

CS 4501/6501: Quiz 8

24-Oct-2017

Names:

Instruction: Answer the questions as concisely as you can. Please write neatly; if I can't read it I have to mark it wrong.

Consider the `min()` method

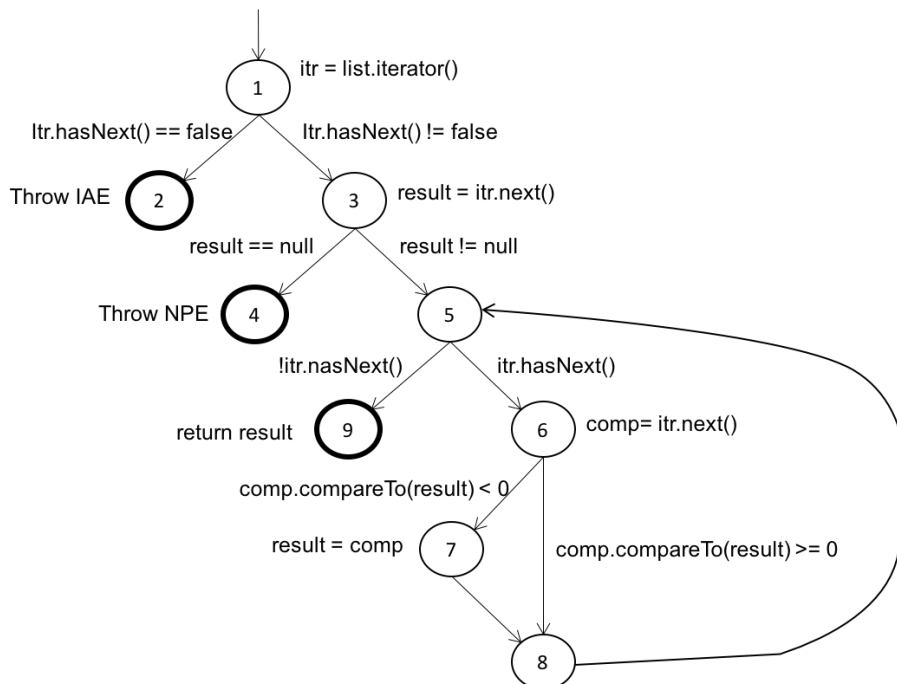
```
public static <T extends Comparable<? super T>> T min (List<? extends T> list) {
    Iterator<? extends T> itr = list.iterator();
    if (itr.hasNext() == false) {
        throw new IllegalArgumentException("min: Empty list");
    }

    T result = itr.next();
    if (result == null)
        throw new NullPointerException("Min.min");

    while (itr.hasNext()) {
        T comp = itr.next();
        if (comp.compareTo(result) < 0) {    // throws NPE, CCE as needed
            result = comp;
        }
    }
    return result;
}
```

1. (4 pts.) Draw a control flow graph for this code. There are several possible values for the number of nodes in the graph. Choose something reasonable.

Answer:



2. (2 pts.) Label edges/nodes directly in the graph (previous question) with the corresponding code fragments.

Answer: See prior question.

3. (3 pts.) Give test cases (inputs and expected outputs) that yield edge coverage on the graph. Hint: You need 3 tests, one of which has to have a certain length.

Answer:

```
list =[], expect IAE  
list =[null], expect NPE  
list =[dog, cat, mouse], expect cat // note length=3, min not first
```

4. (1 pt.) To achieve edge pair coverage, one more test is needed (in addition to the above three tests). Give one such test.

Answer: A single element list

```
list =[cat], expect cat
```