用busyBox生成一个可用的根文件系统

1.先使用make menuconfig, 对busyBox进行设置

```
lgx@ubuntu: ~/linux/Filesystem/busybox-1.32.0
                              Busybox Configuration
Arrow keys navigate the menu. <Enter> selects submenus --->. Highlighted letters are
hotkeys. Pressing <Y> includes, <N> excludes, <M> modularizes features. Press
<Esc><Esc> to exit, <?> for Help, </> for Search. Legend: [*] built-in [ ] excluded
<M> module < > module capable
      Settings --->
          Applets
          Archival Utilities --->
          Coreutils --->
          Console Utilities --->
          Debian Utilities --->
          klibc-utils --->
          Editors --->
          Finding Utilities --->
           Init Utilities --->
          Login/Password Management Utilities --->
          Linux Ext2 FS Progs --->
          Linux Module Utilities --->
          Linux System Utilities --->
          Miscellaneous Utilities --->
          Networking Utilities --->
          Print Utilities --->
          Mail Utilities --->
          Process Utilities --->
          Runit Utilities --->
          Shells --->
          System Logging Utilities --->
          Load an Alternate Configuration File
          Save Configuration to an Alternate File
                         <Select>
                                     < Exit >
                                                 < Help >
```

2.进入Settings, 找到Build Options目录, 选择Build static binary (no shared libs)

```
[*] Support LOG_INFO level syslog messages (NEW
--- Build Options
[*] Fuild static binary (no shared libs)
[ ] Force NOMMU build (NEW)
() Cross compiler prefix (NEW)
() Path to sysroot (NEW)
() Additional CFLAGS (NEW)
```

3.然后选择交叉编译cross compiler prefix,添加arm-linux-gcc的路径

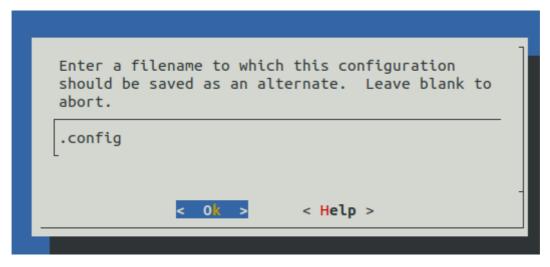
```
Cross compiler prefix

Please enter a string value. Use the <TAB> key to move from the input field to the buttons below it.

/opt/FriendlyARM/toolchain/4.9.3/bin/arm-linux-

< Ok > < Help >
```

4.选择默认路径_install安装,保存设置退出

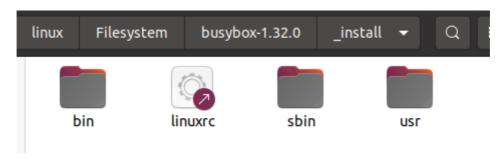


5.完成设置,输入命令 make 对BusyBox进行编译

```
ciiscacc//usi/sucii/reauprorcce
  ./_install//usr/sbin/remove-shell -> ../../bin/busybox
  ./_install//usr/sbin/rtcwake -> ../../bin/busybox
  ./_install//usr/sbin/sendmail -> ../../bin/busybox
  ./_install//usr/sbin/setfont -> ../../bin/busybox
  ./_install//usr/sbin/setlogcons -> ../../bin/busybox
  ./_install//usr/sbin/svlogd -> ../../bin/busybox
  ./_install//usr/sbin/telnetd -> ../../bin/busybox
  ./ install//usr/sbin/tftpd -> ../../bin/busybox
  ./_install//usr/sbin/ubiattach -> ../../bin/busybox
  ./_install//usr/sbin/ubidetach -> ../../bin/busybox
  ./ install//usr/sbin/ubimkvol -> ../../bin/busybox
  ./_install//usr/sbin/ubirename -> ../../bin/busybox
  ./ install//usr/sbin/ubirmvol -> ../../bin/busybox
  ./_install//usr/sbin/ubirsvol -> ../../bin/busybox
  ./ install//usr/sbin/ubiupdatevol -> ../../bin/busybox
  ./ install//usr/sbin/udhcpd -> ../../bin/busybox
You will probably need to make your busybox binary
setuid root to ensure all configured applets will
work properly.
```

```
busybox_unstripped
Static linking against glibc, can't use --gc-sections
Trying libraries: crypt m resolv rt
Library crypt is not needed, excluding it
Library m is needed, can't exclude it (yet)
Library resolv is needed, can't exclude it (yet)
Library rt is not needed, excluding it
Library m is needed, can't exclude it (yet)
Library resolv is needed, can't exclude it (yet)
Final link with: m resolv
          busybox.pod
  DOC
          BusyBox.txt
  DOC
  DOC
          busybox.1
 DOC
          BusyBox.html
```

7.编译安装完成后,生成了一个_install目录,可以看到bin,sbin和usr三个目录



8.在_install中创建etc目录,在etc内建立rci, nittab, motd三个文件,并且创建init.d目录

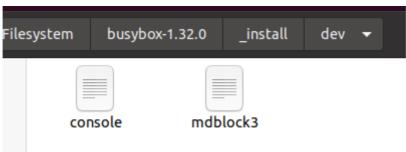


9.在init.d目录中,使用命令 In -s ../rc rcS 创建rc文件的符号连接文件rcS



10.回到_install目录,创建dev目录,使用mknod命令进行创建设备文件





做一个Ubi文件系统

1.先使用make menuconfig, 对ubi进行设置

Device Drivers ---> Memory Technology Device (MTD) support ---> Enable UBI - Unsorted block images

```
{m} Connector - Untitled Userspace <-> kernetspace tinker
<*> Memory Technology Device (MTD) support --->
[*] Device Tree and Open Firmware support
<*> Enable UBI - Unsorted block images --->
```

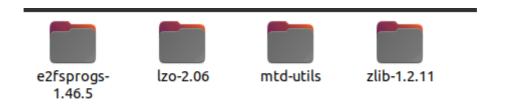
File systems ---> Miscellaneous filesystems ---> UBIFS file system support

```
[*] Miscellaneous filesystems --->

[*] Wiscellaneous filesystems --->

<*> UFS file system support (read only)
```

2.下载MTD Utilites和3个编译所需的依赖库: Zlib, Lzo, e2fsprogs



3.对这三个依赖库进行编译

./configure --prefix=/lgx/home/mtd/install

```
lgx@ubuntu:~/mtd/zlib-1.2.11$ make install
rm -f ~/mtd/install/lib/libz.a
cp libz.a ~/mtd/install/lib/libz.a
cp libz.so.1.2.11 ~/mtd/install/lib
chmod 644 ~/mtd/install/lib/libz.so.1.2.11
rm -f ~/mtd/install/lib/libz.so.1.2.11
rm -f ~/mtd/install/share/man/man3/zlib.3
cp zlib.3 ~/mtd/install/share/man/man3
chmod 644 ~/mtd/install/share/man/man3/zlib.3
rm -f ~/mtd/install/lib/pkgconfig/zlib.pc
cp zlib.pc ~/mtd/install/lib/pkgconfig
chmod 644 ~/mtd/install/lib/pkgconfig/zlib.pc
rm -f ~/mtd/install/lib/pkgconfig/zlib.pc
rm -f ~/mtd/install/include/zlib.h ~/mtd/install/include/zconf.h
cp zlib.h zconf.h ~/mtd/install/include
chmod 644 ~/mtd/install/include/zlib.h ~/mtd/install/include/zconf.h
```

./configure CPPFLAGS="\$CPPFLAGS -std=c90 -fPIC" --build=i686-pc-linux --prefix=/lgx/home/mtd/install

```
lgx@ubuntu:~/mtd/lzo-2.06$ sudo make install
make[1]: Entering directory '/home/lgx/mtd/lzo-2.06'
test -z "/lgx/home/mtd/install/lib" || /usr/bin/mkdir -p "/lgx/home/mtd/install/
lib"
/bin/bash ./libtool
                      --mode=install /usr/bin/install -c src/liblzo2.la '/lgx
/home/mtd/install/lib'
libtool: install: /usr/bin/install -c src/.libs/liblzo2.lai /lgx/home/mtd/instal
l/lib/liblzo2.la
libtool: install: /usr/bin/install -c src/.libs/liblzo2.a /lgx/home/mtd/install/
lib/liblzo2.a
libtool: install: chmod 644 /lgx/home/mtd/install/lib/liblzo2.a
libtool: install: ranlib /lgx/home/mtd/install/lib/liblzo2.a
libtool: finish: PATH="/usr/local/sbin:/usr/local/bin:/usr/sbin:/sbin:/
bin:/snap/bin:/sbin" ldconfig -n /lgx/home/mtd/install/lib
Libraries have been installed in:
   /lgx/home/mtd/install/lib
```

./configure --build=i686-pc-linux --prefix=/lgx/home/mtd/install

```
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/bitops.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/ext2fs.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/ext2_io.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/ext2_fs.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/ext2_ext_attr.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/ext3_extents.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/tdb.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/qcow2.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/hashmap.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/ext2_err.h
INSTALL_DATA /lgx/home/mtd/install/include/ext2fs/ext2_types.h
INSTALL_DATA /lgx/home/mtd/install/lib/pkgconfig/ext2fs.pc
make[2]: Leaving directory '/home/lgx/mtd/e2fsprogs-1.46.5/lib/ext2fs'
make[1]: Leaving directory '/home/lgx/mtd/e2fsprogs-1.46.5'
lgx@ubuntu:~/mtd/e2fsprogs-1.46.5$
```

进入/lib/uuid进行安装

```
lgx@ubuntu:~/mtd/e2fsprogs-1.46.5/lib/uuid$ sudo make install
[sudo] password for lgx:
        MKDIR P /lgx/home/mtd/install/lib /lgx/home/mtd/install/include/uuid /lg
x/home/mtd/install/share/man/man3
        INSTALL_DATA /lgx/home/mtd/install/lib/libuuid.a
        INSTALL_DATA /lgx/home/mtd/install/include/uuid/uuid.h
        INSTALL_DATA /lgx/home/mtd/install/share/man3/uuid.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_clear.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_compare.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_copy.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_generate.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_is_null.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_parse.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_time.3
        INSTALL_DATA /lgx/home/mtd/install/share/man/man3/uuid_unparse.3
        LINK /lgx/home/mtd/install/share/man/man3/uuid_generate_random.3
LINK /lgx/home/mtd/install/share/man/man3/uuid_generate_time.3
        INSTALL_DATA /lgx/home/mtd/install/lib/pkgconfig/uuid.pc
```

4.然后对mtd-utils进行编译,编译失败