```
!pip install buildozer
```

```
Collecting buildozer
    Downloading https://files.pythonhosted.org/packages/ac/62/a53738c604ebc86d3b62f654c3169e8c0b4178a066d7398cf53377a5cb3b/buildozer-1.2.0-py3-none-any.whl (7
        |████████████████████████████████| 81kB 3.8MB/s
Collecting virtualenv
    Downloading https://files.pythonhosted.org/packages/80/59/f8815ff01ac7eff0f628c454f2d2b4cace19b70ccc9dcdbc61c3eb7f599d/virtualenv-20.4.6-py2.py3-none-any.
        |████████████████████████████████| 7.2MB 8.9MB/s
Collecting sh
    Downloading https://files.pythonhosted.org/packages/7a/c3/0836b7b975d09428d90f926dc1f86e2d76d721cf79bd6659838761c35f85/sh-1.14.2-py2.py3-none-any.whl (40kl
        |████████████████████████████████| 40kB 4.1MB/s
Requirement already satisfied: pexpect in /usr/local/lib/python3.7/dist-packages (from buildozer) (4.8.0)
Requirement already satisfied: six<2,>=1.9.0 in /usr/local/lib/python3.7/dist-packages (from virtualenv->buildozer) (1.15.0)
Requirement already satisfied: importlib-metadata>=0.12; python_version < "3.8" in /usr/local/lib/python3.7/dist-packages (from virtualenv->buildozer) (4.0.
Requirement already satisfied: appdirs<2,>=1.4.3 in /usr/local/lib/python3.7/dist-packages (from virtualenv->buildozer) (1.4.4)
Collecting distlib<1,>=0.3.1
    Downloading https://files.pythonhosted.org/packages/f5/0a/490fa011d699bb5a5f3a0cf57de82237f52a6db9d40f33c53b2736c9a1f9/distlib-0.3.1-py2.py3-none-any.whl
        |████████████████████████████████| 337kB 33.4MB/s
Requirement already satisfied: filelock<4,>=3.0.0 in /usr/local/lib/python3.7/dist-packages (from virtualenv->buildozer) (3.0.12)
Requirement already satisfied: ptyprocess>=0.5 in /usr/local/lib/python3.7/dist-packages (from pexpect->buildozer) (0.7.0)
Requirement already satisfied: zipp>=0.5 in /usr/local/lib/python3.7/dist-packages (from importlib-metadata>=0.12; python_version < "3.8"->virtualenv->build
Requirement already satisfied: typing-extensions>=3.6.4; python_version < "3.8" in /usr/local/lib/python3.7/dist-packages (from importlib-metadata>=0.12; py
Installing collected packages: distlib, virtualenv, sh, buildozer
Successfully installed buildozer-1.2.0 distlib-0.3.1 sh-1.14.2 virtualenv-20.4.6
```

```
!sudo apt-get install -y \
    python3-pip \
    build-essential \
    git \
    python3 \
    python3-dev \
    ffmpeg \
    libsdl2-dev \
    libsdl2-image-dev \
    libsdl2-mixer-dev \
    libsdl2-ttf-dev \
    libportmidi-dev \
    libswscale-dev \
    libavformat-dev \
    libavcodec-dev \
    zlib1g-dev
```

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version (12.4ubuntu1).
zlib1g-dev is already the newest version (1:1.2.11.dfsg-0ubuntu2).
zlib1g-dev set to manually installed.
git is already the newest version (1:2.17.1-1ubuntu0.8).
python3 is already the newest version (3.6.7-1~18.04).
python3 set to manually installed.
python3-dev is already the newest version (3.6.7-1~18.04).
python3-dev set to manually installed.
ffmpeg is already the newest version (7:3.4.8-0ubuntu0.2).
libavcodec-dev is already the newest version (7:3.4.8-0ubuntu0.2).
libavcodec-dev set to manually installed.
libavformat-dev is already the newest version (7:3.4.8-0ubuntu0.2).
libavformat-dev set to manually installed.
libswscale-dev is already the newest version (7:3.4.8-0ubuntu0.2).
libswscale-dev set to manually installed.
The following package was automatically installed and is no longer required:
  libnvidia-common-460
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  fluidr3mono-gm-soundfont gir1.2-ibus-1.0 libcapnp-0.6.1 libdbus-1-dev
  libfluidsynth1 libibus-1.0-5 libibus-1.0-dev libmad0 libmirclient-dev
  libmirclient9 libmircommon-dev libmircommon7 libmircookie-dev libmircookie2
  libmircore-dev libmircore1 libmirprotobuf3 libmodplug1 libportmidi0
  libprotobuf-dev libprotobuf-lite10 libpulse-dev libpulse-mainloop-glib0
  libsdl2-image-2.0-0 libsdl2-mixer-2.0-0 libsdl2-ttf-2.0-0 libsndio-dev
  libudev-dev libxcursor-dev libxinerama-dev libxkbcommon-dev libxrandr-dev
  libxv-dev python-pip-whl python3-asn1crypto python3-cffi-backend
  python3-crypto python3-cryptography python3-idna python3-keyring
  python3-keyrings.alt python3-pkg-resources python3-secretstorage
  python3-setuptools python3-six python3-wheel python3-xdg x11proto-randr-dev
  x11proto-xinerama-dev
Suggested packages:
  python-crypto-doc python-cryptography-doc python3-cryptography-vectors
  gnome-keyring libkf5wallet-bin gir1.2-gnomekeyring-1.0
  python-secretstorage-doc python-setuptools-doc
The following NEW packages will be installed:
  fluidr3mono-gm-soundfont gir1.2-ibus-1.0 libcapnp-0.6.1 libdbus-1-dev
  libfluidsynth1 libibus-1.0-5 libibus-1.0-dev libmad0 libmirclient-dev
  libmirclient9 libmircommon-dev libmircommon7 libmircookie-dev libmircookie2
  libmircore-dev libmircore1 libmirprotobuf3 libmodplug1 libportmidi-dev
  libportmidi0 libprotobuf-dev libprotobuf-lite10 libpulse-dev
  libpulse-mainloop-glib0 libsdl2-dev libsdl2-image-2.0-0 libsdl2-image-dev
  libsdl2-mixer-2.0-0 libsdl2-mixer-dev libsdl2-ttf-2.0-0 libsdl2-ttf-dev
  libsndio-dev libudev-dev libxcursor-dev libxinerama-dev libxkbcommon-dev
  libxrandr-dev libxv-dev python-pip-whl python3-asn1crypto
  python3-cffi-backend python3-crypto python3-cryptography python3-idna
  python3-keyring python3-keyrings.alt python3-pip python3-pkg-resources
  python3-secretstorage python3-setuptools python3-six python3-wheel
```

```
      python3-xdg x11proto-randr-dev x11proto-xinerama-dev
0 upgraded, 55 newly installed, 0 to remove and 34 not upgraded.
Need to get 26.1 MB of archives.
After this operation, 59.3 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu bionic/universe amd64 fluidr3mono-gm-soundfont all 2.315-4 [18.7 MB]
Get:2 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libibus-1.0-5 amd64 1.5.17-3ubuntu5.3 [133 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 gir1.2-ibus-1.0 amd64 1.5.17-3ubuntu5.3 [66.5 kB]
```

```
[ ]  !sudo apt-get install -y \
         libgstreamer1.0 \
         gstreamer1.0-plugins-base \
         gstreamer1.0-plugins-good
```

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
Note, selecting 'libgstreamer1.0-dev' for regex 'libgstreamer1.0'
Note, selecting 'libgstreamer1.0-0-dbg' for regex 'libgstreamer1.0'
Note, selecting 'libgstreamer1.0-0' for regex 'libgstreamer1.0'
The following package was automatically installed and is no longer required:
  libnvidia-common-460
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  autoconf automake autopoint autotools-dev debhelper dh-autoreconf
  dh-strip-nondeterminism file gettext gettext-base gir1.2-gstreamer-1.0
  gstreamer1.0-x intltool-debian libaa1 libarchive-cpio-perl
  libarchive-zip-perl libcap2-bin libcdparanoia0 libdv4
  libfile-stripnondeterminism-perl libgpm2 libgstreamer-plugins-base1.0-0
  libgstreamer-plugins-good1.0-0 libmagic-mgc libmagic1 libmail-sendmail-perl
  liborc-0.4-0 libpam-cap libshout3 libsigsegv2 libsys-hostname-long-perl
  libtag1v5 libtag1v5-vanilla libtimedate-perl libtool libv4l-0 libv4lconvert0
  libvisual-0.4-0 m4 po-debconf
Suggested packages:
  autoconf-archive gnu-standards autoconf-doc dh-make dwz gettext-doc
  libasprintf-dev libgettextpo-dev gvfs libdv-bin oss-compat gpm
  libvisual-0.4-plugins gstreamer1.0-tools gstreamer1.0-doc libtool-doc
  gcj-jdk m4-doc libmail-box-perl
The following NEW packages will be installed:
  autoconf automake autopoint autotools-dev debhelper dh-autoreconf
  dh-strip-nondeterminism file gettext gettext-base gir1.2-gstreamer-1.0
  gstreamer1.0-plugins-base gstreamer1.0-plugins-good gstreamer1.0-x
  intltool-debian libaa1 libarchive-cpio-perl libarchive-zip-perl libcap2-bin
  libcdparanoia0 libdv4 libfile-stripnondeterminism-perl libgpm2
  libgstreamer-plugins-base1.0-0 libgstreamer-plugins-good1.0-0
  libgstreamer1.0-0 libgstreamer1.0-0-dbg libgstreamer1.0-dev libmagic-mgc
  libmagic1 libmail-sendmail-perl liborc-0.4-0 libpam-cap libshout3
  libsigsegv2 libsys-hostname-long-perl libtag1v5 libtag1v5-vanilla
  libtimedate-perl libtool libv4l-0 libv4lconvert0 libvisual-0.4-0 m4
  po-debconf
0 upgraded, 45 newly installed, 0 to remove and 34 not upgraded.
Need to get 12.8 MB of archives.
After this operation, 50.7 MB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libmagic-mgc amd64 1:5.32-2ubuntu0.4 [184 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libmagic1 amd64 1:5.32-2ubuntu0.4 [68.6 kB]
Get:3 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 file amd64 1:5.32-2ubuntu0.4 [22.1 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic/main amd64 libcap2-bin amd64 1:2.25-1.2 [20.6 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic/main amd64 libpam-cap amd64 1:2.25-1.2 [7,268 B]
Get:6 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 gettext-base amd64 0.19.8.1-6ubuntu0.3 [113 kB]
Get:7 http://archive.ubuntu.com/ubuntu bionic/main amd64 libsigsegv2 amd64 2.12-1 [14.7 kB]
Get:8 http://archive.ubuntu.com/ubuntu bionic/main amd64 m4 amd64 1.4.18-1 [197 kB]
Get:9 http://archive.ubuntu.com/ubuntu bionic/main amd64 autoconf all 2.69-11 [322 kB]
Get:10 http://archive.ubuntu.com/ubuntu bionic/main amd64 autotools-dev all 20180224.1 [39.6 kB]
Get:11 http://archive.ubuntu.com/ubuntu bionic/main amd64 automake all 1:1.15.1-3ubuntu2 [509 kB]
Get:12 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 autopoint all 0.19.8.1-6ubuntu0.3 [426 kB]
Get:13 http://archive.ubuntu.com/ubuntu bionic/main amd64 libtool all 2.4.6-2 [194 kB]
Get:14 http://archive.ubuntu.com/ubuntu bionic/main amd64 dh-autoreconf all 17 [15.8 kB]
Get:15 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libarchive-zip-perl all 1.60-1ubuntu0.1 [84.6 kB]
Get:16 http://archive.ubuntu.com/ubuntu bionic/main amd64 libfile-stripnondeterminism-perl all 0.040-1.1~build1 [13.8 kB]
Get:17 http://archive.ubuntu.com/ubuntu bionic/main amd64 libtimedate-perl all 2.3000-2 [37.5 kB]
Get:18 http://archive.ubuntu.com/ubuntu bionic/main amd64 dh-strip-nondeterminism all 0.040-1.1~build1 [5,208 B]
Get:19 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 gettext amd64 0.19.8.1-6ubuntu0.3 [1,293 kB]
```

```
[ ]  !sudo apt-get install build-essential libsqlite3-dev sqlite3 bzip2 libbz2-dev zlib1g-dev libssl-dev openssl libgdbm-dev libgdbm-compat-dev liblzma-dev libr
```

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
build-essential is already the newest version (12.4ubuntu1).
libffi6 is already the newest version (3.2.1-8).
liblzma-dev is already the newest version (5.2.2-1.3).
liblzma-dev set to manually installed.
libreadline-dev is already the newest version (7.0-3).
libreadline-dev set to manually installed.
zlib1g-dev is already the newest version (1:1.2.11.dfsg-0ubuntu2).
bzip2 is already the newest version (1.0.6-8.1ubuntu0.2).
libbz2-dev is already the newest version (1.0.6-8.1ubuntu0.2).
libbz2-dev set to manually installed.
libsqlite3-dev is already the newest version (3.22.0-1ubuntu0.4).
libsqlite3-dev set to manually installed.
libssl-dev is already the newest version (1.1.1-1ubuntu2.1~18.04.9).
uuid-dev is already the newest version (2.31.1-0.4ubuntu3.7).
uuid-dev set to manually installed.
The following package was automatically installed and is no longer required:
  libnvidia-common-460
Use 'sudo apt autoremove' to remove it.
Suggested packages:
  ncurses-doc sqlite3-doc
The following NEW packages will be installed:
  libffi-dev libgdbm-compat-dev libgdbm-dev libncursesw5-dev sqlite3
The following packages will be upgraded:
  openssl
```

```
1 upgraded, 5 newly installed, 0 to remove and 33 not upgraded.
Need to get 1,804 kB of archives.
After this operation, 4,211 kB of additional disk space will be used.
Get:1 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 openssl amd64 1.1.1-1ubuntu2.1~18.04.9 [614 kB]
Get:2 http://archive.ubuntu.com/ubuntu bionic/main amd64 libgdbm-compat-dev amd64 1.14.1-6 [3,360 B]
Get:3 http://archive.ubuntu.com/ubuntu bionic/main amd64 libgdbm-dev amd64 1.14.1-6 [79.3 kB]
Get:4 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 libncursesw5-dev amd64 6.1-1ubuntu1.18.04 [199 kB]
Get:5 http://archive.ubuntu.com/ubuntu bionic-updates/main amd64 sqlite3 amd64 3.22.0-1ubuntu0.4 [752 kB]
Get:6 http://archive.ubuntu.com/ubuntu bionic/main amd64 libffi-dev amd64 3.2.1-8 [156 kB]
Fetched 1,804 kB in 1s (1,761 kB/s)
debconf: unable to initialize frontend: Dialog
debconf: (No usable dialog-like program is installed, so the dialog based frontend cannot be used. at /usr/share/perl5/Debconf/FrontEnd/Dialog.pm line 76,
debconf: falling back to frontend: Readline
debconf: unable to initialize frontend: Readline
debconf: (This frontend requires a controlling tty.)
debconf: falling back to frontend: Teletype
dpkg-preconfigure: unable to re-open stdin:
(Reading database ... 164156 files and directories currently installed.)
Preparing to unpack .../0-openssl_1.1.1-1ubuntu2.1~18.04.9_amd64.deb ...
Unpacking openssl (1.1.1-1ubuntu2.1~18.04.9) over (1.1.1-1ubuntu2.1~18.04.6) ...
Selecting previously unselected package libgdbm-compat-dev.
Preparing to unpack .../1-libgdbm-compat-dev_1.14.1-6_amd64.deb ...
Unpacking libgdbm-compat-dev (1.14.1-6) ...
Selecting previously unselected package libgdbm-dev:amd64.
Preparing to unpack .../2-libgdbm-dev_1.14.1-6_amd64.deb ...
Unpacking libgdbm-dev:amd64 (1.14.1-6) ...
Selecting previously unselected package libncursesw5-dev:amd64.
Preparing to unpack .../3-libncursesw5-dev_6.1-1ubuntu1.18.04_amd64.deb ...
Unpacking libncursesw5-dev:amd64 (6.1-1ubuntu1.18.04) ...
Selecting previously unselected package sqlite3.
Preparing to unpack .../4-sqlite3_3.22.0-1ubuntu0.4_amd64.deb ...
```

[ ] !sudo apt-get install libffi-dev

```
Reading package lists... Done
Building dependency tree
Reading state information... Done
libffi-dev is already the newest version (3.2.1-8).
The following package was automatically installed and is no longer required:
  libnvidia-common-460
Use 'sudo apt autoremove' to remove it.
0 upgraded, 0 newly installed, 0 to remove and 33 not upgraded.
```

[ ] !buildozer init

```
Buildozer is running as root!
This is not recommended, and may lead to problems later.
Are you sure you want to continue [y/n]? y
File buildozer.spec created, ready to customize!
```

[ ] !buildozer -v android debug

```
# Check configuration tokens
Buildozer is running as root!
This is not recommended, and may lead to problems later.
Are you sure you want to continue [y/n]? y
# Ensure build layout
# Create directory /root/.buildozer
# Create directory /root/.buildozer/cache
# Create directory /content/.buildozer
# Create directory /content/bin
# Create directory /content/.buildozer/applibs
# Create directory /root/.buildozer/android/platform/android/platform
# Create directory /content/.buildozer/android/platform
# Create directory /content/.buildozer/android/app
# Check configuration tokens
# Read available permissions from api-versions.xml
# Preparing build
# Check requirements for android
# Run 'dpkg --version'
# Cwd None
Debian 'dpkg' package management program version 1.19.0.5 (amd64).
This is free software; see the GNU General Public License version 2 or
later for copying conditions. There is NO warranty.
# Search for Git (git)
#  -> found at /usr/bin/git
# Search for Cython (cython)
#  -> found at /usr/local/bin/cython
# Search for Java compiler (javac)
#  -> found at /usr/lib/jvm/java-11-openjdk-amd64/bin/javac
# Search for Java keytool (keytool)
#  -> found at /usr/lib/jvm/java-11-openjdk-amd64/bin/keytool
# Install platform
# Run 'git clone -b master --single-branch https://github.com/kivy/python-for-android.git python-for-android'
# Cwd /content/.buildozer/android/platform
Cloning into 'python-for-android'...
# Run '/usr/bin/python3 -m pip install -q --user \'appdirs\' \'colorama>=0.3.3\' \'jinja2\' \'six\' \'enum34; python_version<"3.4"\' \'sh>=1.10; sys_platf
# Cwd None
# Android ANT is missing, downloading
# Downloading http://archive.apache.org/dist/ant/binaries/apache-ant-1.9.4-bin.tar.gz
# Run 'tar xzf apache-ant-1.9.4-bin.tar.gz'
# Cwd /root/.buildozer/android/platform/apache-ant-1.9.4
# Apache ANT installation done.
# Android SDK is missing, downloading
# Downloading https://dl.google.com/android/repository/commandlinetools-linux-6514223_latest.zip
# Unpacking Android SDK
# Run 'unzip -q /root/.buildozer/android/platform/android-sdk/commandlinetools-linux-6514223_latest.zip'
# Cwd /root/.buildozer/android/platform/android-sdk
# Android SDK tools base installation done.
# Recommended android's NDK version by p4a is: 19c
```

```
# Android NDK is missing, downloading
# Downloading https://dl.google.com/android/repository/android-ndk-r19c-linux-x86_64.zip
# Unpacking Android NDK
# Run 'unzip -q /root/.buildozer/android/platform/android-ndk-r19c-linux-x86_64.zip'
# Cwd /root/.buildozer/android/platform
# Rename /root/.buildozer/android/platform/android-ndk-r19c to /root/.buildozer/android/platform/android-ndk-r19c
# Android NDK installation done.
# Installing/updating SDK platform tools if necessary
# Run '/root/.buildozer/android/platform/android-sdk/tools/bin/sdkmanager --sdk_root=/root/.buildozer/android/platform/android-sdk platform-tools'
# Cwd /root/.buildozer/android/platform/android-sdk
```

```
!pip install cython==0.29.19
```

```
Collecting cython==0.29.19
  Downloading https://files.pythonhosted.org/packages/9a/bd/d39af77b8c3a0b8881b960c467272f29a6b8c70fb425e8c665abb81e0b82/Cython-0.29.19-cp37-cp37m-manylinux
  |████████████████████████████████| 2.0MB 6.5MB/s
Installing collected packages: cython
  Found existing installation: Cython 0.29.23
    Uninstalling Cython-0.29.23:
      Successfully uninstalled Cython-0.29.23
Successfully installed cython-0.29.19
```