



Graphical User Interfaces

BIOL 6750 Advanced Programming for
Biologists

The Main Loop

- Graphical applications are basically one big loop.
- Things that need to happen in the loop:
 - Refresh the screen
 - Check for events (user input, etc.)
 - Check for exit conditions

Python GUI libraries

- **wxPython** ← we'll be using this one
- PyQt
- Tkinter (comes packaged with Python)
- PyJamas
- and many more...

wxPython

- wxPython is a Python wrapper over C++ libraries, so it has some quirks compared to traditional Python libraries
- Method names are capitalized (usually in Python, they're lower case) i.e. `frame.Show()`
- Flags are passed using the `|` operator, i.e. `(wx.EXPAND | wx.ALL | wx.BLACK)`

A wxPython example

- `sample1_basic.py`

Controls

Database Toolkit

Connection Info

Enter your database connection information:

username:

password:

hostname:

port:

database:

< Back Finish Cancel

Label

Label

Textbox

Button

Controls

- Controls are objects and have methods to manipulate them
- `sample2_controls.py`

Sizers

- Sizers set the layout of controls
- `sample3_sizers.py`
- `sample4_nested_sizers.py`

Events

- Events are bound to controls. They call a function when a specific thing happens.
- `sample5_events.py`

Long Tasks

- Since everything (including screen refreshing) happens in this loop, you want it to be as fast as possible
- If you perform a long task in the main thread, the Main Loop will have to wait for it to finish – this will cause your program to hang

Additional Resources

- wxPython in Action
- Lots of tutorials online

