

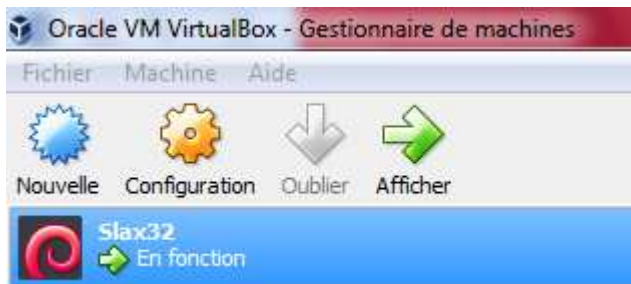
TP08 PAS A PAS (Utilisation de Buildroot)

Matière : ATELIER SYSTEME D'EXPLOITATION EMBARQUE

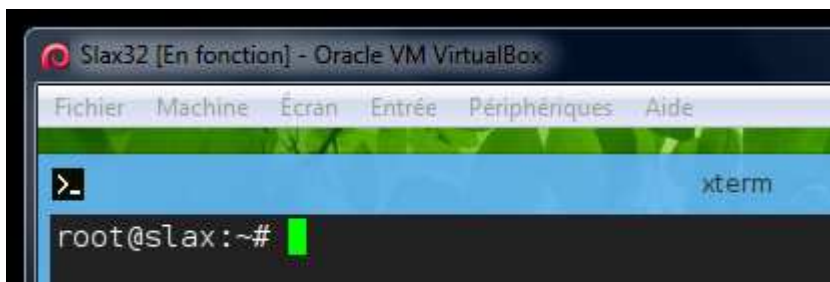
Classe : SEM21

Travail effectué

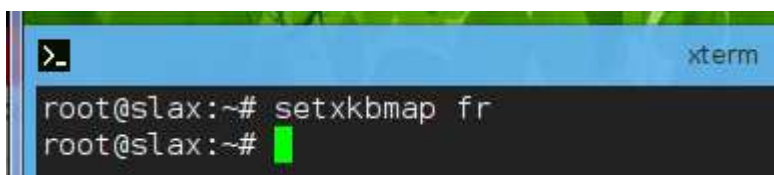
1- Lancer VirtualBox



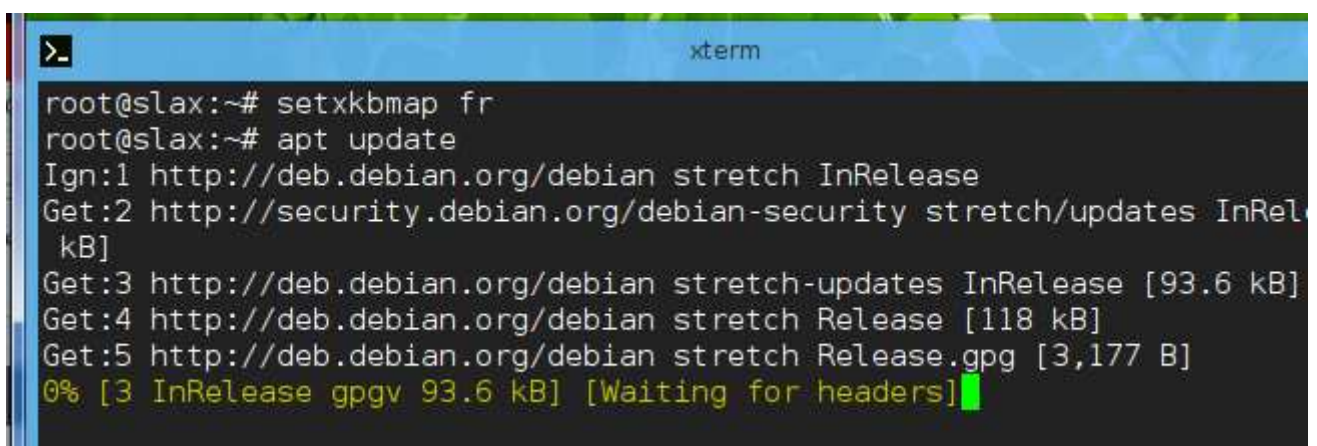
2- Démarrer la machine virtuelle "Slax32"



3- Changer le clavier en "azerty"



4- Actualiser apt (apt update)



5- Créer un dossier "br" (mkdir)

```
>_ xterm
root@slax:~# mkdir br
```

6- Entrer dans le dossier "br" (cd)

```
>_ xterm
root@slax:~# cd br
```

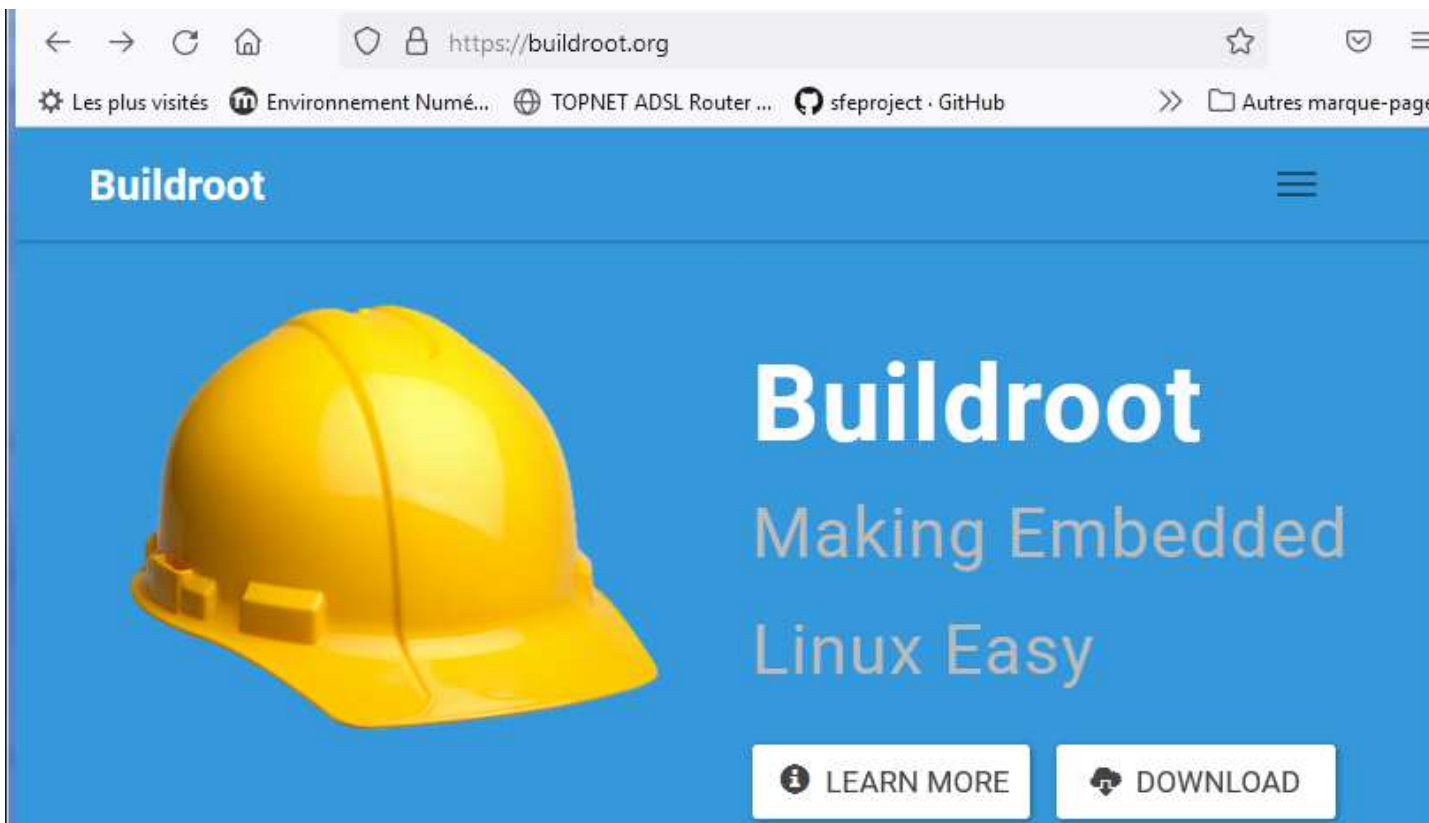
7- Lister le contenu de "br" (ls)

```
>_ xterm
root@slax:~/br# ls
root@slax:~/br#
```

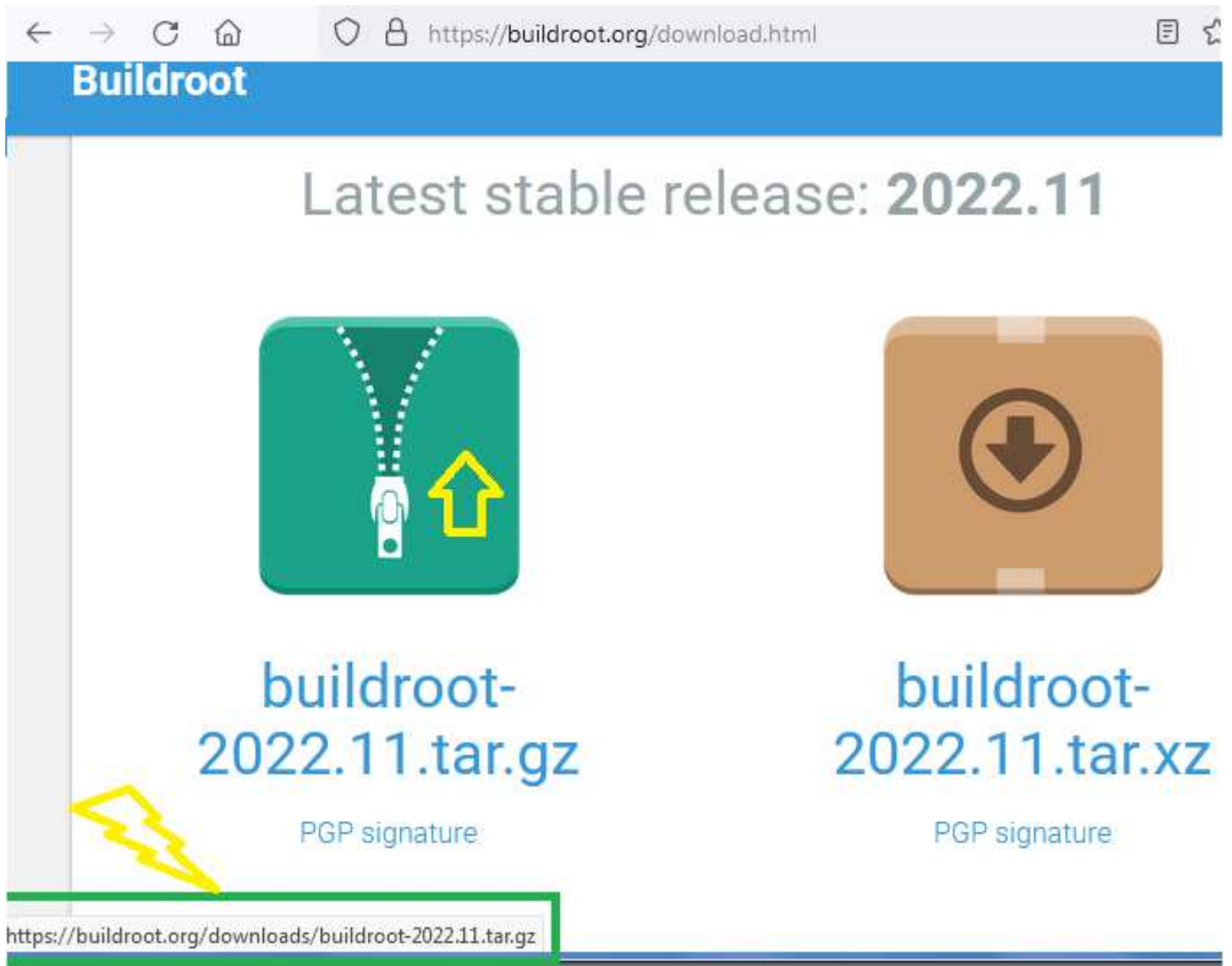
8- Installer wget

```
>_ xterm
root@slax:~/br# apt install wget
Reading package lists... Done
Building dependency tree... Done
wget is already the newest version (1.18-5+deb9u3).
0 upgraded, 0 newly installed, 0 to remove and 134 not upgraded.
root@slax:~/br#
```

9- Ouvrir le lien [1] et cliquer sur "Download"



10- Fixer la souris sur "buildroot-2020.1.11.tar.gz" pour voir son chemin complet dans la barre d'état



11- Télécharger "buildroot-2020.11.1.tar.gz" (wget --no-check-certificate CheminComplet)

```
>_ xterm
root@slax:~/br# wget --no-check-certificate https://buildroot.org/downloads/buildroot-2022.11.tar.gz
--2022-12-11 10:03:17-- https://buildroot.org/downloads/buildroot-2022.11.tar.gz
Resolving buildroot.org (buildroot.org)... 140.211.167.122
Connecting to buildroot.org (buildroot.org)|140.211.167.122|:443... connected.
WARNING: The certificate of 'buildroot.org' is not trusted.
WARNING: The certificate of 'buildroot.org' has expired.
HTTP request sent, awaiting response... 200 OK
Length: 7060984 (6.7M) [application/x-gzip]
Saving to: 'buildroot-2022.11.tar.gz'

buildroot-2022.11.t 100%[=====>] 6.73M 722KB/s in 11s

2022-12-11 10:03:30 (632 KB/s) - 'buildroot-2022.11.tar.gz' saved [7060984/7060984]
```



12- Lister le contenu du dossier en cours (ls)

```
>_ xterm
root@slax:~/br# ls
buildroot-2022.11.tar.gz
root@slax:~/br#
```

13- Extraire le fichier "buildroot-2020.1.11.tar.gz" (tar zxvf nomFichier)

```
>_ xterm
root@slax:~/br# tar zxvf buildroot-2022.11.tar.gz
```

14- Lister le contenu du dossier en cours (ls)

```
>_ xterm
root@slax:~/br# ls
buildroot-2022.11 buildroot-2022.11.tar.gz
root@slax:~/br#
```

15- Entrer dans le dossier " buildroot-2020.1.11" (cd)

```
>_ xterm
root@slax:~/br# cd buildroot-2022.11
root@slax:~/br/buildroot-2022.11#
```

16- Lister le contenu du dossier en cours (ls)

```
>_ xterm
root@slax:~/br/buildroot-2022.11# ls
arch  CHANGES  configs  docs  Makefile  README  toolchain
board Config.in  COPYING  fs    Makefile.legacy  support  utils
boot  Config.in.legacy  DEVELOPERS  linux  package  system
root@slax:~/br/buildroot-2022.11#
```

17- Afficher le menu de configuration de buildroot (make menuconfig)

```
>_ xterm
root@slax:~/br/buildroot-2022.11# make menuconfig

>_ xterm
root@slax:~/br/buildroot-2022.11# make menuconfig
-bash: make: command not found
root@slax:~/br/buildroot-2022.11# apt install build-essential
```

```
>_ xterm
root@slax:~/br/buildroot-2022.11# make menuconfig
```

```
*** Unable to find the ncurses libraries or the
*** required header files.
*** 'make menuconfig' requires the ncurses libraries
***
*** Install ncurses (ncurses-devel or libncurses-dev
*** depending on your distribution) and try again.
***
Makefile:253: recipe for target '/root/br/buildroot-2022.11/output/build/buildroot-config/dochecklxdialog' failed
make[1]: *** [/root/br/buildroot-2022.11/output/build/buildroot-config/dochecklxdialog] Error 1
make[1]: Leaving directory '/root/br/buildroot-2022.11/support/kconfig'
Makefile:957: recipe for target '/root/br/buildroot-2022.11/output/build/buildroot-config/mconf' failed
make: *** [/root/br/buildroot-2022.11/output/build/buildroot-config/mconf] Error 2
root@slax:~/br/buildroot-2022.11#
```

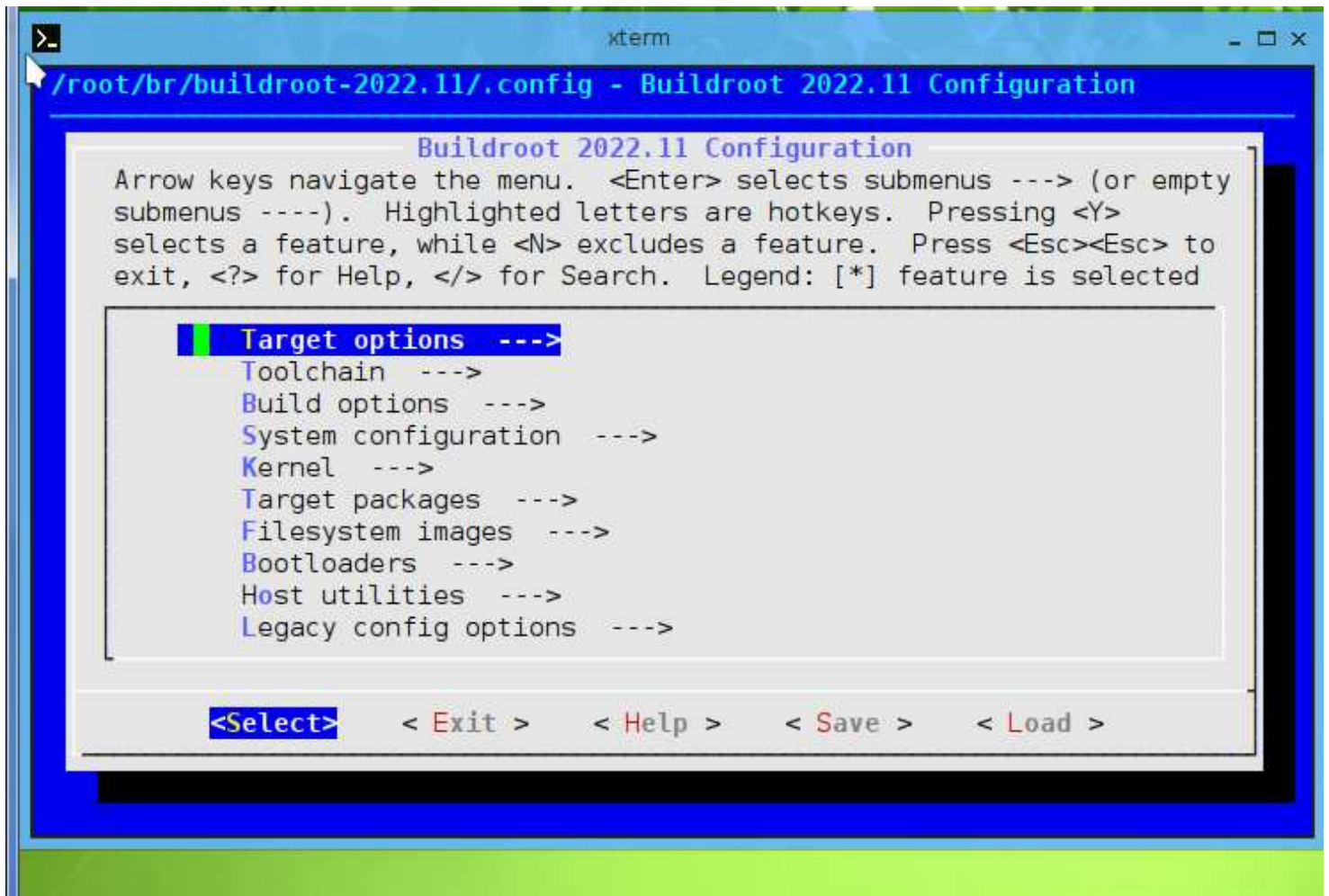
18- Installer toutes les bibliothèques du lien [2]

```
>_ xterm
root@slax:~/br/buildroot-2022.11# apt install cpio unzip rsync bc libncurses5-dev screen
```



19- Afficher le menu de configuration de buildroot (make menuconfig)

```
>_ xterm
root@slax:~/br/buildroot-2022.11# make menuconfig
```



20- Quitter le "menuconfig"



21- Afficher le menu de configuration "qt" de buildroot (make xconfig)

```
>_ xterm
root@slax:~/br/buildroot-2022.11# make xconfig
mkdir -p /root/br/buildroot-2022.11/output/build/buildroot-config/lxdialog
PKG_CONFIG_PATH="" make CC="/usr/bin/gcc" HOSTCC="/usr/bin/gcc" \
    obj=/root/br/buildroot-2022.11/output/build/buildroot-config -C support/kcon
fig -f Makefile.br qconf
make[1]: Entering directory '/root/br/buildroot-2022.11/support/kconfig'
/bin/sh: line 1: pkg-config: command not found
/bin/sh: line 5: pkg-config: command not found
*
* Could not find Qt via pkg-config.
* Please install either Qt 4.8 or 5.x. and make sure it's in PKG_CONFIG_PATH
*
make[1]: *** No rule to make target '/root/br/buildroot-2022.11/output/build/bui
ldroot-config/.tmp_qtcheck', needed by '/root/br/buildroot-2022.11/output/build/
buildroot-config/qconf.o'. Stop.
make[1]: Leaving directory '/root/br/buildroot-2022.11/support/kconfig'
Makefile:957: recipe for target '/root/br/buildroot-2022.11/output/build/buildro
ot-config/qconf' failed
make: *** [/root/br/buildroot-2022.11/output/build/buildroot-config/qconf] Error
 2
root@slax:~/br/buildroot-2022.11#
```

22- Installer Qt en utilisant le lien [5]

- a. apt install qtcreator

```
>_ xterm
root@slax:~/br/buildroot-2022.11# apt install qtcreator
```

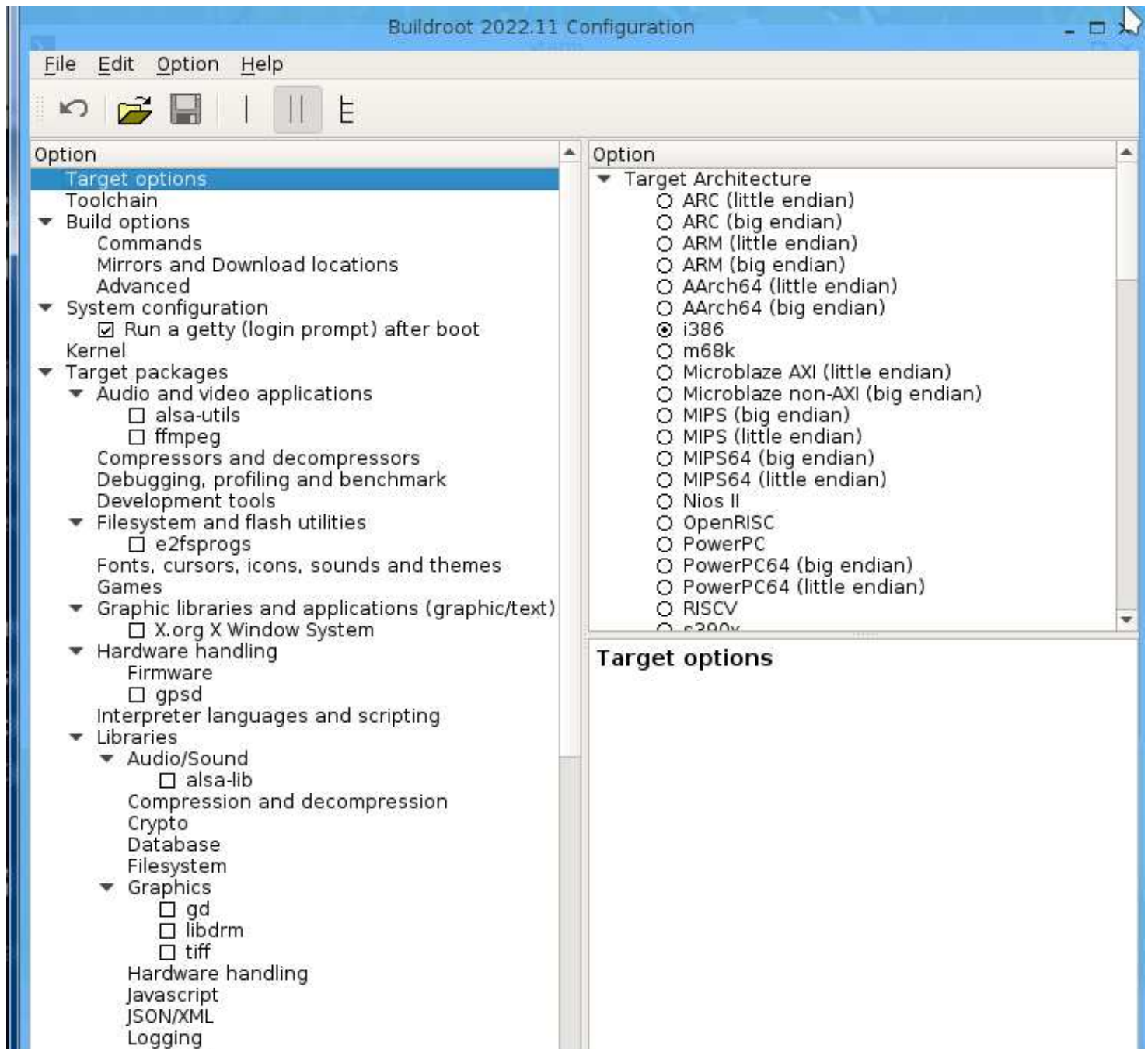
- b. apt install qt5-default

```
>_ xterm
root@slax:~/br/buildroot-2022.11# apt install qt5-default
```

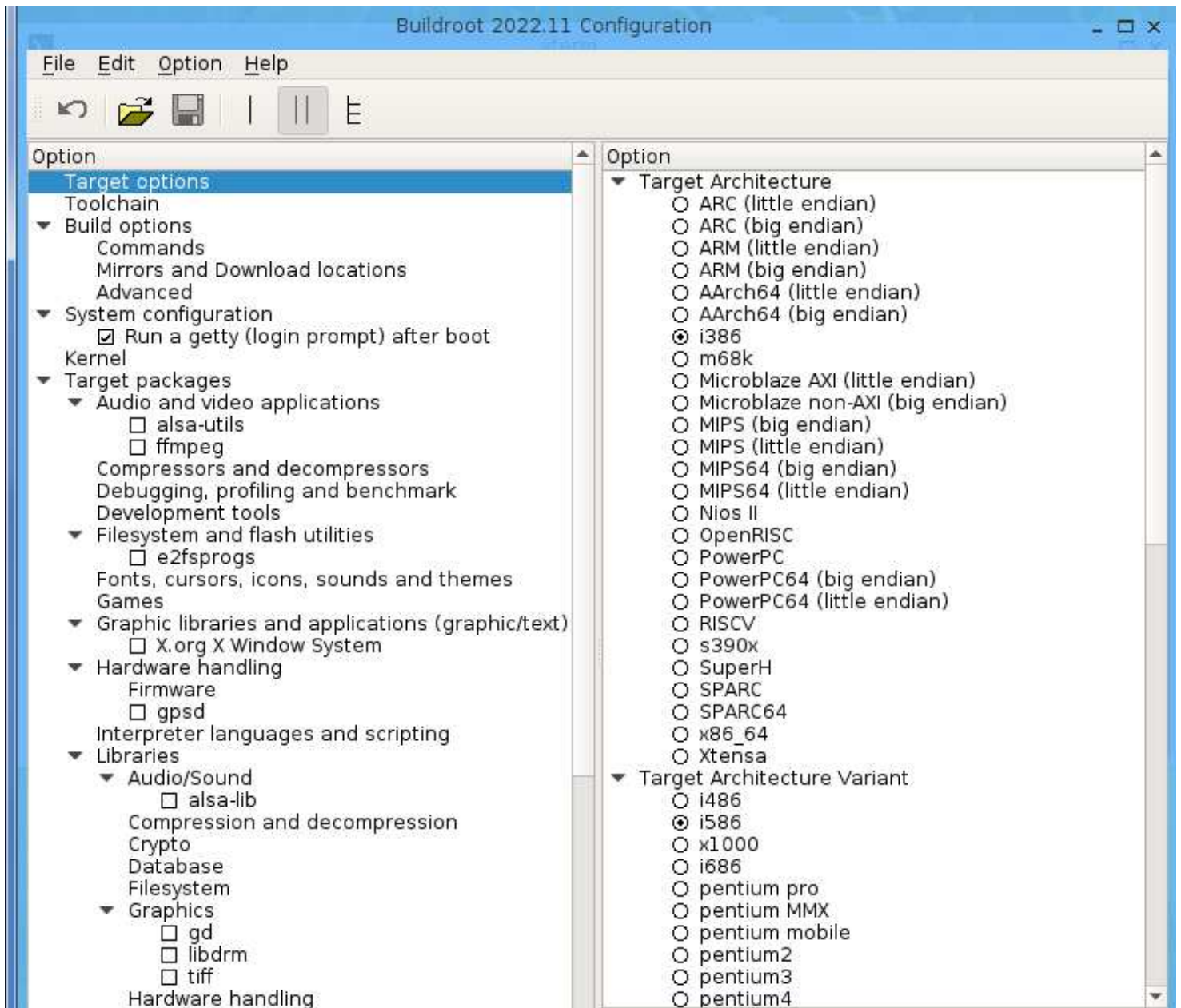
- c. apt install pkg-config

```
>_ xterm
root@slax:~/br/buildroot-2022.11# apt install pkg-config
```

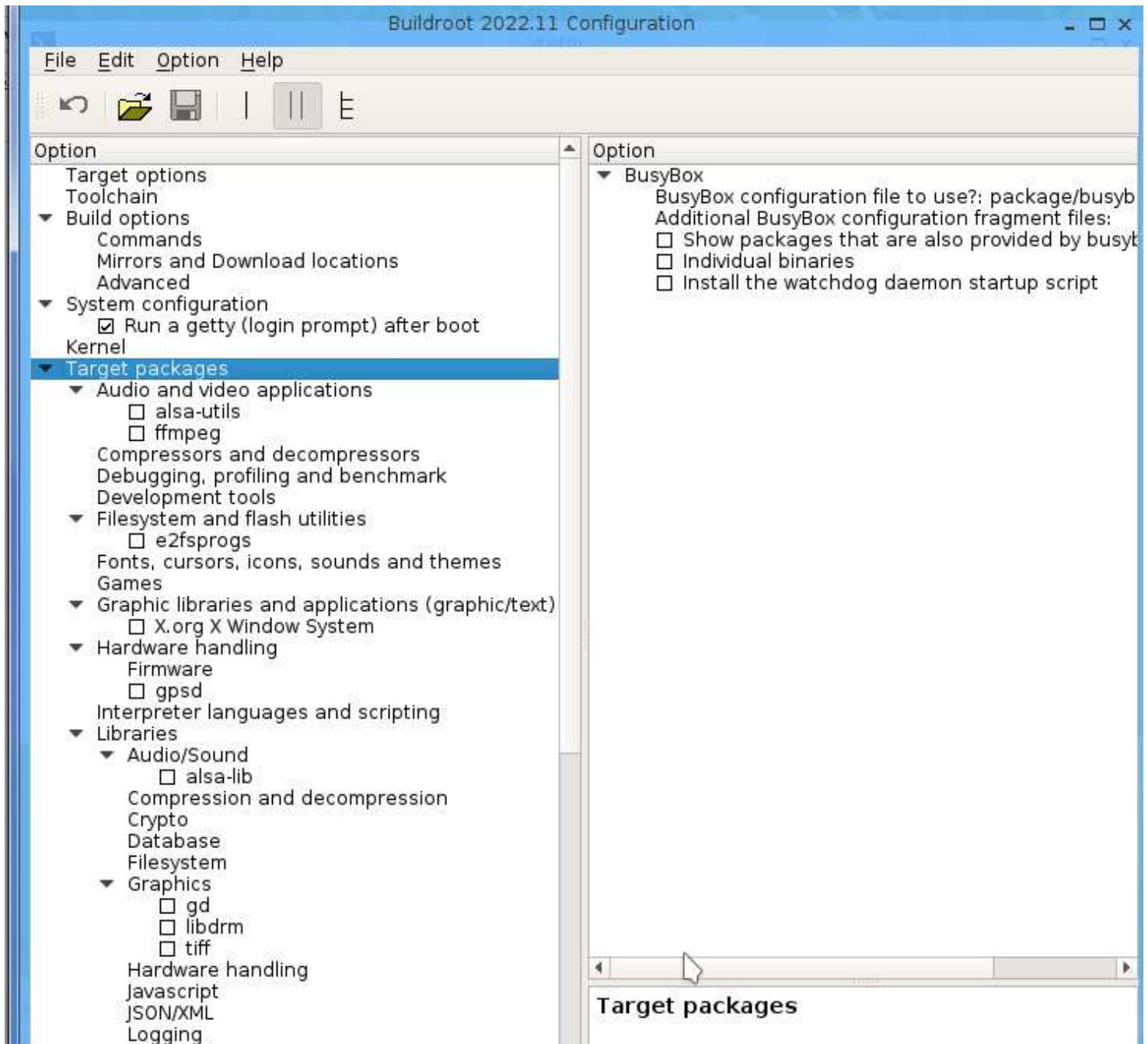
23- Afficher le menu de configuration "qt" de buildroot (make xconfig)



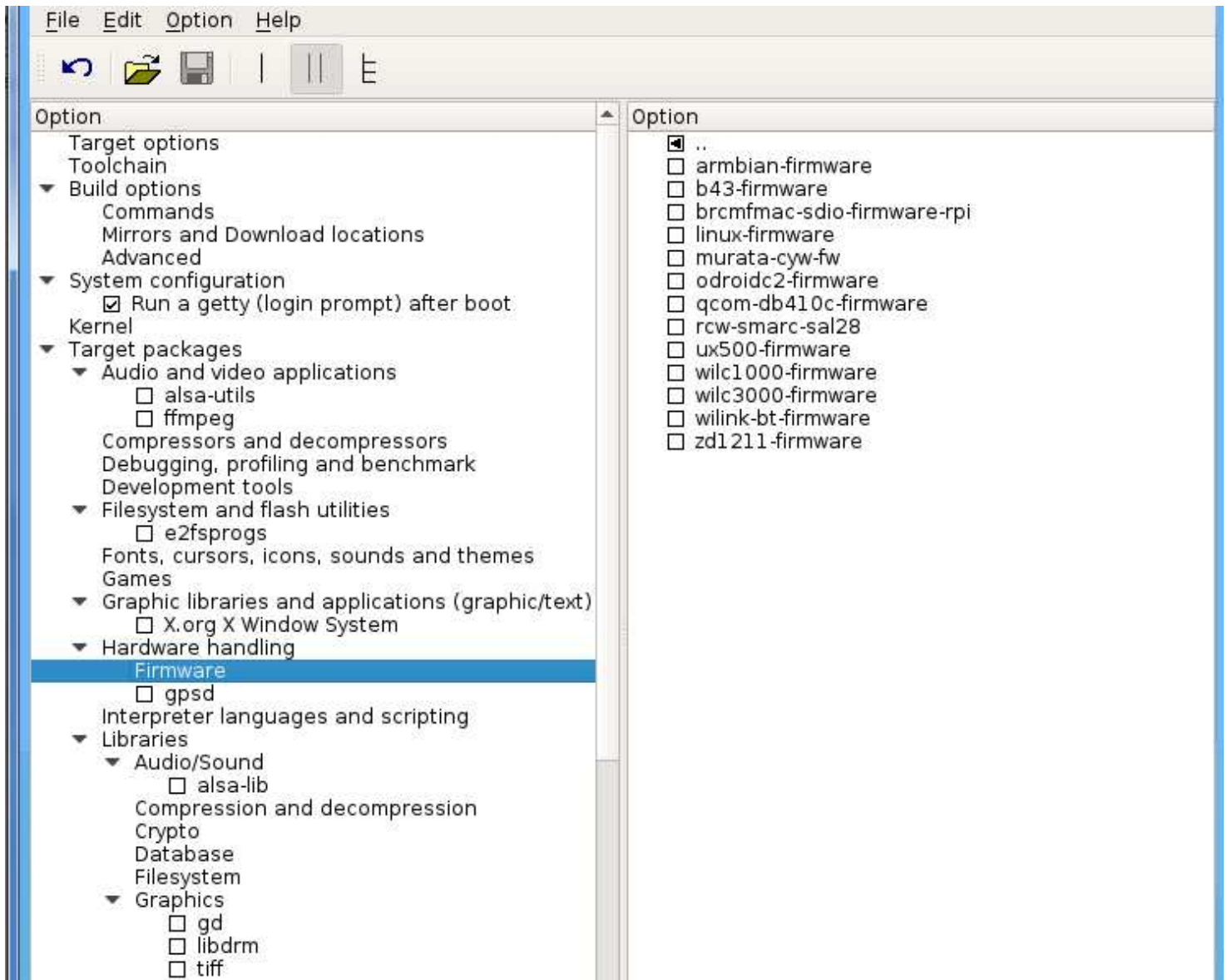
Target options



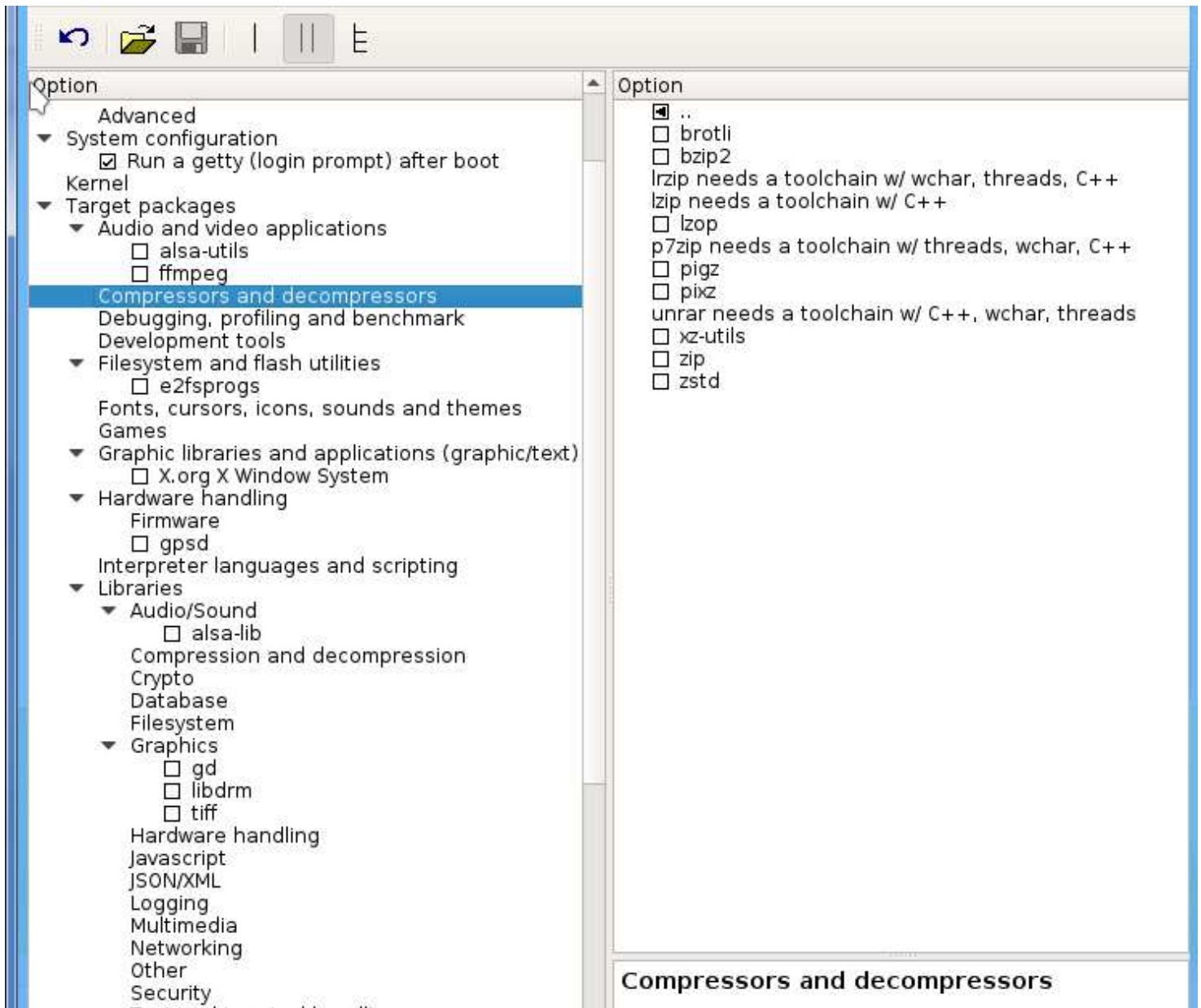
Target packages



Firmware



Compressors and décompressors

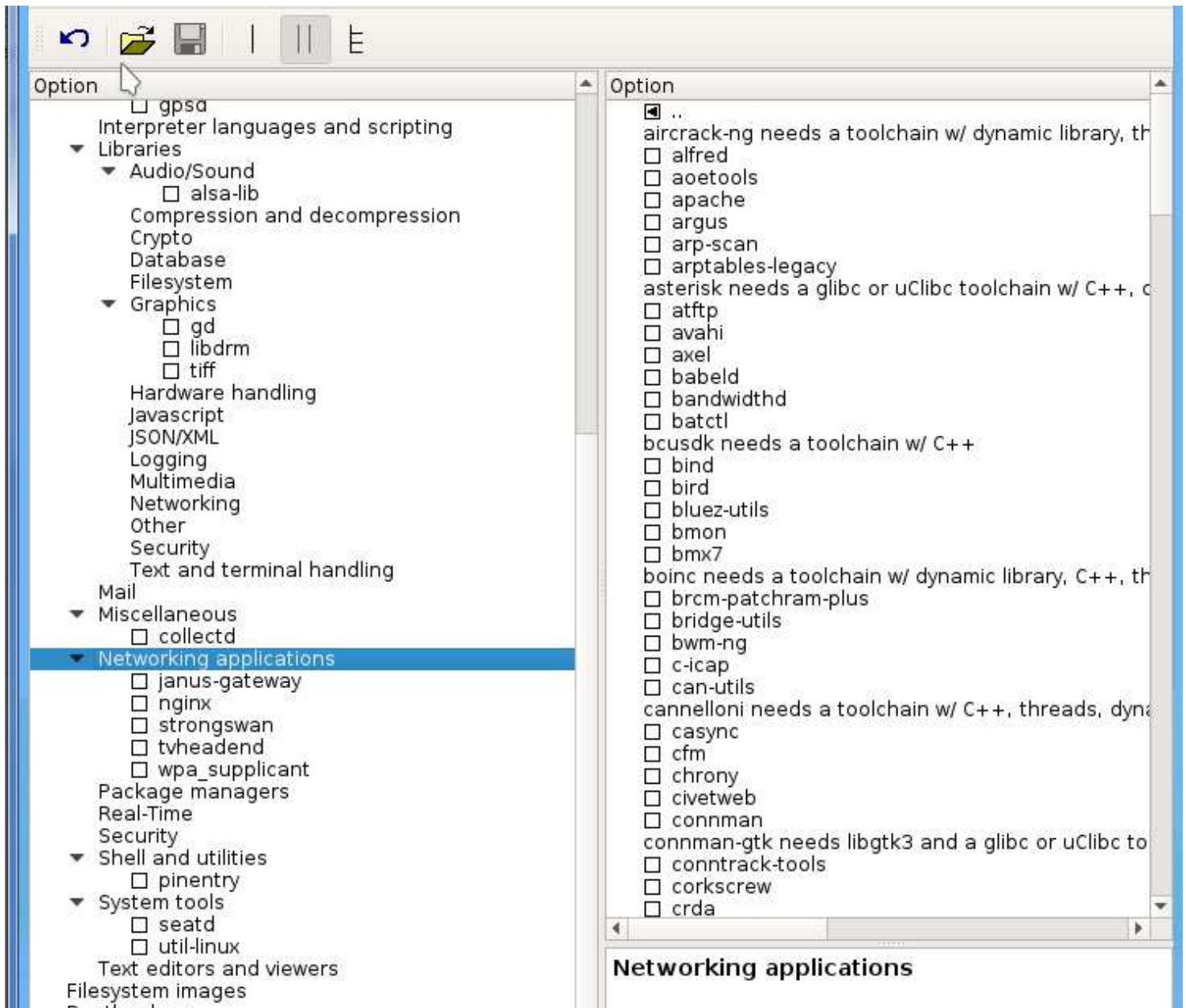


The screenshot displays the Yocto Project configuration tool interface. On the left, a tree view under 'Option' shows the 'Compressors and decompressors' section selected. The right pane, also titled 'Option', lists the following configuration options:

- ☒ ..
- ☐ brotli
- ☐ bzip2
- lrzip needs a toolchain w/ wchar, threads, C++
- lzzip needs a toolchain w/ C++
- ☐ lzop
- p7zip needs a toolchain w/ threads, wchar, C++
- ☐ pigz
- ☐ pixz
- unrar needs a toolchain w/ C++, wchar, threads
- ☐ xz-utils
- ☐ zip
- ☐ zstd

The title bar of the right pane reads 'Compressors and decompressors'.

Networking applications



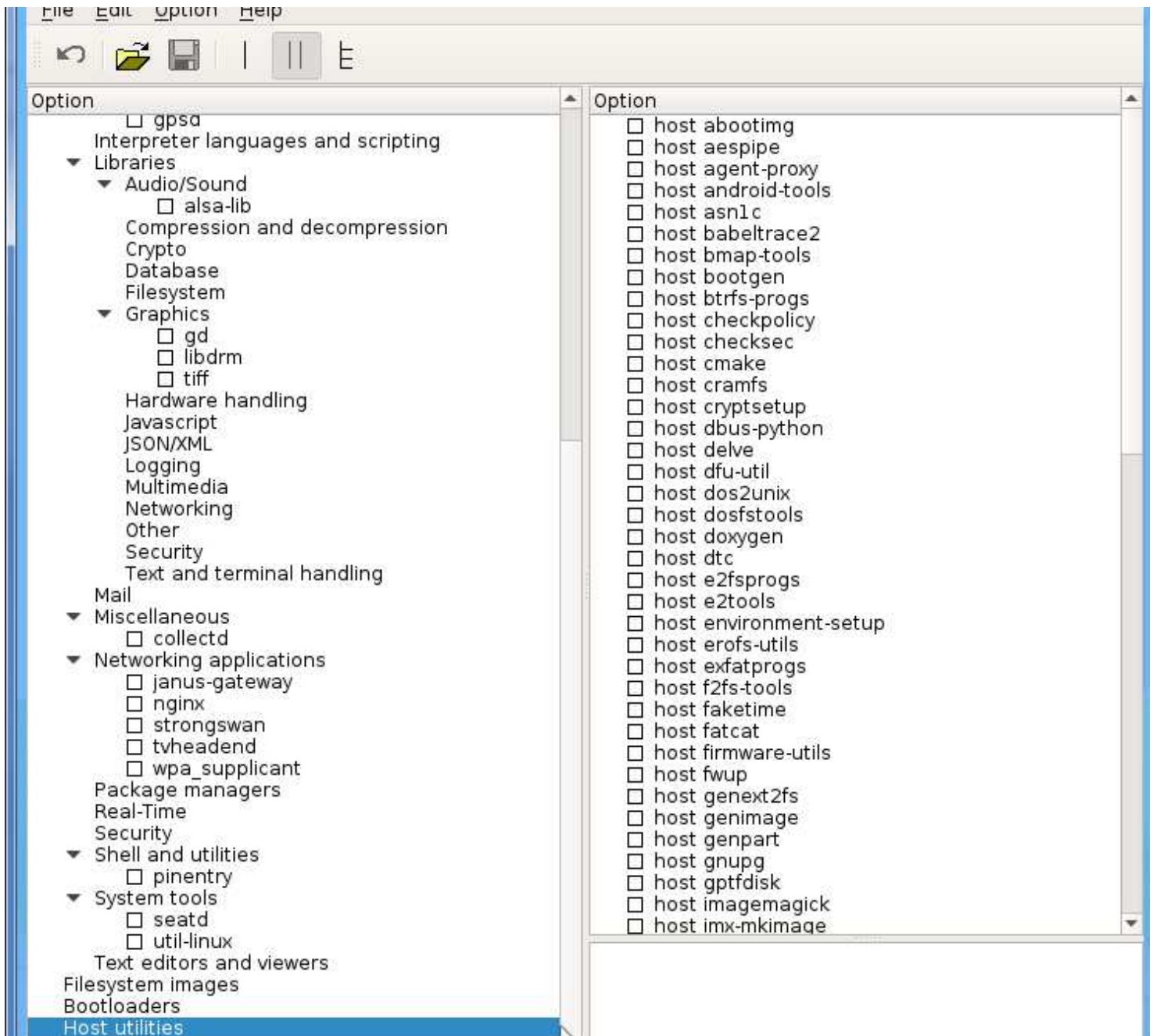
Bootloaders

Option	Option
<input type="checkbox"/> gpsd	<input type="checkbox"/> Barebox
Interpreter languages and scripting	<input type="checkbox"/> EDK2
▼ Libraries	<input type="checkbox"/> grub2
▼ Audio/Sound	<input type="checkbox"/> gummiboot
<input type="checkbox"/> alsa-lib	<input type="checkbox"/> shim
Compression and decompression	<input type="checkbox"/> syslinux
Crypto	<input type="checkbox"/> U-Boot
Database	
Filesystem	
▼ Graphics	
<input type="checkbox"/> gd	
<input type="checkbox"/> libdrm	
<input type="checkbox"/> tiff	
Hardware handling	
Javascript	
JSON/XML	
Logging	
Multimedia	
Networking	
Other	
Security	
Text and terminal handling	
Mail	
▼ Miscellaneous	
<input type="checkbox"/> collectd	
▼ Networking applications	
<input type="checkbox"/> janus-gateway	
<input type="checkbox"/> nginx	
<input type="checkbox"/> strongswan	
<input type="checkbox"/> tvheadend	
<input type="checkbox"/> wpa_supplicant	
Package managers	
Real-Time	
Security	
▼ Shell and utilities	
<input type="checkbox"/> pinentry	
▼ System tools	
<input type="checkbox"/> seatd	
<input type="checkbox"/> util-linux	
Text editors and viewers	
Filesystem images	
Bootloaders	
Host utilities	

Bootloaders



Host utilities



Toolchain

File Edit Option Help

Option

Target options

Toolchain

- ▼ Build options
 - Commands
 - Mirrors and Download locations
 - Advanced
- ▼ System configuration
 - ☒ Run a getty (login prompt) after boot
- Kernel
- ▼ Target packages
 - ▼ Audio and video applications
 - ☐ alsa-utils
 - ☐ ffmpeg
 - Compressors and decompressors
 - Debugging, profiling and benchmark
 - Development tools
 - ▼ Filesystem and flash utilities
 - ☐ e2fsprogs
 - Fonts, cursors, icons, sounds and themes
 - Games
 - ▼ Graphic libraries and applications (graphic/text)
 - ☐ X.org X Window System
 - ▼ Hardware handling
 - Firmware
 - ☐ gpsd
 - Interpreter languages and scripting
 - ▼ Libraries
 - ▼ Audio/Sound
 - ☐ alsa-lib
 - Compression and decompression
 - Crypto
 - Database
 - Filesystem
 - ▼ Graphics
 - ☐ gd
 - ☐ libdrm
 - ☐ tiff
 - Hardware handling
 - Javascript
 - JSON/XML
 - Localization

Option

- ▼ Toolchain type
 - ☒ Buildroot toolchain
 - ☐ External toolchain
- Toolchain Buildroot Options
 - custom toolchain vendor name: buildroot
- ▼ C library
 - ☐ uClibc-ng
 - ☒ glibc
 - ☐ musl
- Kernel Header Options
- ▼ Kernel Headers
 - ☐ Linux 4.9.x kernel headers
 - ☐ Linux 4.14.x kernel headers
 - ☐ Linux 4.19.x kernel headers
 - ☐ Linux 5.4.x kernel headers
 - ☐ Linux 5.10.x kernel headers
 - ☐ Linux 5.15.x kernel headers
 - ☐ Linux 5.19.x kernel headers
 - ☒ Linux 6.0.x kernel headers
 - ☐ Manually specified Linux version
 - ☐ Custom tarball
 - ☐ Custom Git repository
- Glibc Options
 - ☐ Enable compatibility shims to run on older ke...
 - ☐ Install glibc utilities
- Binutils Options
- ▼ Binutils Version
 - ☐ binutils 2.37
 - ☒ binutils 2.38
 - ☐ binutils 2.39
- Additional binutils options:
- GCC Options
- ▼ GCC compiler Version
 - ☐ gcc 10.x
 - ☒ gcc 11.x
 - ☐ gcc 12.x
- Additional gcc options:
 - ☐ Enable C++ support

Toolchain

