Hints to solutions for HW#3

- **Exercise 17.1-3:**
  There are $\log_2 n + 1$ operations with the cost $2^i$. Other operations have a cost of 1. By using aggregate analysis, we find $O(1)$ is the amortized cost per operation.

- **Exercise 22.2-7:**
  Represent the problem as a graph $G(N,R)$, where each vertex represents a wrestler and each edge represents a rivalry. Perform BFS to visit all N’s, Assign the first wrestler to be a good guy and then assign all its immediate neighbors to be bad guys, and so on. If that is impossible return NO designation is possible. $O(N+R)$.

- **Exercise 22.2-8:**

  ```python
diameter=0
for each vertex v in V(G)
do BFS starting at v
  for each vertex u in V(G)
    if d(u,v) > diameter
      diameter = d(u,v)
return diameter
```

  Time complexity: $O(|V| |E|)$. 