

Creative Computing

Warm-up

- What's different between the programs we have been writing and software you use every day?
- What of the things we have learned do you imagine transfers to large scale software?
Doesn't?

Executables

- “Binaries” -- can be run directly
- Makes system calls to operating system
- Tied to specific operating systems

Python script to exe

- Not every computer has a Python interpreter
- exe can be run by all Windows computers
- Conversion requires building and including some of the nasty bits Python hides
 - How to read and interpret key presses
 - How to interact with the monitor
 - How to look like a Windows application

Requires a utility

- <http://www.py2exe.org>
- Has some python extensions used to convert

Need a setup script

- Generally saved as `setup.py`
- Tells Python what to build
- Can you understand what each statement does?

```
from distutils.core import setup
import py2exe

setup(console=['hello.py'])
```

py2exe uses setup.py

- Type the following command at the command prompt

```
C:\AwesomeClass>python setup.py py2exe
```

Output

- Lots of nasty stuff gets spit out
- Only really useful if there are problems
- Tells you of dependencies
- Two directories created: build and dist
 - Build is scratch space
 - Dist is your distributable files!

Command prompt?!

- Yes, it's archaic
- It's often more efficient than a GUI!
- Much, much easier to program
- Fine for 'programmer-only' tools

```
mars@marsmain ~ $ pwd
/home/mars
mars@marsmain ~ $ cd /usr/portage/app-shells/bash
mars@marsmain /usr/portage/app-shells/bash $ ls -al
total 130
drwxr-xr-x  3 portage portage 1024 Jul 25 10:06 .
drwxr-xr-x 33 portage portage 1024 Aug  7 22:39 ..
-rw-r--r--  1 root  root   35808 Jul 25 10:06 ChangeLog
-rw-r--r--  1 root  root   27002 Jul 25 10:06 Manifest
-rw-r--r--  1 portage portage  4645 Mar 23 21:37 bash-3.1_p17.ebuild
-rw-r--r--  1 portage portage  5977 Mar 23 21:37 bash-3.2_p39.ebuild
-rw-r--r--  1 portage portage  6151 Apr  5 14:37 bash-3.2_p48-r1.ebuild
-rw-r--r--  1 portage portage  5988 Mar 23 21:37 bash-3.2_p48.ebuild
-rw-r--r--  1 portage portage  5643 Apr  5 14:37 bash-4.0_p10-r1.ebuild
-rw-r--r--  1 portage portage  6230 Apr  5 14:37 bash-4.0_p10.ebuild
-rw-r--r--  1 portage portage  5648 Apr 14 05:52 bash-4.0_p17-r1.ebuild
-rw-r--r--  1 portage portage  5532 Apr  8 10:21 bash-4.0_p17.ebuild
-rw-r--r--  1 portage portage  5660 May 30 03:35 bash-4.0_p24.ebuild
-rw-r--r--  1 root  root   5660 Jul 25 09:43 bash-4.0_p28.ebuild
drwxr-xr-x  2 portage portage  2048 May 30 03:35 files
```

Compiling and linking

- Compiling translates into “computer speak”
- Linking brings in operating system libraries

Microsoft puzzle!

- There is a room with a closed door and three light bulbs. Outside the room there are three switches, connected to the bulbs. You may manipulate the switches as you wish, but once you open the door you can't change them.

Identify each switch with its bulb.

Interview Question

- 100 closed lockers
- Open all 100
- Close every 2nd locker
- Go through every every 3rd; close if open or open if closed. Then 4th, 5th... 100th
- How many are open at the end?