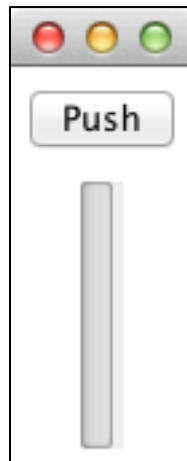


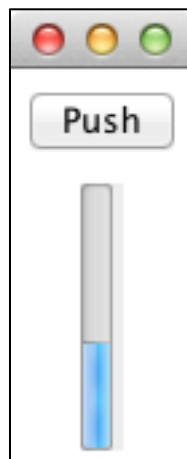
## IFB104 GUI Workshop Exercise: “Pump Me Up”

The tkinter Application Programming Interface allows us to create windows full of widgets, as an alternative to purely textual user interfaces. In this easy exercise you will use tkinter’s `Tk` class to create a window, its `Button` class to create a button, and the `ttk` module’s `Progressbar` class to create a progress bar. You will then link the button to the progress bar, so that when the button is pressed the progress bar changes.

When started your program should pop up a window something like the following. (Here the program was executed under Mac OS X. The user interface may look different under other operating systems.)



This window has a single button labelled ‘Push’ and a progress bar that initially registers zero (and has been oriented vertically). Each time the button is pushed, the progress bar’s value should be incremented by a small, fixed amount. For instance, in our solution the window has the following appearance after the button has been pressed four times.



Apart from this the only other behaviour possible is to minimise, maximise or close the window using the standard operating system buttons (red, yellow and green in the case of Mac OS X).

Note: You will find that the progress bar 'wraps around' and returns to zero when its maximum value is reached. By default `ttk` progress bars display 100 values from 0 to 99, inclusive, but you can change this with optional parameters to the `Progressbar` constructor if desired.