

CITS5501 Software Testing and Quality Assurance

Semester 1, 2020

Workshop 1 – Testing concepts

1. A database has a table for students, a table for units being offered, and a table for enrolments. When a unit is removed as an offering, all enrolments relating to that unit must also be removed. The code for doing a unit removal currently looks like this:

```
1  /** Remove a unit from the system  
2  */  
3  void removeUnit(String unitCode) {  
4      units.removeRecord(unitCode);  
5  }
```

Discuss and come up with an answer to the following questions:

- a. What preconditions do you think there should be for calling `removeUnit()`?
 - b. What postconditions should hold after it is called?
 - c. Does the scenario give rise to any system invariants?
 - d. Can you identify any problems with the code? Describe what defects, failures and erroneous states might exist as a consequence.
2. Discuss whether the following requirements for a system are (a) precise and (b) testable. (It is hard to know if they are consistent and complete in isolation, so we won't consider that.) If they are not, how might you make them precise and testable?
- a. The flight booking system should be easy for travel agents to use.
 - b. The `int String.indexOf(char ch)` method should return a -1 if `ch` does not appear in the receiver string, or the index at which it appears, if it does.
 - c. Internet-aware Toast-O-Matic toasters should have a mean time between failure of 6 months.
3. Sketch out code for a JUnit test for the `String.indexOf()` method. What does it need to contain? What are some tests you might include? Use pseudocode if you cannot recall the Java syntax.