

All instructions are tested on Ubuntu x86_64.

Setting up environment:

1. Android SDK.

- a. Android SDK has been integrated into Android Studio bundle, so download whole IDE environment from this link, <https://developer.android.com/studio/index.html>
- b. Unzip Android IDE
`$ unzip android-studio-ide-145.3276617-linux.zip`
- c. Initialize android IDE
`$ cd android-studio-ide-145.3276617-linux`
`$./bin/studio.sh`
Select default setting to finish the initialization
- d. Add SDK to your environment variable
`$ export PATH=$PATH:~/Android/Sdk/tools/:~/Android/Sdk/platform-tools/`
- e. Download Android SDK API-19
`$ android`
Select Android 4.4.2(API-19) to download

2. Cross compilation toolchain.

- a. Download toolchain using git
`$ git clone https://android.googlesource.com/platform/prebuilt`
- b. Add toolchain to your environment variable
`$ export PATH=$PATH:$(pwd)/prebuilt/linux-x86/toolchain/arm-eabi-4.43/bin`

Running goldfish emulator:

1. Create a virtual machine.

- `$ android create avd --name cs179 --target android-19`
Select "no" when asked whether to create a custom hardware profile.

2. Start goldfish emulator.

- a. Download emulator and system image from
https://drive.google.com/file/d/0B_uX9Hx6LQttWHU2QI9HdFRIWGs/view?usp=sharing
- b. Unpack cs179_emu.tar.gz
`$ tar -axvf cs179_emu.tar.gz`
- c. Boot emulator:
`$ cd cs179_emu`
`$./emulator64-arm -verbose -debug init -show-kernel -kernel zImage -avd cs179 -system system.img -ramdisk ramdisk.img -no-boot-anim -no-skin -no-audio -no-window -qemu`