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From a Python script to a portable Mac application with py2app

November 13, 2014 Marina Mele

Do you want to share a Python script to a friend that doesn't have Python installed? In this post you'll learn how 😊

With the py2app package you can compile a Python script and create a portable Mac application. If you're using windows, you can check [py2exe](#).

First of all, we need to install the [py2app](#) python package. If you have a [virtual environment](#), activate it now 😊

```
$ pip install -U py2app
```

Next, we need to create a [setup.py](#) file for our project. In your working directory (the one that contains your Python script), type:

```
$ py2applet --make-setup MyApplication.py
```

This will create the file [setup.py](#), which is responsible to tell setuptools how to build your application.

If you edit this file, you should see something like:

```
"""
This is a setup.py script generated by py2applet

Usage:
    python setup.py py2app
"""

from setuptools import setup

APP = ['MyApplication.py']
DATA_FILES = []
OPTIONS = {'argv_emulation': True}

setup(
    app=APP,
    data_files=DATA_FILES,
    options={'py2app': OPTIONS},
    setup_requires=['py2app'],
)
```

You should put the name of your starting python script (the one your run to start) in the [APP](#) variable.

```
APP = ['application_name.py']
```

Also, if your application uses some data files, like a json or a txt file, you should include it in [DATA_FILES](#). For example:

```
DATA_FILES = ['myfile.json', 'myfile.txt']
```

Now, we will compile our project in [Alias](#) mode. This instructs [py2app](#) to build an application that uses the source data files in-place. Note that this means that the application will not be portable to other machines (we'll do that next!).

```
$ python setup.py py2app -A
```

You will have two new folders inside your working directory: [build](#) and [dist](#). The first one is used for building your app (you don't have to touch it) and the second one contains your application bundle.

From the working directory, you can run your app using:

```
$ ./dist/application_name.app/Contents/MacOS/application_name
```

or you can find your application in Finder and open it from there (you'll find it in [dist/application_name](#)).

Once your application is running, we are ready to create the stand alone version. First remove the build and dist folders with:

```
$ rm -rf build dist
```

and next, build your application:

```
$ python setup.py py2app
```

During the building process, I encounter some problems with the ModuleGraph package (remember that this package is installed at the same time as py2app).

If you get one of the following errors:

```
AttributeError: 'ModuleGraph' object has no attribute 'scan_code'
AttributeError: 'ModuleGraph' object has no attribute 'load_module'
```

Edit the file where this error ocured (for me, it was inside the virtual environment folder, named [myenv](#)), at:

```
myenv/lib/python2.7/site-packages/py2app/recipes/virtualenv.py
```

Look for the functions [scan_code](#) or [load_module](#) and add it an underscore before them, [_scan_code](#) and [_load_module](#). Build again your application, it should work now 😊

Next, try to run your app, and see if it works.

If you get errors with external packages, like certificates with [httplib2](#) or [requests](#), missing files in [selenium webdriver](#), or import errors that normally work, you'll have to fully include these packages in your application. Edit again the [setup.py](#) file and add the package that raised the error:

```
OPTIONS = {
    'argv_emulation': True,
    'packages': ['httplib2', 'requests', 'selenium']
}
```

After saving the file, remove again the [build](#) and [dist](#) directories, build your application and try to run it. Maybe another package failed? Try to include it in the setup file and start over.

However, not all the errors you get will be solved like this, sorry...!

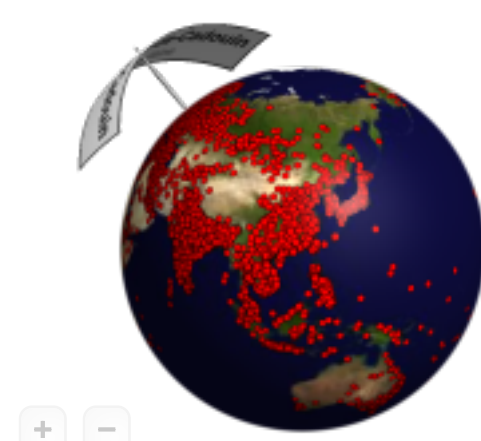
Once you're application runs correctly, and you're happy with the results, you can share it by copying the application bundle [dist/application_name](#).

That's all! Hope it was useful!

And please, don't forget to share it with your friends, they might find it useful too 😊

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