

PYTHON FOR S60 (PYS60)

MATOVU RICHARD

Matrich

Email: rkmatrix@gmail.com

Website: <http://www.matrich.net/>

Twitter: <http://twitter.com/matrich/>



SMART PHONES: OPERATING SYSTEMS

○ Symbian

- Runs on most of today's phones and jointly owned by major portion of mobile phone industry
- Many various favours i.e. Nokia Series 60, UIQ, Series 80,

○ Microsoft SmartPhone OS

- Windows Compact Edition and Pocket PC OS
- Windows Mobile

○ Android

- Brings Internet-style innovation and openness to mobile phones

○ iPhone OS

- Runs on iPhone and iPod touch devices

○ Linux OS

- Rare and 'invisible'



SMART PHONES: PROGRAMMING LANGUAGES

- Java Platform, Micro Edition
 - Most used but major sandboxing
- C++ (Symbian)
 - Very steep learning curve
 - Frustrating features
 - Designed for 'serious' developers
- .NET Programming on Mobile Phones
- Open C
- Python on Symbian

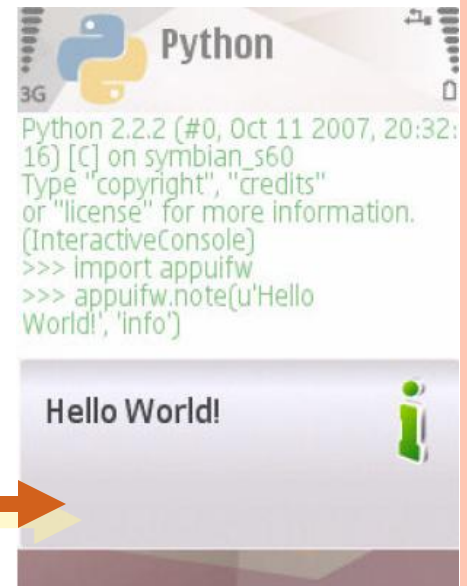


SO WHY PYTHON?

- Cross Platform
- Free and Open Source
- Scripting Language
- Extending and embedding abilities
- Good standard library
- Access to full phone functionality...

IT'S SO EASY

```
import appuifw
appuifw.note(u"Hello World", "info")
```



COMPARISON BETWEEN PYTHON AND JAVA ME



```
import javax.microedition.midlet.*;
import javax.microedition.lcdui.*;

public class HelloWorld extends MIDlet implements CommandListener {
    private Command exitCommand;
    private TextBox tbox;

    public HelloWorld() {
        exitCommand = new Command("Exit", Command.EXIT, 1);
        tbox = new TextBox("Hello world MIDlet", "Hello World!", 25, 0);
        tbox.addCommand(exitCommand);
        tbox.setCommandListener(this);
    }

    protected void startApp() {
        Display.getDisplay(this).setCurrent(tbox);
    }

    protected void pauseApp() {}
    protected void destroyApp(boolean bool) {}

    public void commandAction(Command cmd, Displayable disp) {
        if (cmd == exitCommand) {
            destroyApp(false);
            notifyDestroyed();
        }
    }
}
```

```
import appuifw
appuifw.note(u"Hello World", "info")
```



SO WHICH PYTHON S60 WORKS FOR YOU?

- 1st Edition



- 2nd Edition
FP 1



- 2nd Edition
FP 3



For more details at
<http://croozeus.com/devices.htm>

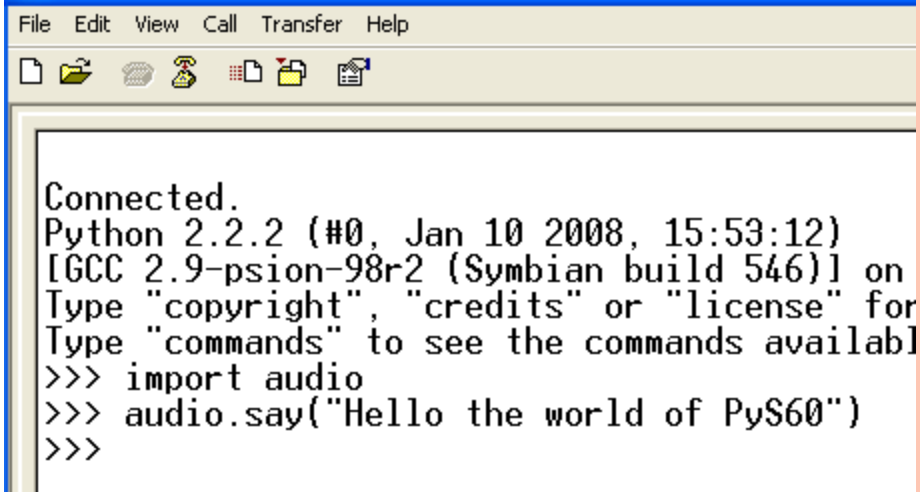
- 3rd Edition
FP 1



TESTING YOUR PYS60 SCRIPTS

○ Install PyS60 on Mobile Phone

- Interactive Console
- Bluetooth Console
 - Benefits of PC while running on the phone



```
File Edit View Call Transfer Help
Connected.
Python 2.2.2 (#0, Jan 10 2008, 15:53:12)
[GCC 2.9-psion-98r2 (Symbian build 546)] on
Type "copyright", "credits" or "license" for
Type "commands" to see the commands availabl
>>> import audio
>>> audio.say("Hello the world of PyS60")
>>>
```

○ Install an emulator

- Test and debug your code on PC
- Though some functionality misses such as camera, GPS, calling, etc.



```
Series 60 2nd Ed. FP3 (debug)
File Tools Help
Python
Python 2.2.2 (#0, Nov 20 2008, 17:17:50) [C] on symbian_s60
Type "copyright", "credits" or "license" for more information.
(InteractiveConsole)
>>> import appuifw
Hello World
```



A QUICK LOOK AT PYTHON

STRINGS

- `"hello"+"world"` `"helloworld"` # concatenation
- `"hello"[0]` `"h"` # indexing
- `len("hello")` `5` # size
- `"e" in "hello"` `1` # search

LISTS

- ordered group of items (or elements)
 - `listOfWords = ["this", "is", "a", "list", "of", "words", "another", "list", "inside", "list"]`
- Same operators as for strings
 - `a+b`, `a*3`, `a[0]`, `a[-1]`, `a[1:]`, `len(a)`
- List Methods
 - `a = range(5)` # `[0,1,2,3,4]`
 - `a.append(5)` # `[0,1,2,3,4,5]`
 - `a.reverse()` # `[4,3,2,1,0]`
 - `a.sort()` # `[0,1,2,3,4]`



PYTHON: INDENTING

○ Control Structures

- Indenting instead of braces

```
/* in C */
for (i = 0; i < 20; i++)
{
    if (i%3 == 0) {
        printf("%d is divisible by 3\n", i);
        if (i%5 == 0)
        {
            printf(" and also divisible by 5\n");
        }
    }
}
```

```
#          in Python

for i in range(20):
    if i%3 == 0:
        print str(i) + "is divisible by 3"
    if i%5 == 0:
        print " and also divisible by 5"
```



PYTHON: FUNCTIONS AND MODULES

○ Functions

- greetings.py

○ Modules

- import appuifw, e32

```
import appuifw

def greetings():
    # this is an example function
    name = appuifw.query(u'What is your name?', 'text')
    appuifw.note(u'Good Morning '+name, 'conf')

greetings()
```

Exercise: Write a function that allows the user to enter his year of birth and displays his age?



THE APPUIFW MODULE

○ Queries

```
import appuifw
```

```
appuifw.query(u"Enter a word", "text", u"Mpadtm")
```

```
appuifw.query(u"Enter a number", "number")
```

```
appuifw.query(u"Enter a time", "time")
```

```
appuifw.query(u"Enter a password", "code")
```

```
appuifw.query(u"Would you like to play again", "query")
```

`appuifw.note(label, type[,initial value])`

text

Python
Copyright (C) 1995-2001 Corporation for National Research Initiatives. All Rights Reserved.
Copyright (C) 1991-1995 Stichting Mathematisch Centrum, Amsterdam. All Rights Reserved.
Enter a word
Mpadtm
OK Cancel

number

Python
Copyright (C) 1995-2001 Corporation for National Research Initiatives. All Rights Reserved.
Copyright (C) 1991-1995 Stichting Mathematisch Centrum, Amsterdam. All Rights Reserved.
Enter a number
123
OK Cancel

time

Python
Copyright (C) 1995-2001 Corporation for National Research Initiatives. All Rights Reserved.
Copyright (C) 1991-1995 Stichting Mathematisch Centrum, Amsterdam. All Rights Reserved.
Enter a time
02:49
OK Cancel

code

Python
Copyright (C) 1995-2001 Corporation for National Research Initiatives. All Rights Reserved.
Copyright (C) 1991-1995 Stichting Mathematisch Centrum, Amsterdam. All Rights Reserved.
Enter a password

OK Cancel

query

Python
Copyright (C) 1995-2001 Corporation for National Research Initiatives. All Rights Reserved.
Copyright (C) 1991-1995 Stichting Mathematisch Centrum, Amsterdam. All Rights Reserved.
Would you like to play again?
OK Cancel



THE APPUIFW MODULE

○ Notifications

`appuifw.note(text[,type[,global]])`

```
import appuifw
```

```
appuifw.note(u"Almost finished...")
```

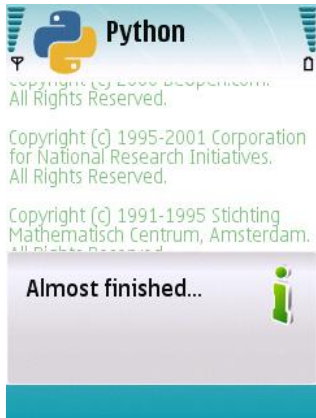
```
appuifw.note(u"Download complete", "conf")
```

```
appuifw.note(u"Invalid syntax", "error")
```

info/default

conf

error



Exercise: Write an application that

- allows first name and last name and displays them
- allows user to input name, course, year and then outputs those details as notifications.



A LOOK AT OTHER MODULES

- Text / SMS Module:
 - messaging
 - `messaging.sms_send(number, txt)`
- Telephone module:
 - telephone
 - `telephone.dial(number)`
 - `telephone.hang_up()`

Exercise: Write a program that inputs a number and text from the user and then sends the text entered via SMS to that inputted number.



RESOURCES & LINKS

- PyS60 Library Reference
http://surfnet.dl.sourceforge.net/project/pys60/pys60/1.4.0/PythonForS60_1_4_0_doc.pdf
- <http://wiki.opensource.nokia.com/projects/PyS60>
- Nokia Forum
<http://forum.nokia.com/python>
- PyS60 Developer Forum
<http://discussion.forum.nokia.com/>
- Coozeus
<http://www.croozeus.com/tutorials.htm>
- Python for Series 60 tutorial
<http://www.mobilenin.com/pys60/menu.htm>
- Dive Into Python
<http://www.diveintopython.org/>

