

**NATIONAL UNIVERSITY OF SINGAPORE**

**CS2103/T – Software Engineering**

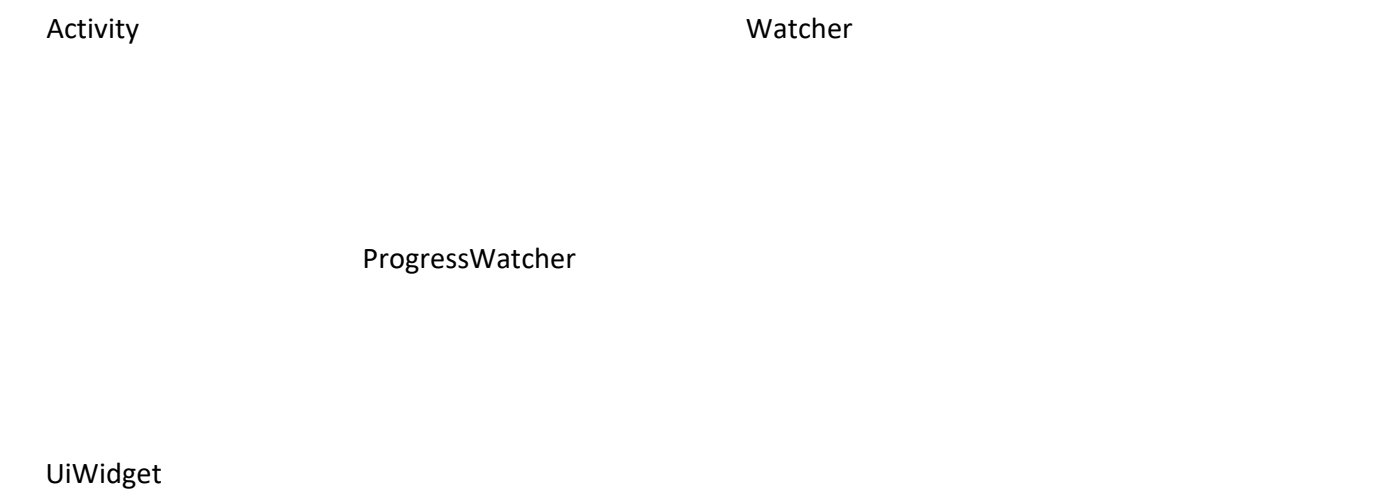
**Practice exam- Part 2**

Time Allowed: 20 minutes

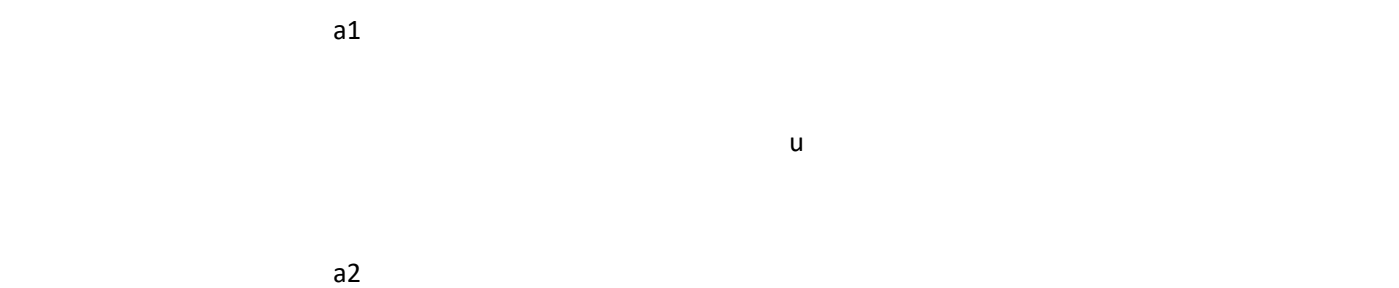
(a) Sketch a class diagram for the code given below. Follow the layout given. Also incorporate the following information into the diagram:

- An Activity object can consist of other Activity objects i.e., sub-activities.
- A Watcher object may not be associated with more than 5 Activity objects.
- UiWidget class inherits the ProgressWatcher.

<pre>class Activity{     private Watcher[] watchers = new Watcher[ProgressWatcher.MAX];     //...     void watch(Watcher w){         //add w to watchers     }      Activity getInstance(){         //...     } }</pre>	
<pre>interface Watcher{     void update(int value); }</pre>	<pre>abstract class ProgressWatcher implements Watcher{     static int MAX = 10; }</pre>



(b) Sketch an object diagram that has two Activity objects a1 and a2, both being watched by a UiWidget object u. Furthermore, a2 is a sub-activity of a1. Follow the given layout.



(c) Sketch a sequence diagram to illustrate the interactions resulting from the code below.

```
Client c = new Client(s, 100)
```

Code of the relevant classes are given below. Note that the two statements in the constructor execute in parallel to each other (the extra code required for parallelizing them is not shown for simplicity).

```
class Client {
    Client(Server s, int port) {
        init(s);    // parallel
        s.set(port); // parallel
    }

    void init(Server s) {
        s.add(this);
    }
    //...
```

-- End of Part 2 --

Sample answers are given in the next page.  
Recommended not to look at them before you've tried the questions first.

# Practice Exam – Part 2 - Sample answers

