Week 5 Section Solutions

1. Tracing Trees

   a. 1, 2, 3, 4, 5, 6, 7, 8
   b. 8, 6, 4, 2, 1, 3, 5, 7
   c. 5, 7, 3, 8, 1, 2, 4, 6

2. Tracing Heaps

   a. \{1, 2, 3, 4, 5, 6, 7, 8\}
      After dequeuing:
      \{2, 4, 3, 8, 5, 6, 7\}
   b. \{1, 2, 3, 7, 4, 6, 5, 8\}
      After dequeuing:
      \{2, 4, 3, 7, 8, 6, 5\}
   c. \{1, 3, 2, 6, 7, 5, 4, 8\}
      After dequeuing:
      \{2, 3, 4, 6, 7, 5, 8\}

Thanks to Marty Stepp and other CS106B and X instructors and TAs for contributing problems on this handout.
3. Height (Height on CodeStepByStep)

```cpp
int heightHelper(BinaryTreeNode* node) {
    if (node == NULL) {
        return 0;
    } else {
        return 1 + max(heightHelper(node->left),
                        heightHelper(node->right));
    }
}

int BinaryTree::height() const {
    return heightHelper(root);
}
```