

Porting Kernel

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1. Install Compiler

1.1 Get the Source Code

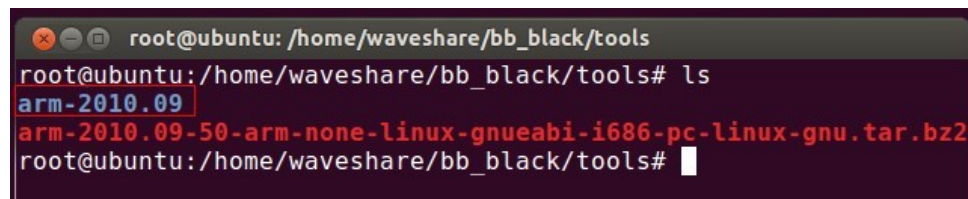
Copy the tool chain

arm-2010.09-50-arm-none-linux-gnueabi-i686-pc-linux-gnu.tar.bz2

to the Ubuntu system, say, copy to /home/waveshare/bb_black/tools.

1.2 Extract

```
# tar jxvf arm-2010.09-50-arm-none-linux-gnueabi-i686-pc-linux-gnu.tar.bz2
```

A terminal window screenshot showing the command 'ls' being executed in the directory '/home/waveshare/bb_black/tools'. The output lists two files: 'arm-2010.09' and 'arm-2010.09-50-arm-none-linux-gnueabi-i686-pc-linux-gnu.tar.bz2'. The file 'arm-2010.09' is highlighted in red in the original image, indicating it has been successfully extracted.

```
root@ubuntu: /home/waveshare/bb_black/tools
root@ubuntu:/home/waveshare/bb_black/tools# ls
arm-2010.09
arm-2010.09-50-arm-none-linux-gnueabi-i686-pc-linux-gnu.tar.bz2
root@ubuntu:/home/waveshare/bb_black/tools#
```

As shown in the picture, "arm-2010.09" was extracted.

1.3 Add Environment Variables

Add the following code to the /etc/environment file:

```
/home/waveshare/bb_black/tools/arm-2010.09/bin
```

That is, Edit:

```
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games "
```

As:

```
PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/sbin:/bin:/usr/games:/home
/waveshare/bb_black/tools/arm-2010.09/bin"
```

Save and exit, execute:

```
#source /etc/environment
```

2. Compile the Kernel

2.1 Get the Source Code

Copy the bb-black-kernel-3.8.13.tar.bz2 to the Ubuntu system, say, copy to

/home/waveshare/bb_black/kernel

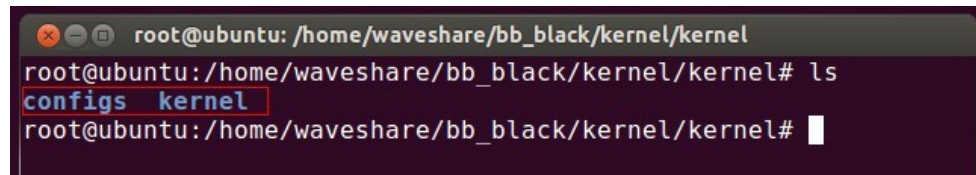
The file can be found on Source-code\kernel.

2.2 Extract

```
#tar -xvf bb-black-kernel-3.8.13.tar.bz2
```

As shown in the picture, a folder named "kernel" was extracted, in which there are two files:

"configs" and "kernel".



```
root@ubuntu: /home/waveshare/bb_black/kernel/kernel
root@ubuntu: /home/waveshare/bb_black/kernel/kernel# ls
configs kernel
root@ubuntu: /home/waveshare/bb_black/kernel/kernel#
```

2.3 Specify Compiler

```
#cd /home/waveshare/bb_black/kernel/kernel/kernel
```

```
#vi Makefile
```

Edit:

```
export KBUILD_BUILDHOST := $(SUBARCH)
```

```
ARCH ?= $(SUBARCH)
```

```
CROSS_COMPILE ?=
```

As:

```
export KBUILD_BUILDHOST := $(SUBARCH)
```

```
ARCH ?= arm
```

```
CROSS_COMPILE ?= arm-none-linux-gnueabi-
```

Save and exit.

2.4 Clean Temp Files

```
#make clean
```

2.5 Copy the Standard Config File

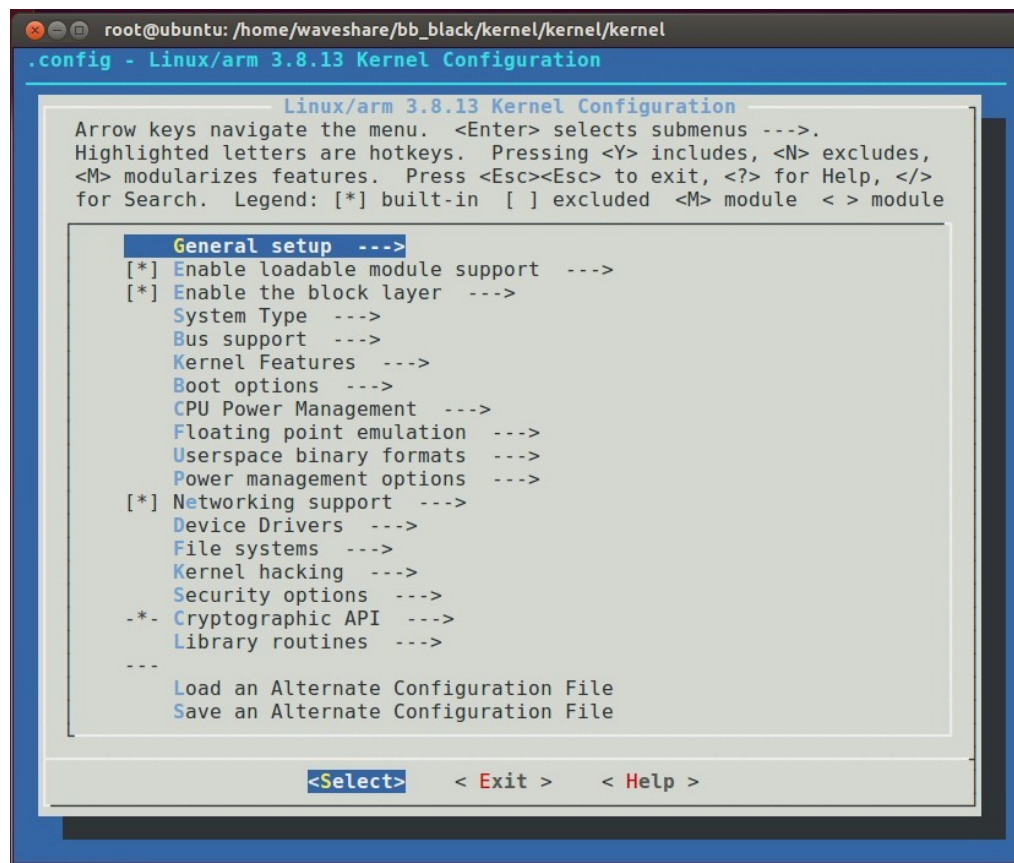
```
#cp ../configs/beaglebone .config
```

The hidden file .config will be generated under the root directory.

2.6 Config the Kernel

```
#make menuconfig
```

Config the kernel in the popup window.



2.7 Compile the Kernel

```
#make ulmage dtbs
```

Note:

In case any problem occurred while compiling the kernel, please try to install the following tools first:

```
#apt-get install uboot-mkimage
```

```
#apt-get install lzop
```