

Tutorial Quiz #3 — Solutions

A *switch* is a very simple ADT: it represents anything that is always in one of two possible states (called *on* and *off*) and that supports the following operations.

isOn: Return true if the switch is *on* and false if the switch is *off*.

toggle: Change the state of the switch from *on* to *off* or from *off* to *on*.

Below, write a Java **interface** for the switch ADT. Include appropriate comments.

```
//// ANSWER ////
/**
 * A Switch is anything that is always either 'on' or 'off'.
 */
public interface Switch {
    /**
     * Checks whether or not this switch is 'on'.
     * @return true if this switch is on, false if it is off
     */
    public boolean isOn();

    /**
     * Changes the state of this switch (sets is to 'on' if it was 'off',
     * and to 'off' if it was 'on').
     */
    public void toggle();
} // interface Switch
```

Marking Scheme:

- A. 1 mark for having “interface Switch”
- B. 1 mark for having “public boolean isOn();”
- C. 1 mark for a reasonable comment for method isOn() (not necessarily JavaDoc)
- D. 1 mark for having “public void toggle();”
- E. 1 mark for a reasonable comment for method toggle() (not necessarily JavaDoc)
- F. -2 marks if the interface contains any instance variable (but no method definition)
- G. -2 marks if the interface contains any method definition (but no instance variable)
- H. -3 marks if the interface contains instance variables *and* method definitions