SENG 462 Tutorial #6

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Logbooks

- When student001's log book entry is validated:
  - Student001 only sees how many group members have validated that entry
  - Student001 does NOT see if the group members agree or disagree with that entry
  - Student001 does NOT see any comments left by the group members

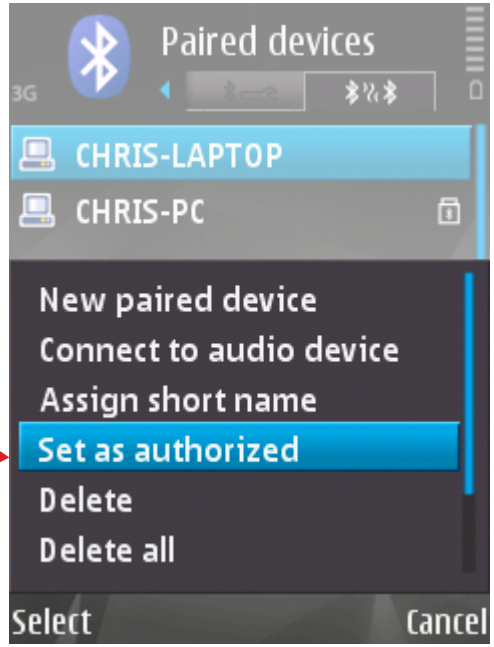
- Only the class instructors see the comments and the agree/disagree counts.

Testing

- Once your 2 user workload file is complete, try running all the other workload files through.
  - If you've done it right, they should ALL work but very very slowly

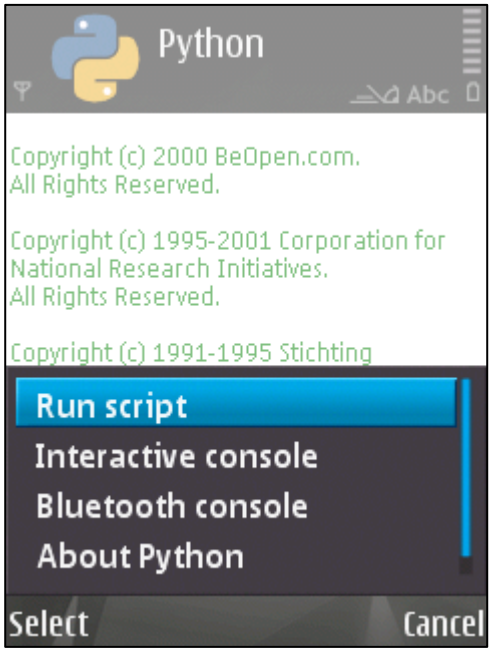
Connecting to the N97

- Bluetooth menu on N97:
  - Phone must be set as visible
- Bluetooth menu on computer:
  - Add Bluetooth device
  - Search for N97
  - Pair the devices
- Bluetooth menu on N97:
  - Set computer as "authorized"

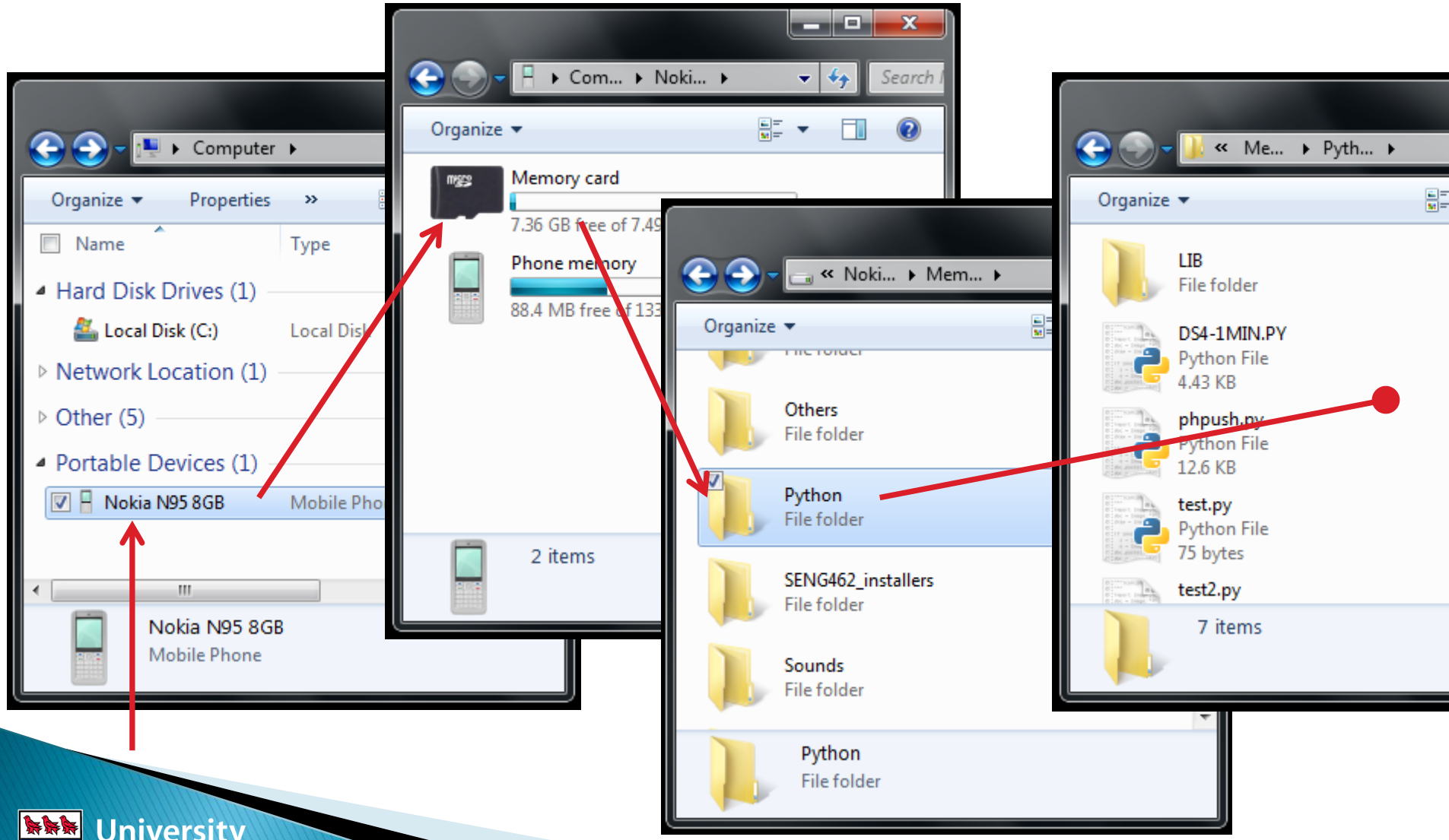


Drag and Drop Development

- Quickest for development:
  - Bluetooth to PC/Mac/Linux
  - Edit Python scripts on your computer
  - Drag and drop files into the N97 E:\Python directory
  - Run script from the PyS60 Script Shell

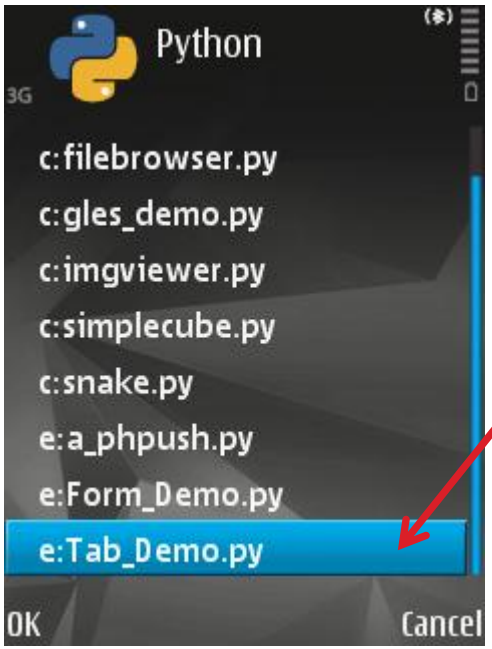


Drag and Drop Development (2)



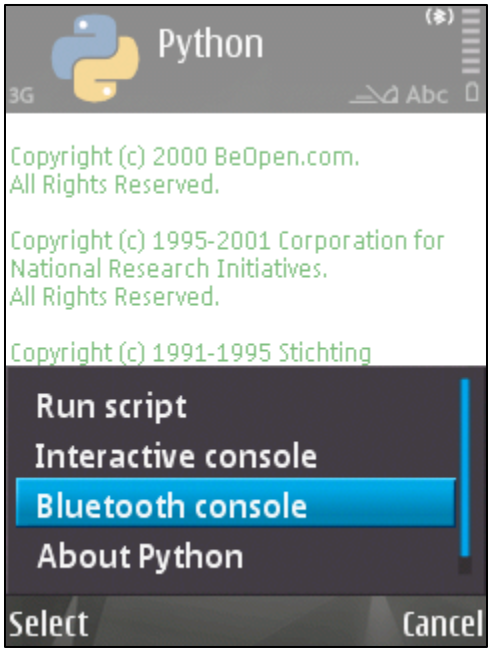
Drag and Drop Development (2)

- Run your script!



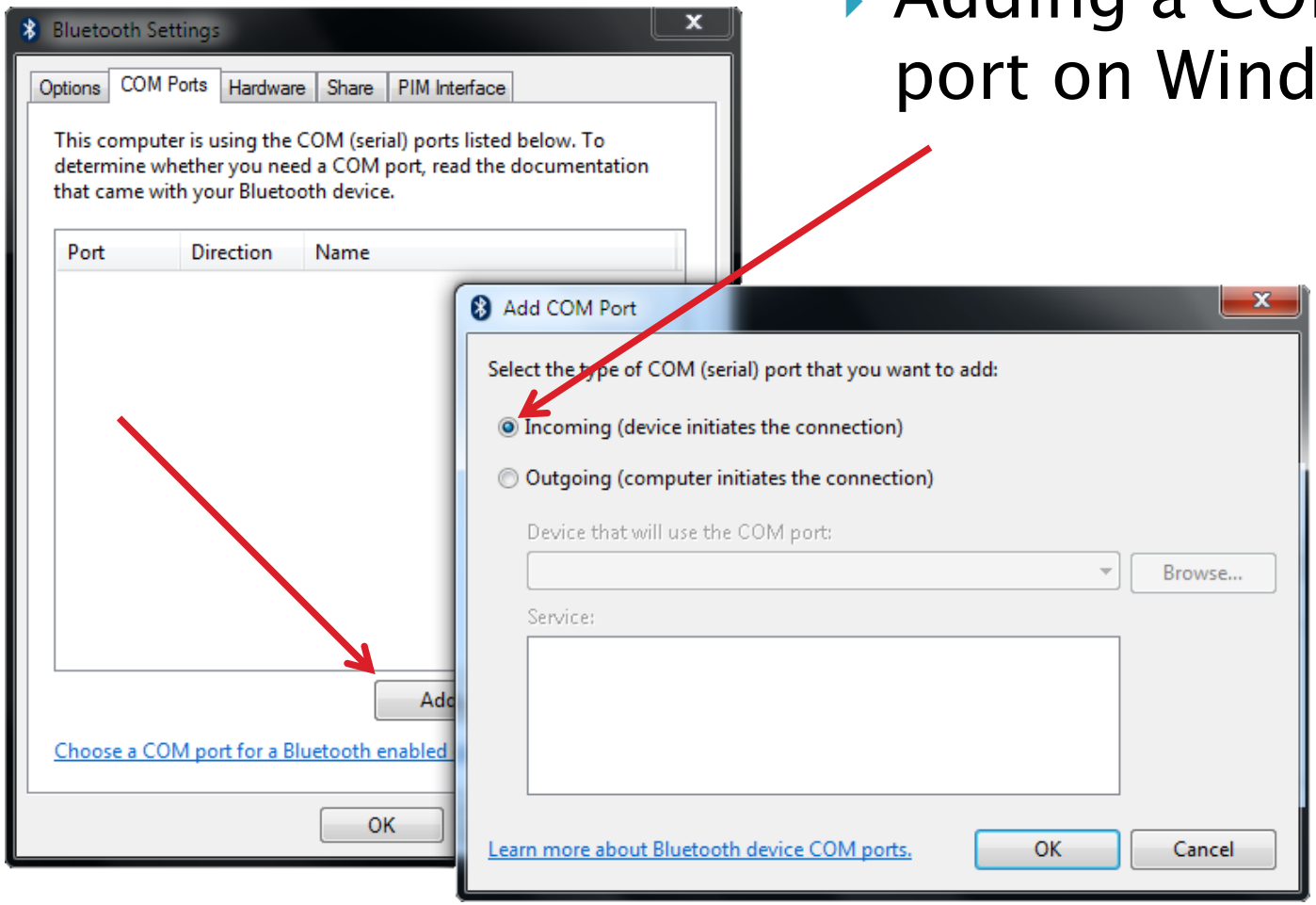
Bluetooth Console

- Simple for testing: Bluetooth console
  - A console for typing Python commands
  - Connect via terminal program (ie: PuTTY)
  - Requires an outgoing serial connection on the computer (one time setup)



Bluetooth Console

- Adding a COM port on Windows

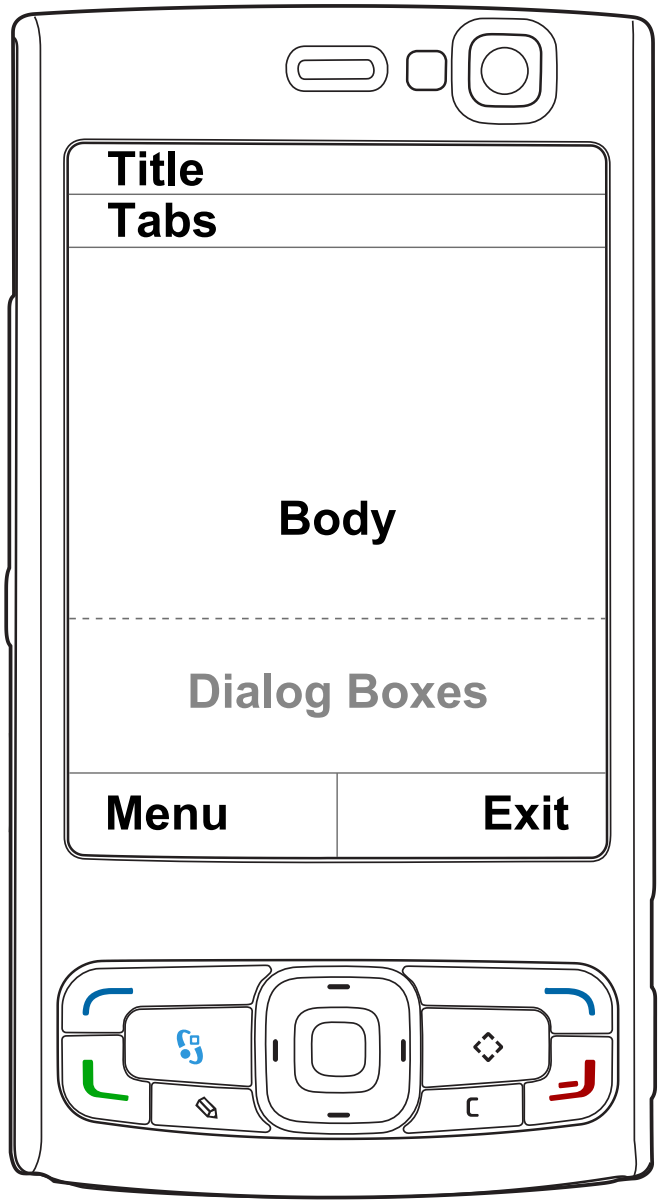


Bluetooth Console

- On computer:
  - Start PuTTY
  - Connect to the port number you assigned
- On N97:
  - Start Python
  - Choose Bluetooth Console
  - Choose computer
- Test on computer:
  - Type: `import audio`
  - Type: `audio.say("Hello World")`

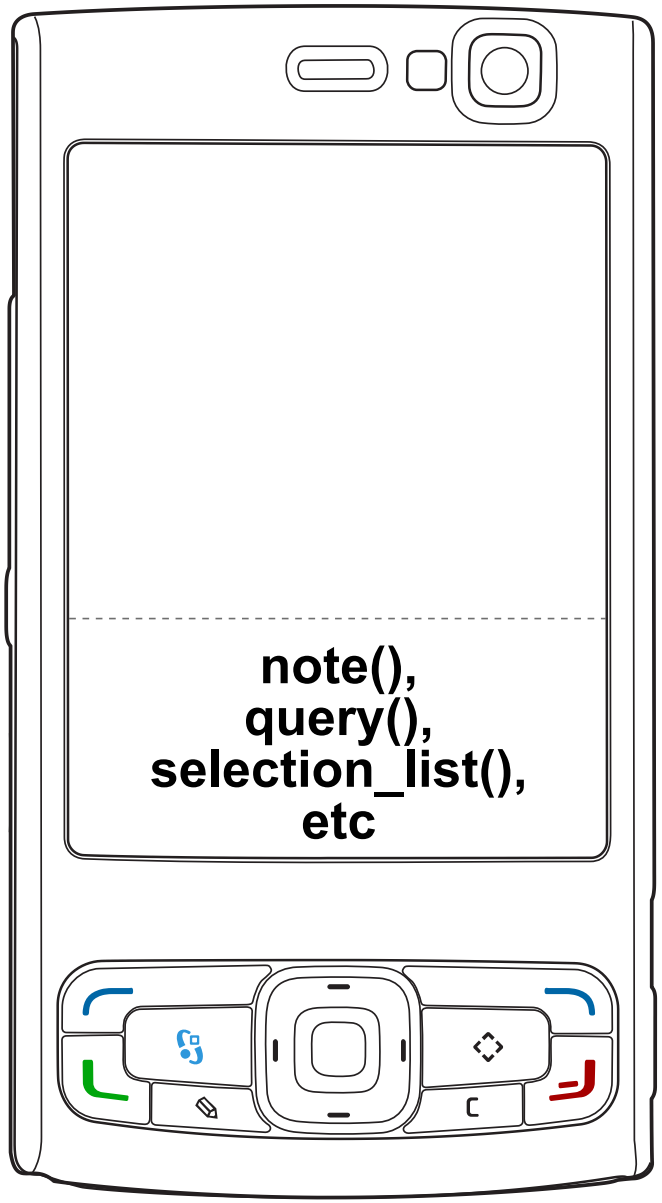
The Interface

- The typical Symbian OS interface:
  - Title bar
  - Body
  - Soft keys
- Other:
  - Tabs overlay the title bar
  - Dialog boxes cover the bottom of the body



Dialog Boxes

- note()
  - Displays a simple information box
- query()
  - Displays different input requests
- Popup Menus
- Selection Lists

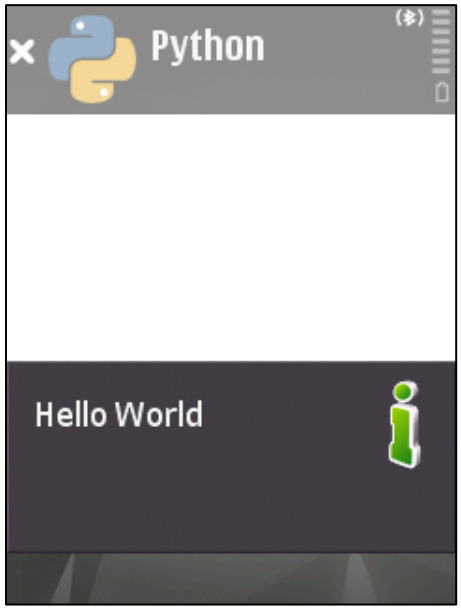


Dialog Boxes – Notes

```
from appuifw import *

# Display a note dialog
note(u"Hello World")
```

- Only two lines of code are needed
- Notice the use of Unicode strings…



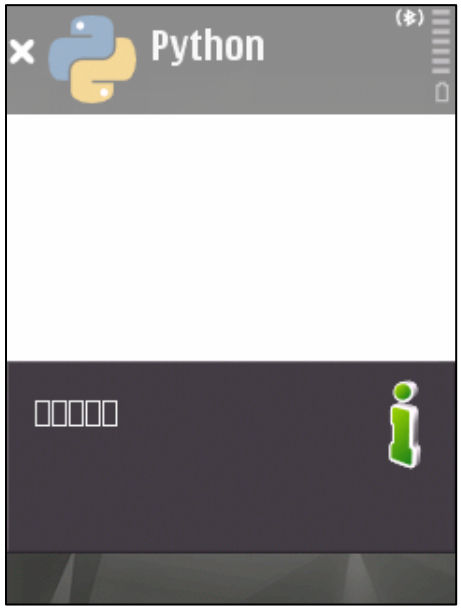
A note() dialog box

Dialog Boxes – Notes

```
from appuifw import *

# Display a note dialog
note("Hello World")
```

- Without Unicode strings, things just don't look right…

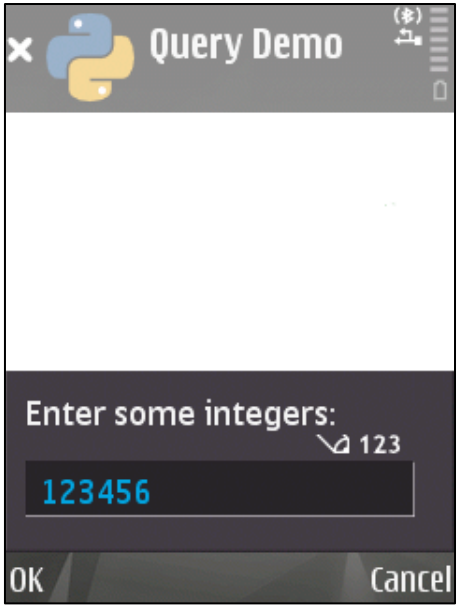


Incorrect Text Encoding

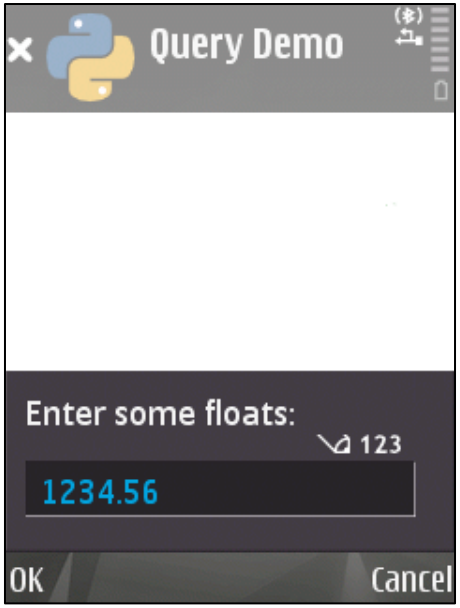
Dialog Boxes – Queries

- There are seven types of pop-up queries

text



number



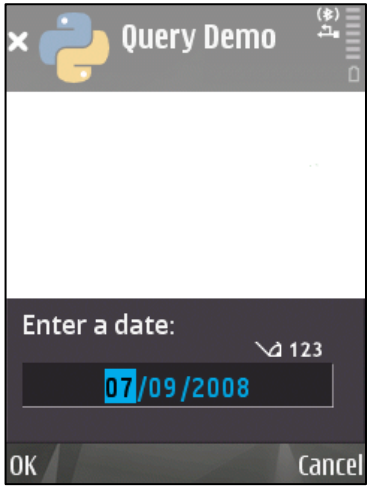
float

```
query(u"Enter some text:", "text")
```

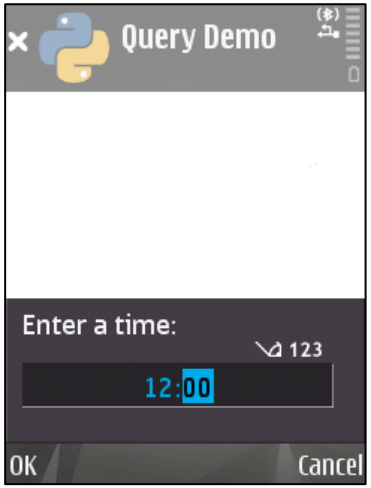
- The first field is the message to display
- The second field is the type of query

Dialog Boxes – Queries (2)

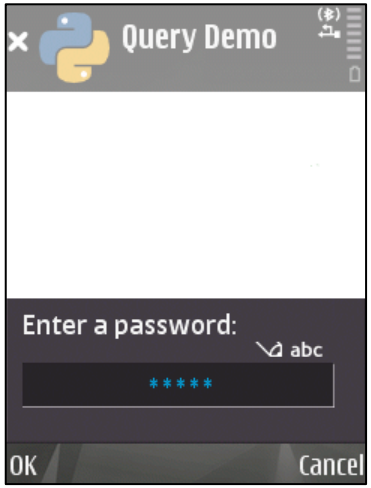
- There are seven types of pop-up queries



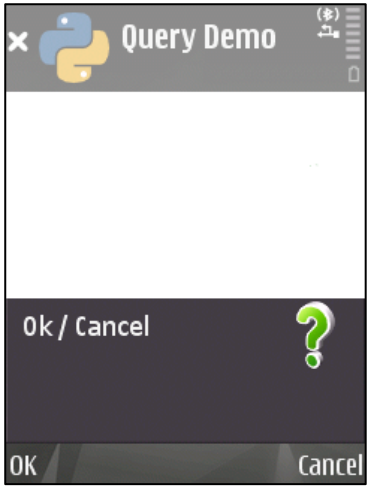
date



time



password



query

```
query(u"Enter some text:", "text")
```

- The first field is the message to display
- The second field is the type of query

The Interface

- The interface elements are accessed through the app object

Primary UI Controls

- Text
- Listbox
- Canvas

- Form
  - Forms have more in common with dialog boxes

A Simple Application

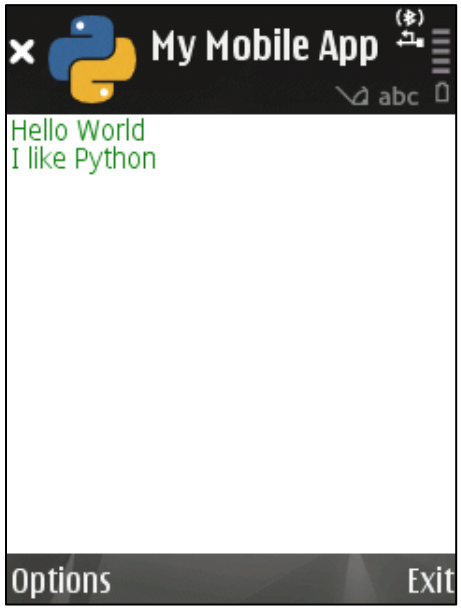
- An app.body displaying text

```
from appuifw import *

# Define the type of window to use
textArea = Text()
app.body = textArea

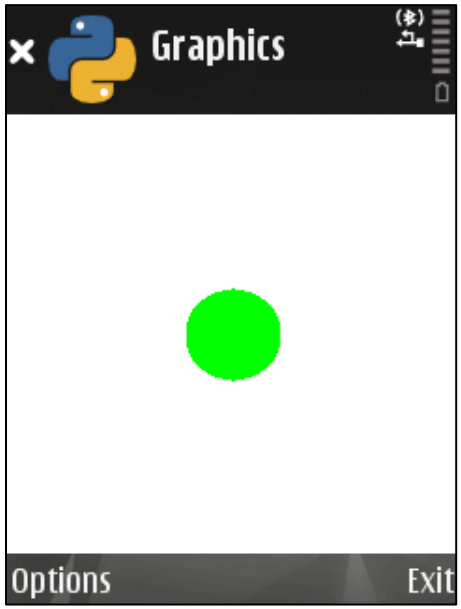
# Add some text to the area
textArea.add(u"Hello World\nI like Python")

# Display the app's name
app.title = u"My Mobile App"
```



A Simple Application

- This time displaying graphics




```
import graphics
from appuifw import *

# Define the type of window to use
canvas=Canvas()
app.body = canvas
w,h = canvas.size

# Add some text to the area
canvas.clear((255,255,255))
canvas.point((w/2,h/2),(0,255,0), width=50)

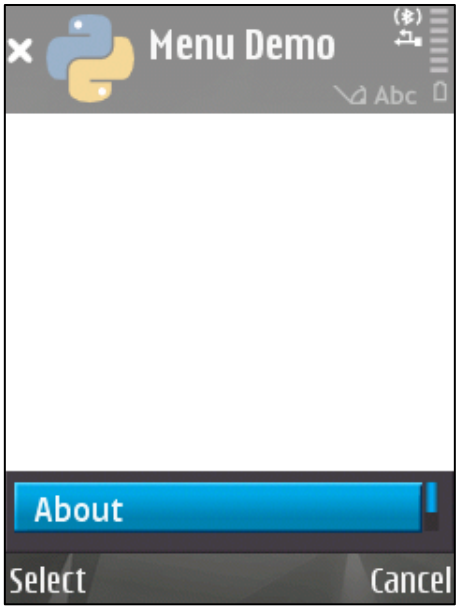
# Display the app's name
app.title = u"Graphics"
```

Menus

- Menus are created from tuples stored in lists
- Lists can be nested for multi-level menus

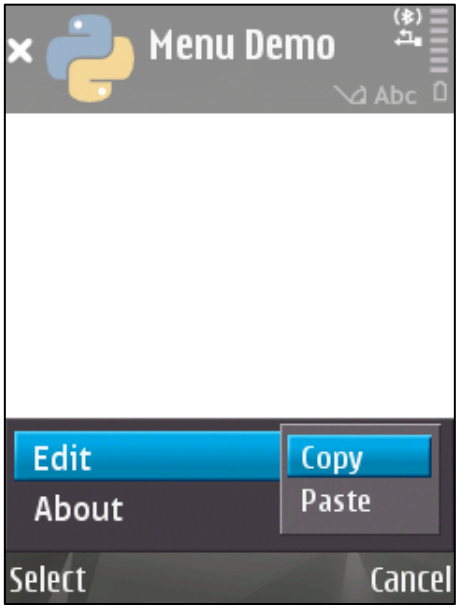
- A simple menu:

```
app.menu = [(u"About", about)]
```



- A multi-level menu:

```
app.menu = [(u"Edit",((u"Copy",copy),
  (u"Paste",paste))), (u"About",about)]
```



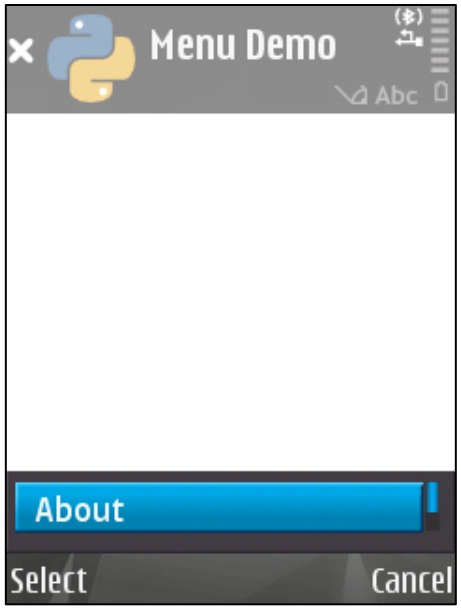
A Less Simple Application

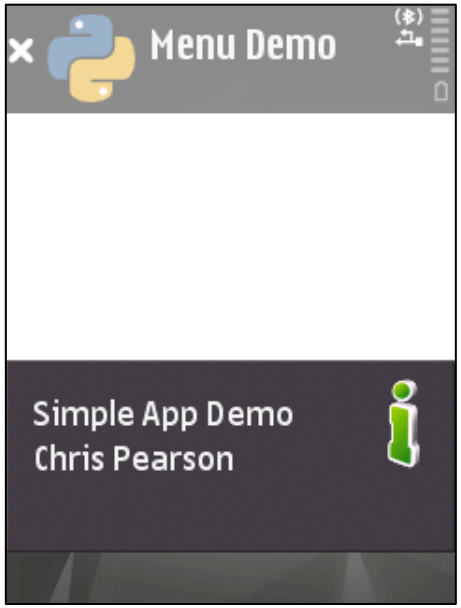
- Let's add a menu
  - This requires a callback – a function that will be called when an event occurs

```
import e32
from appuifw import *

# The "about" menu callback function
def about():
  note(u"Simple App Demo\nChris Pearson");

# A menu with "about"
app.menu = [(u"About", about)]
```





Threads, Locks, and Signals

- Threads in PyS60 use the phone's:
  - Memory management
  - Power management
- Locks allow a thread to pause and wait on a signal

- `app_lock = e32.Ao_lock()`
  - creates a lock object
- `app_lock.wait()`
  - suspends the thread until signalled
- `app_lock.signal()`
  - signal all threads waiting on app_lock

A Less Simple Application

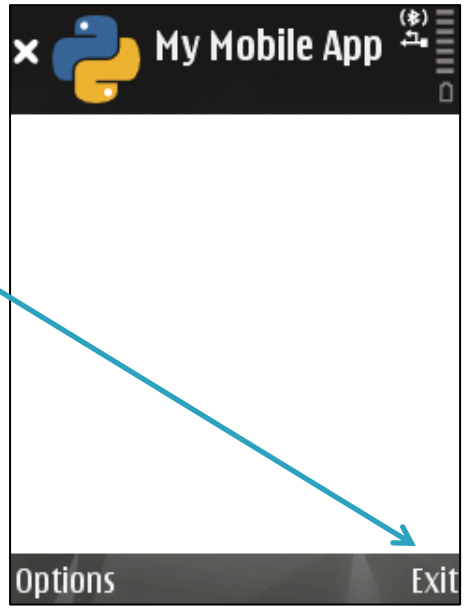
- Let's add the GUI thread
  - This halts the main flow of the application
  - Interactive events now control our program

```
# Create the lock variable
app_lock = e32.Ao_lock()
# Tell this thread to wait for a signal
appLock.wait()

# Signal the GUI thread to continue
app_lock.signal()
```

A Less Simple Application

- A callback for when the "Exit" soft key is pressed:




```
import e32
from appuifw import *

def quit():
  app_lock.signal()

#The function for when exit is pressed
app.exit_key_handler = quit

#Wait until we get a signal from quit()
app_lock = e32.Ao_lock()
app_lock.wait()
```

A Less Simple Application

- Putting it all together:

```
import e32
from appuifw import *

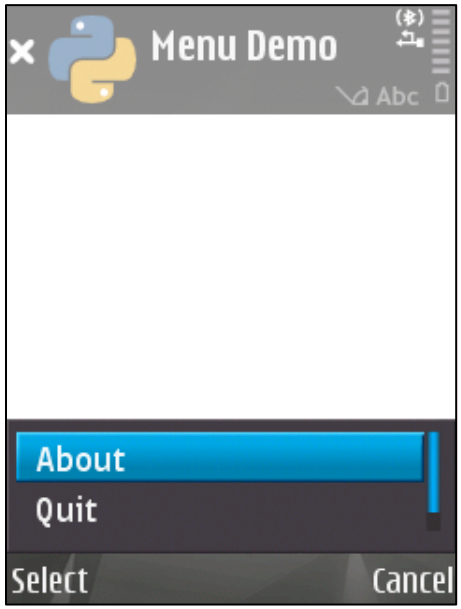
def about():
   note(u"Simple App Demo\nChris Pearson");

#Called by menu and by soft key
def quit():
   app_lock.signal()

#Include the menu
app.menu = [(u"About", about), (u"Quit", quit)]

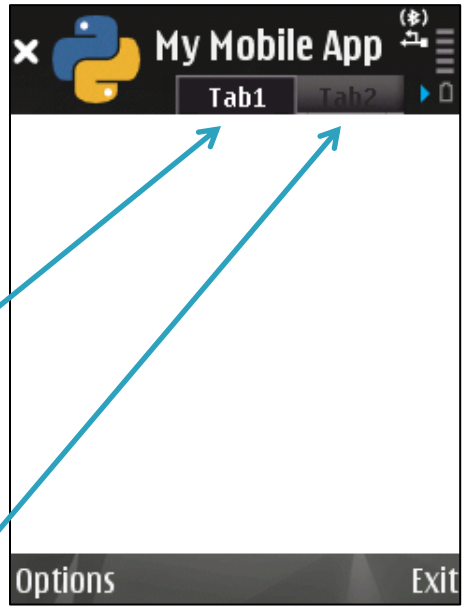
#The function to call if the quit key is pressed
app.exit_key_handler = quit

#Wait until we get a signal from quit()
app_lock = e32.Ao_lock()
app_lock.wait()
```



Tabs

- Similar to tab gadgets on computers
- Tab objects are created using:
  - A list of names
  - A callback function name
- The callback function is passed the index of the selected tab




```
app.set_tabs([u"Tab1", u"Tab2"], tabChange)
```

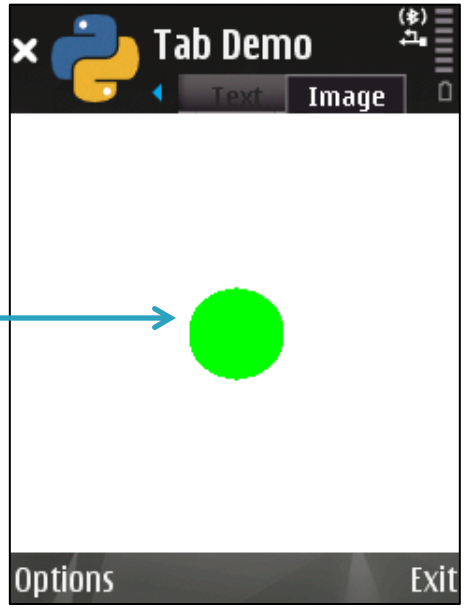
A Less Simple Application

- Adding tabs:

```
def tabChanged(tabIndex):
  global canvasArea, isImage
  # First tab (tab 0) is text
  if (tabIndex == 0):
      isImage = False
      app.body = textArea #display Text object

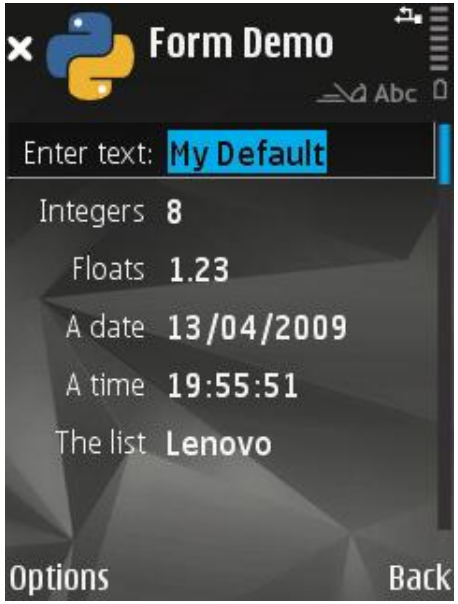
  # Second tab (tab 1) is canvas
  elif (tabIndex == 1):
      isImage = True
      app.body = canvasArea # display Canvas obj
      draw_image(None) #Draw the circle

#Call "tabChanged" if tabs are used
app.set_tabs([u"Text", u"Image"], tabChanged)
```



Forms

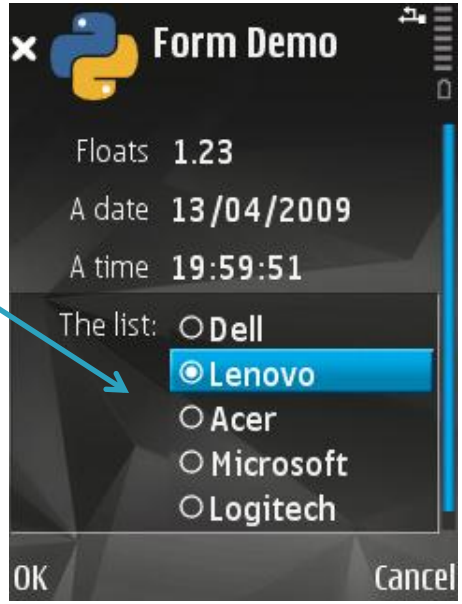
- Forms are similar to dialog boxes



Forms

- Define a list for a combo box

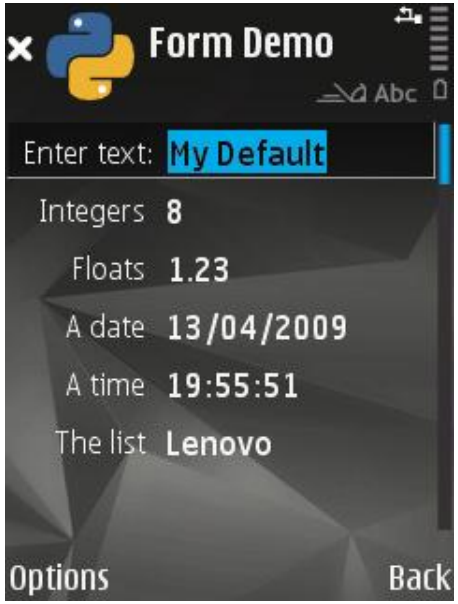
```
# Define a combo list for the form
a_list = [u"Dell", u"Lenovo",
u"Acer", u"Microsoft", u"Logitech"]
```



Forms

- Create a form object

```
# Create the form object
formArea = Form([\
        (u"Enter text", "text", u"My Default"),\
        (u"Integers", "number", 8),\
        (u"Floats", "float", 1.23),\
        (u"A date", "date", time.time()),\
        (u"A time", "time", time.time()),\
        (u"The list", "combo", (a_list, 1))\
        ],FFormEditModeOnly)
```



- Set up a callback for when the form data is saved

```
# the callback for when the form data is saved
formArea.save_hook = save_form_data
```

Forms

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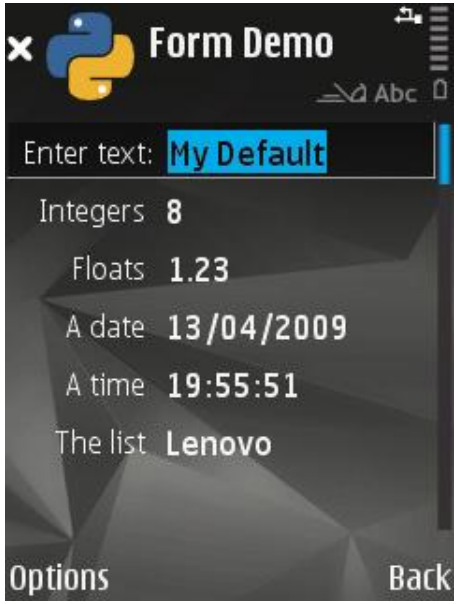
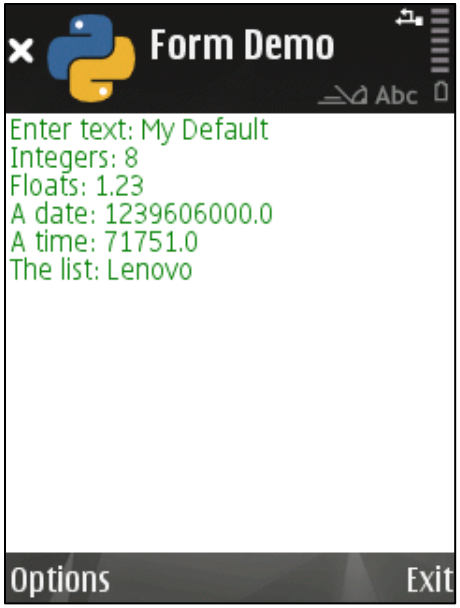


Forms

- Display the saved data




```
# The callback to handle form data when "save" is chosen
def save_form_data(form_data):
   # put the data into the text area
   text_area.clear()

   # use the title from the form, data the extry field
   text_area.add(form_data[0][0] + u": " + form_data[0][2] + u"\n")

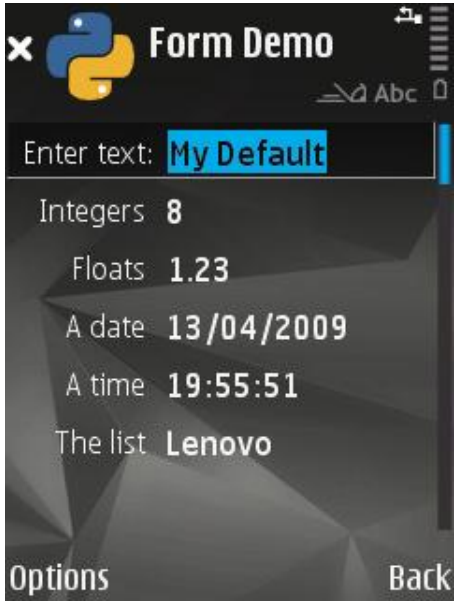
   # the entry field contains an integer, so convert it to a Unicode string
   text_area.add(form_data[1][0] + u": " + unicode(form_data[1][2]) + u"\n")
   text_area.add(form_data[2][0] + u": " + unicode(form_data[2][2]) + u"\n")
   text_area.add(form_data[3][0] + u": " + unicode(form_data[3][2]) + u"\n")
   text_area.add(form_data[4][0] + u": " + unicode(form_data[4][2]) + u"\n")

   # the entry field is a tuple, with the list of items and the index
   new_list, index = form_data[5][2]
   # display the appropriate item from the list returned
   text_area.add(form_data[5][0] + u": " + new_list[index] + u"\n")
```

Forms

- Display the form

```
# display the form and wait for it to exit
formArea.execute()
```



Form Data

- These data objects have the same format:
  - The original form data structure
  - The saved form data structure

```
formArea = Form([\
        (u"Enter text", "text", u"My Default"),\
        (u"Integers", "number", 8),\
        (u"Floats", "float", 1.23),\
        (u"A date", "date", time.time()),\
        (u"A time", "time", time.time()),\
        (u"The list", "combo", (a_list, 1))\
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```

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text_area.add(form_data[2][0] + u": " + unicode(form_data[2][2]) + u"\n")
text_area.add(form_data[3][0] + u": " + unicode(form_data[3][2]) + u"\n")
text_area.add(form_data[4][0] + u": " + unicode(form_data[4][2]) + u"\n")
```

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