Worksheet #20:
Parallel Spanning Tree Algorithm

Name: _____   Netid: _____

1. **Insert finish, async, and isolated constructs (pseudocode is fine) to convert the sequential spanning tree algorithm below into a parallel algorithm**

2. **Is it better to use a global isolated or an object-based isolated construct for the parallelization in question 1? If object-based is better, which object(s) should be included in the isolated list?**

Sequential Parallel Spanning Tree Algorithm

```
1.  class V  {
2.     V [] neighbors; // adjacency list for input graph
3.     V parent; // output value of parent in spanning tree

4.     boolean makeParent(V n) {
5.       if (parent == null) { parent = n; return true; }
6.       else return false; // return true if n became parent
7.     } // makeParent

8.     void compute() {
9.       for (int i=0; i<neighbors.length; i++) {
10.        final V child = neighbors[i];
11.        if (child.makeParent(this))
12.          child.compute(); // recursive call
13.      }
14.    } // compute
15. } // class V
16. . . . // main program
17. root.parent = root; // Use self-cycle to identify root
18. root.compute();
19. . . .
```