1) (10 pts) DSN (Binary Trees)

Demonstrate your understanding of recursion by rewriting the following recursive function, which operates on a binary tree, as an **iterative** function. In doing so, you must abide by the following restrictions:

1. Do not use *break* statements in your solution.
2. Do not write any helper functions in your solution.
3. Do not make any recursive calls in your solution.

```
int foo(node *root) {
    if (root == NULL) return 1;
    if (root->left == NULL && root->right == NULL) return 2;
    if (root->left == NULL) return 3 * foo(root->right);
    if (root->right == NULL) return 4 * foo(root->left);
    if (root->right->data > root->left->data) return 5 * foo(root->right);
    return 6 * foo(root->left);
}

int iterative_foo(node *root) {

      int result = 1;
      node *temp = root;

      while (temp != NULL) {
            if (temp->left == NULL && temp->right == NULL) {
               result *= 2;
               temp = NULL;
            }
            else if (temp->left == NULL) {
               result *= 3;
               temp = temp->right;
            }
            else if (temp->right == NULL) {
               result *= 4;
               temp = temp->left;
            }
            else if (temp->right->data > temp->left->data) {
               result *= 5;
               temp = temp->right;
            }
            else {
               result *= 6;
               temp = temp->left;
            }
      }

      return result;
}
```

See grading notes on following page.