Lecture 14 - In Class Exercise

Goal: Understand how to set up and work with a control flow graph and apply all the past coverage techniques discussed.

1 CFGs and More

Instructions: Work with your neighbors in groups of 2.

Consider the following graph and test paths:

```
public static int numOccurences(char [] c, char c) {
   if(v = = null)
      throw new NullPointerException();
   int n = 0;
   for(int i = 0; i < v.length; i++) {
      if(v[i] == c)
         n++;
   }
   return n;
}
```

Based on the graph above, answer the following questions:

1. Draw a control flow graph for `numOccurences`
2. Apply node coverage. List the: test requirements, test paths, and test cases (input values and expected output).
3. Apply edge coverage. List the: test requirements, test paths, and test cases (input values and expected output).
4. Apply edge-pair coverage. List the: test requirements, test paths, and test cases (input values and expected output).
5. Apply prime path coverage. List the: test requirements, test paths, and test cases (input values and expected output).
6. List all du-pairs and derive the du-paths (these paths can then be used as test requirements for the data flow coverage)
7. Apply all-defs coverage. List the: test requirements, test paths.
8. Apply all-uses coverage. List the: test requirements, test paths.
9. Apply all-du-paths coverage. List the: test requirements, test paths.