

Instruções passo a passo

1. Baixar o compilador gcc do arm64

```
user@pc$~: sudo apt install gcc-aarch64-linux-gnu
```

1. Baixar o código-fonte do kernel Linux 6.12.48

O código-fonte do kernel está disponível no [site oficial](#) do Linux Kernel.

1. Acesse o diretório de trabalho:

```
user@pc$~: mkdir ~/kernel  
user@pc$~: cd kernel
```

2. Baixe o código-fonte do kernel 6.12.48:

```
sudo wget  
https://git.kernel.org/pub/scm/linux/kernel/git/stable/linux.git/snapshot/linux-  
6.12.48.tar.gz
```

3. Extraia o arquivo:

```
sudo tar -xvf linux-6.12.48.tar.gz && cd linux-6.12.48
```

```
alexmonteiro@ppgi-pc:~$ wget https://git.kernel.org/pub/scm/linux/kernel/git/stable/linux.git/snapshot/linux-6.12.48.tar.gz  
--2025-11-13 13:46:21-- https://git.kernel.org/pub/scm/linux/kernel/git/stable/linux.git/snapshot/linux-6.12.48.tar.gz  
Resolving git.kernel.org (git.kernel.org)... 2600:3c04:e001:324:0:1991:8:25, 172.105.4.254  
Connecting to git.kernel.org (git.kernel.org)|2600:3c04:e001:324:0:1991:8:25|:443... connected.  
HTTP request sent, awaiting response... 200 OK  
Length: unspecified [application/x-gzip]  
Saving to: 'linux-6.12.48.tar.gz'  
  
linux-6.12.48.tar.gz [=====] 233,96M 7,37MB/s in 27s  
  
2025-11-13 13:46:49 (8,72 MB/s) - 'linux-6.12.48.tar.gz' saved [245324438]  
  
alexmonteiro@ppgi-pc:~$ tar -xvf linux-6.12.48.tar.gz && cd linux-6.12.48  
linux-6.12.48/  
linux-6.12.48/.clang-format  
linux-6.12.48/.clippy.toml  
linux-6.12.48/.cocciconfig  
linux-6.12.48/.editorconfig  
linux-6.12.48/.get_maintainer.ignore  
linux-6.12.48/.gitattributes  
linux-6.12.48/.gitignore  
linux-6.12.48/.mailmap  
linux-6.12.48/.rustfmt.toml  
linux-6.12.48/COPYING  
linux-6.12.48/CREDITS  
linux-6.12.48/Documentation/  
linux-6.12.48/Documentation/.gitignore  
linux-6.12.48/Documentation/ABI/  
linux-6.12.48/Documentation/ABI/README  
linux-6.12.48/Documentation/ABI/obsolete/  
linux-6.12.48/Documentation/ABI/obsolete/o2cb  
linux-6.12.48/Documentation/ABI/obsolete/procfs-i8k  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-bus-iio  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-bus-usb  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-class-typec  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-cpuidle  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-driver-hid-roccat-arvo  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-driver-hid-roccat-isku  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-driver-hid-roccat-koneplus  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-driver-hid-roccat-konepure  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-driver-hid-roccat-kovaplus  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-driver-hid-roccat-lua  
linux-6.12.48/Documentation/ABI/obsolete/sysfs-driver-hid-roccat-pyra
```

2. Configurar o Kernel

1. Gere o arquivo de configuração padrão:

```
make defconfig
```

3. Compilar o kernel

1. Compilar o kernel pode levar algum tempo, dependendo do hardware do sistema:

```
make -j$(nproc) ARCH=arm64 CROSS_COMPILE=aarch64-linux-gnu-
```

3. Compilar o kernel module

1. Alterar o KDIR para PATH do Kernel baixado

```
user@pc$: nano Makefile  
  
KDIR ?= /home/username/kernel/linux-6.12.48
```

2. Compilar kernel module

```
make ARCH=arm64 CROSS_COMPILE=aarch64-linux-gnu-
```

```
alexmonteiro@ppgi-pc:~/JoystickRaspberry-HandsOn-DevTitans/drivers$ nano Makefile  
alexmonteiro@ppgi-pc:~/JoystickRaspberry-HandsOn-DevTitans/drivers$ make ARCH=arm64 CROSS_COMPILE=aarch64-linux-gnu-  
make -C /home/alexmonteiro/kernel/linux-6.12.48 M=/home/alexmonteiro/JoystickRaspberry-HandsOn-DevTitans/driver modules  
make[1]: Entering directory '/home/alexmonteiro/kernel/linux-6.12.48'  
 CC [M] /home/alexmonteiro/JoystickRaspberry-HandsOn-DevTitans/driver/joy_driver.o  
 MODPOST /home/alexmonteiro/JoystickRaspberry-HandsOn-DevTitans/driver/Module.symvers  
 CC [M] /home/alexmonteiro/JoystickRaspberry-HandsOn-DevTitans/driver/joy_driver.o  
 CC [M] /home/alexmonteiro/JoystickRaspberry-HandsOn-DevTitans/driver/.module-common.o  
 LD [M] /home/alexmonteiro/JoystickRaspberry-HandsOn-DevTitans/driver/joy_driver.ko  
make[1]: Leaving directory '/home/alexmonteiro/kernel/linux-6.12.48'  
alexmonteiro@ppgi-pc:~/JoystickRaspberry-HandsOn-DevTitans/drivers$ make ARCH=arm64 CROSS_COMPILE=aarch64-linux-gnu-
```

3. Copiar .ko para o AOSP e montar a imagem