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