Creating Graphical User Interfaces

1.

```
import tkinter
window = tkinter.Tk()
frame = tkinter.Frame(window)
frame.pack()
button = tkinter.Button(frame, text='Goodbye', command=lambda:
window.destroy())
button.pack()
window.mainloop()
2.
import tkinter
def increment(text):
    """ Increment number represented by the contents of text by 1 and update
       text with the result."""
    count = int(text.get())
    text.set(str(count + 1))
window = tkinter.Tk()
frame = tkinter.Frame(window)
frame.pack()
text = tkinter.StringVar()
text.set('0')
button = tkinter.Button(frame, textvariable=text,
                       command=lambda: increment(text))
button.pack()
window.mainloop()
3.
def x():
   return y
4.
import tkinter
def count(text, out data):
    """ Update out data with the total number of As, Ts, Cs, and Gs found in
text."""
```

```
data = text.get('0.0', tkinter.END)
    counts = {}
    for char in 'ATCG':
       counts[char] = data.count(char)
    out data.set('Num As: {0} Num Ts: {1} Num Cs: {2} Num Gs: {3}'.format(
        counts['A'], counts['T'], counts['C'], counts['G']))
window = tkinter.Tk()
text = tkinter.Text(window, height=10, width=40)
text.pack()
out data = tkinter.StringVar()
button = tkinter.Button(window, text='Count', command=lambda: count(text,
out data))
button.pack()
label = tkinter.Label(window, textvar=out data)
label.pack()
window.mainloop()
5.
import tkinter
def convert (out data, temp data):
    """ Convert the value in temp_data, assumed to be in degrees Celsius,
       to Fahrenheit and store the result in out data. """
    f = temp data.get()
    out data.set((f - 32) * 5 / 9)
window = tkinter.Tk()
frame = tkinter.Frame(window)
frame.pack()
out_data = tkinter.StringVar()
temp data = tkinter.DoubleVar()
tkinter.Label(frame, text='Temperature in Fahrenheit:').pack()
text = tkinter.Entry(frame, textvar=temp data)
text.pack()
label = tkinter.Label(frame, textvar=out data)
label.pack()
button = tkinter.Button(frame, text='Convert', command=lambda:
convert(out data, temp data))
button.pack()
button2 = tkinter.Button(frame, text='Quit', command=lambda:
window.destroy())
button2.pack()
window.mainloop()
```

```
import tkinter
import tkinter.filedialog as dialog
class TextEditor:
    """A simple text editor."""
        __init__(self, parent):
        """Create the GUI."""
        # Framework
        self.parent = parent
        self.frame = tkinter.Frame(parent)
        self.frame.pack()
        # Text box for editing.
        self.text = tkinter.Text(parent)
        self.text.pack()
        # Menus.
        menubar = tkinter.Menu(parent)
        filemenu = tkinter.Menu(menubar)
        filemenu.add_command(label='Save', command=self.save_click)
        filemenu.add command(label='Quit', command=self.quit click)
        menubar.add cascade(label='File', menu=filemenu)
        window.config(menu=menubar)
    def save_click(self):
        """Handle click on 'Save' menu."""
        data = self.text.get('0.0', tkinter.END)
        filename = dialog.asksaveasfilename(
            parent=self.parent,
            filetypes=[('Text', '*.txt')],
            title='Save as...')
        writer = open(filename, 'w')
        writer.write(data)
        writer.close()
    def quit click(self):
        """Handle click on 'Quit' menu."""
        self.parent.destroy()
if __name__ == '__main__':
    window = tkinter.Tk()
    app = TextEditor(window)
    window.mainloop()
```