
   (c) find(r)  

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.
   
   (a) union(r, c)  
   (b) union(y, e)  
   (c) union(q, d)  

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

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