

Development Environment Manual

Our application used Python 2.7.8 as our language, Kivy framework for our GUI and Buildozer to package our mobile application.

For Linux Users:

Step 1: Download and Install Python 2.7.8

Package Information:

Download (HTTP):

<https://www.python.org/ftp/python/2.7.13/Python-2.7.13.tar.xz>

Download MD5 sum: 53b43534153bb2a0363f08bae8b9d99

Download Size: 12 MB

Estimated disk space required: 253 MB (additional 18 MB for tests)

Estimated build time: 0.8 SBU (additional 4.3 SBU for tests)

Installation of Python 2:

Install Python 2 by running the following commands:

```
./configure --prefix=/usr      \  
            --enable-shared    \  
            --with-system-expat \  
            --with-system-ffi  \  
            --with-ensurepip=yes \  
            --enable-unicode=ucs4 &&  
  
make
```

To test the results, issue: **make -k test**. One test fails for unknown reasons.

Now, as the *root* user:

```
make install &&  
chmod -v 755 /usr/lib/libpython2.7.so.1.0
```

Source: <http://www.linuxfromscratch.org/blfs/view/svn/general/python2.html>

Step 2: Download and Install Kivy Framework

1. After downloading python and pip, kivy can be installed using the command line.

```
python -m pip install --upgrade pip wheel setuptools
```

2. Install dependencies

```
python -m pip install docutils pygments pypiwin32 kivy.deps.sdl2
kivy.deps.glew
python -m pip install kivy.deps.gstreamer
```

3. Install kivy

```
python -m pip install -kivy
```

Step 3: Download and Install Buildozer

Buildozer itself doesn't depend on any library, and works on Python 2.7 and ≥ 3.3 . Depending the platform you want to target, you might need more tools installed. Buildozer tries to give you hints or retries to install few things for you, but it doesn't cover every situation

Install the buildozer project by typing this on the command line:

```
pip install --upgrade buildozer
```

If you target Android, you must install at least Cython, few build libs, and a Java SDK. Some binaries of the Android SDK are still in 32 bits, so you need few 32 bits libraries available:

Android on Ubuntu 16.04 (64bit)

```
sudo pip install --upgrade cython==0.21
sudo dpkg --add-architecture i386
sudo apt-get update
sudo apt-get install build-essential ccache git libncurses5:i386
libstdc++6:i386 libgtk2.0-0:i386 libpangox-1.0-0:i386 libpangoxft-1.0-0:i386
libidn11:i386 python2.7 python2.7-dev openjdk-8-jdk unzip zlib1g-dev
zlib1g:i386
```

Android on Ubuntu 15.10 (64bit)

```
sudo pip install --upgrade cython==0.21
sudo dpkg --add-architecture i386
sudo apt-get update
sudo apt-get install build-essential ccache git libncurses5:i386
libstdc++6:i386 libgtk2.0-0:i386 libpangox-1.0-0:i386 libpangoxft-1.0-0:i386
libidn11:i386 python2.7 python2.7-dev openjdk-7-jdk unzip zlib1g-dev
zlib1g:i386
```

Android on Ubuntu 14.10 (64bit)

```
sudo pip install --upgrade cython==0.21
sudo dpkg --add-architecture i386
sudo apt-get update
sudo apt-get install build-essential ccache git lib32stdc++6 lib32z1
lib32z1-dev python2.7 python2.7-dev openjdk-7-jdk unzip zlib1g-dev zlib1g:i386
```

Android on Ubuntu 13.10 (64bit)

```
sudo pip install --upgrade cython==0.21
sudo dpkg --add-architecture i386
sudo apt-get update
sudo apt-get install build-essential ccache git lib32z1 lib32bz2-1.0
libncurses5:i386 libstdc++6:i386 python2.7 python2.7-dev openjdk-7-jdk unzip
zlib1g-dev zlib1g:i386
```

Android on Ubuntu 12.04 (64bit)

```
sudo pip install --upgrade cython==0.21
sudo apt-get install build-essential ccache git lib32z1 lib32bz2-1.0
libncurses5:i386 libstdc++6:i386 python2.7 python2.7-dev openjdk-7-jdk unzip
zlib1g-dev zlib1g:i386
```

Source: <https://buildozer.readthedocs.io/en/latest/installation.html>

Step 4: Compiling the file for Android Package

Make sure that the name of the main file in the program is main.py and that the included .kv file is on the same directory as that of main.py being compiled. On command line, go to the directory of the program to be compiled.

On the command line type:

```
buildozer init
```

A buildozer.spec file should be created on the directory. Open the buildozer.spec and customize it the way you want (you may edit the orientation, icons, etc). For more details read: <http://buildozer.readthedocs.io/en/latest/specifications.html>

On the command line type:

```
buildozer -v android debug
```

A bin folder will be created in the directory. Open the bin folder and the .apk file can be found there.

For Windows Users (buildozer not available):

Windows is solely for developing the source code. Building the code to an apk must be done with a linux machine.

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Package Information:

Download (HTTP):

<https://www.python.org/download/releases/2.7.8/>

Step 2: Download and Install Kivy Framework

2. After downloading python and pip, kivy can be installed using the command line.

```
python -m pip install --upgrade pip wheel setuptools
```

2. Install dependencies

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python -m pip install docutils pygments pypiwin32 kivy.deps.sdl2  
kivy.deps.glew  
python -m pip install kivy.deps.gstreamer
```

3. Install kivy

```
python -m pip install -kivy
```

Note: Most of the installation instructions here were collated from the Installation Manuals of the Development Environment that was used; you may visit the links provided on this document for more details.