CS21, Spring 2009, Practice Quiz 7

1. Implement a **Television** class that mimics a simple television. The television can be on or off, and the channel can be tuned any station between 2 and 99. If you are watching a particular channel (e.g. channel 17) and you turn the television off, when you turn it back on, the television will be on the same channel (in this case, channel 17). Your television will have the following functionality:

   - **__init__** creates a television which is initially off and tuned to channel 2.

   - **__str__** method that returns a string representing the current state of the television (on/off and station information)

   - **power** changes the state of the television to the opposite state (either from off to on, or from on to off)

   - **tuneTo** changes the channel to a station you specify. If the station is invalid (outside the range 2-99) or if the television is off, the channel can not be changed, so print out an appropriate message and do not change the station.

   - **channelUp** increases the channel by one. If the television was tuned to channel 99 before calling `channelUp`, the television should go to channel 2; if the television is off, the channel can not be changed, so print out an appropriate message.

   - **isOn** returns true if the television on; otherwise it returns false.

2. Below left, create a **main** program to test your **Television** class. Be sure that your program tries all the available functionality. Below right, show the output that should be produced by your program.

3. Explain the following object-oriented concepts and cite specific examples from your implementation of the **Television** class on the previous page to illustrate your points.

   (a) instance variable

   (b) constructor

   (c) instance of a class