R: Running Python

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Credits

For the LaTeX source of this sheet, and for more information on LiveWires and on this course, see the LiveWires web site at http://www.livewires.org.uk/python/

Introduction

This sheet tells you:

- How to get Python running on your computer;
- How to type in commands and have the machine obey them;
- How to write programs;
- How to save programs to disc, load them again, and run them.

It's pretty much essential reading.

Getting Python started

On a LiveWires 'Raspberry Pi' computer

The standard computers we now use on LiveWires are tiny, cheap devices called Raspberry Pi. These use an 'SD-card' for their storage so we can provide a standard environment on something the size of a rather thick stamp! If you're using one of these, and you have logged in to the "lwuser" account, it will present you a little window asking for your name and whether you are doing beginners or games. Answering "beginners" will produce a Python shell.

If you've already done the beginners and want to do "games", that option will present a command shell (called an 'xterm') and an editor with your Python programs open.

Otherwise...

On other properly set-up machines, there is probably an icon on the desktop, or on the quick launch bar by the "Start" button, that looks like a green snake. Or perhaps a very stylized blue and yellow snake. That icon will launch the Python shell.

If even that fails, for example if you're now at home and have just installed Python and the LiveWires library on a PC...

On a computer running Windows

1. Click with the mouse button on the "Start" button at the bottom left of your screen. That will bring up a menu.

2. One of the items on the menu should be "Programs". Click on that. This will produce another menu to the right of the first one.
3. One of the items on this menu should be "Python *n.n*". Click on that, producing yet another level of menu.
4. One of the things in there should be "IDLE (Python GUI)". Click on that.

On a computer running Unix

On many modern Unix-like machines there is a "start menu" like on Windows. If not...

1. Ask a leader to get you a "shell window".
2. Type into it "`idle`".

After doing whichever of these is appropriate for the computer you're using, you should have a window labelled "Python Shell". This is where you should type commands.

Prompts and commands

When the machine says >>> to you, it's ready for you to give it orders. At the end of each line you type, remember to press the `Enter` key (it may not be labelled "Enter"; if you don't know what key I'm talking about, ask a leader).

This >>> thing is called a "prompt".

Sometimes, when you've typed something in, Python will give you a slightly different prompt: `...` instead of >>>. This means "You didn't finish typing something in, so I'm waiting for more". Sometimes this is because you started a multi-line statement like `for` or `if`. If you have no idea why it's doing it, try the following.

1. Hit `Enter` without typing anything else. If that doesn't work ...
2. Hold down the `Control` key, and while you're holding it press the `C` key. (More briefly: "type Control-C".) This will probably produce a complaining error message, but get you back to an ordinary prompt.

Programs

Typing in commands one at a time is a very convenient thing to be able to do. But if you're trying to do something more complicated, you want to have it stored somewhere so that you can make small changes and do it all again.

In your Python shell window, use the mouse to select "File" at the top left of the window. That will produce a menu. Choose "New window".

That ought to create a new window, a bit like the Python shell window but labelled "Untitled" and with no prompt in it. You can enter a Python program into there.

Saving a program

When you have something you want to keep in one of these windows, go to the window's "File" menu, and this time select "Save As". That should produce a window labelled "Save as" and a lot of funny stuff in it. If we've set things up right, most of that window should be empty, or contain programs you've already saved. Check with a leader the first time you try this, to make sure it's set up correctly. (If it isn't, all sorts of Bad Things could happen...)

Once you've checked that you're in the right place, click in the box to the right of the words "File name" and type in a name for your program. You should type something that ends with `.py` like `circles.py` or `game.py` . That makes it easier for the computer to know in the future that it's a **Py**thon program.

There's now a copy of your program on the computer's disc. It will stay there even if you turn the computer off.

If you make changes to your program, and want to update the saved file (replacing whatever you saved before with what's in the program now), choose "Save" from the "File" menu.

If you want to change the program and *not* wipe out the older version of it, choose "Save As" again and enter a different name.

You can always see what name your program will get when it's saved by looking at the title bar of the window.

Loading a program

If you've saved a program and you want to look at it again (to make changes, or just to run it), choose "Open" from the "File" menu. You'll get a window very like the "Save As" one. Double-click on the file you want to load. If you can't find the file you want to load, ask a leader.

Running a program

So, you have a program in a window, and you want to try it out to see whether it actually works or not. In other words, you want to "run" the program.

Use the mouse to select the "Run" menu (at the top of the window). One of the items on that menu is called "Run module"; click on that. That will run your program.

Running games

IDLE (the editor we used on the beginners course) and the games module don't get on very well together. You may find IDLE freezes or crashes when trying to run games. The best way around this is to use a different editor, or to edit your program with IDLE then save the program and run it yourself, outside IDLE.

For the standard LiveWires Raspberry Pi, we have installed an editor called "SCiTE", which works well. One nice thing is that you can run your program from there.

To run a program from SCiTE, you simply press the "F5" key. A small window opens with the progress so you will see any errors or text output your program produces.

To run the program yourself, under Windows you can find the file you've just saved in Explorer and double click on the icon of the file. Under Unix, type `python mygame.py` replacing `mygame.py` with the name of your saved file.

There's a problem with running this way from Windows. If your program crashses and gives an error message, you won't see it as Windows closes the Python window as soon as the program has finished. If you want to see the error message, do the following:

1. Click with the mouse button on the "Start" button at the bottom left of your screen. That will bring up a menu.
2. One of the items on the menu should be "Programs". Click on that. This will produce another menu to the right of the first one.
3. One of the items on this menu should be "MS DOS prompt". Click on that. A box should appear on the screen with something like `C:\windows` in it.
4. Type `cd`, a space, and the name of the directory containing your saved file. The prompt on the left side of the screen should change to this name.
5. Type `python mygame.py`, replacing `mygame.py` with the name of your saved file. On some machines you may need to type `c:\python24\python mygame.py` or similar.