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 aparallel algorithm

2. Is it better to use a global isolated or an object-based isolatedconstruct for the parallelization in question 1? If object-based isbetter, 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. `...`