7.1 Hello World!

7.1.1 Hello World Source code

Hello World source code in the CD on linux/examples.tgz package, if you read the steps to install the development environment in chapter 5, it will be located in "/opt/FriendlyARM/mini2440 /examples/hello" directory, its source code is as follows:

```
//Hello, World source code:
#include <stdio.h>
int main (void){
      printf("Hello, FriendyARM!\n");
}
```

7.1.2 Compile Hello World

First, enter the test program source code directory.

```
#cd /opt/FriendlyARM/mini2440/examples/hello
```

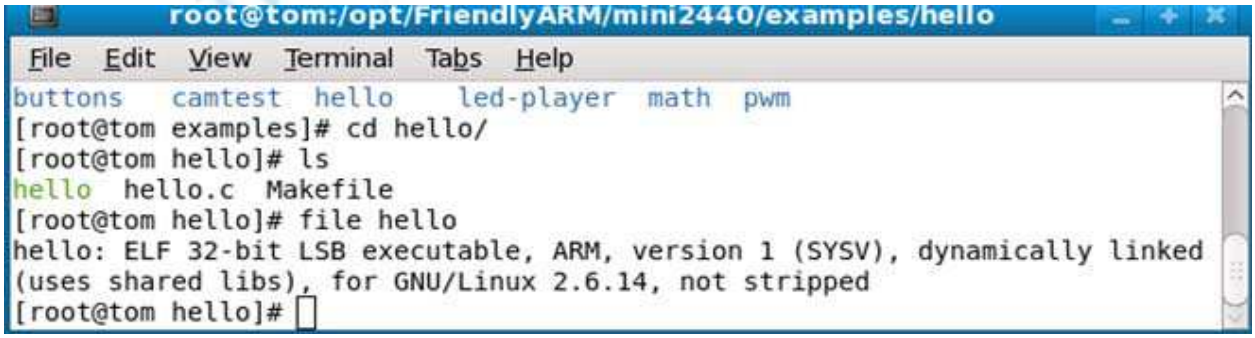
And then, use the command line for manual cross-compiling the sample programs.

```
#arm-linux-gcc-o hello main.c
```

With the build script to compile.

```
#make
```

Finally create hello file, you use the file command to check to create and executable hello file system by ARM version, the development board are operation of the executable files and there are create as shown:



7.1.3 The Hello, World downloaded to the development board to run

Download the executable file will be compiled to the target board is mainly in four ways:

- First: Copy to external media (eg. USB flash drive, SD card)
- Second: Transfer files via the network to the development board (recommended).
- Third: Transfer files via the serial port to the development board.
- Fourth: NFS (Network File System) run directly.

The following were introduced:

(1) Use USB flash drives

Method: First copy the compiled executable to flash drive, plug flash drive into the target board and then mount it, then copy the program executable directory to the target board /bin

The following were introduced:

Step 1: Copy the program to flash drive

The flash drive plugged into the PC's USB port, execute the following command to copy the program to flash drive

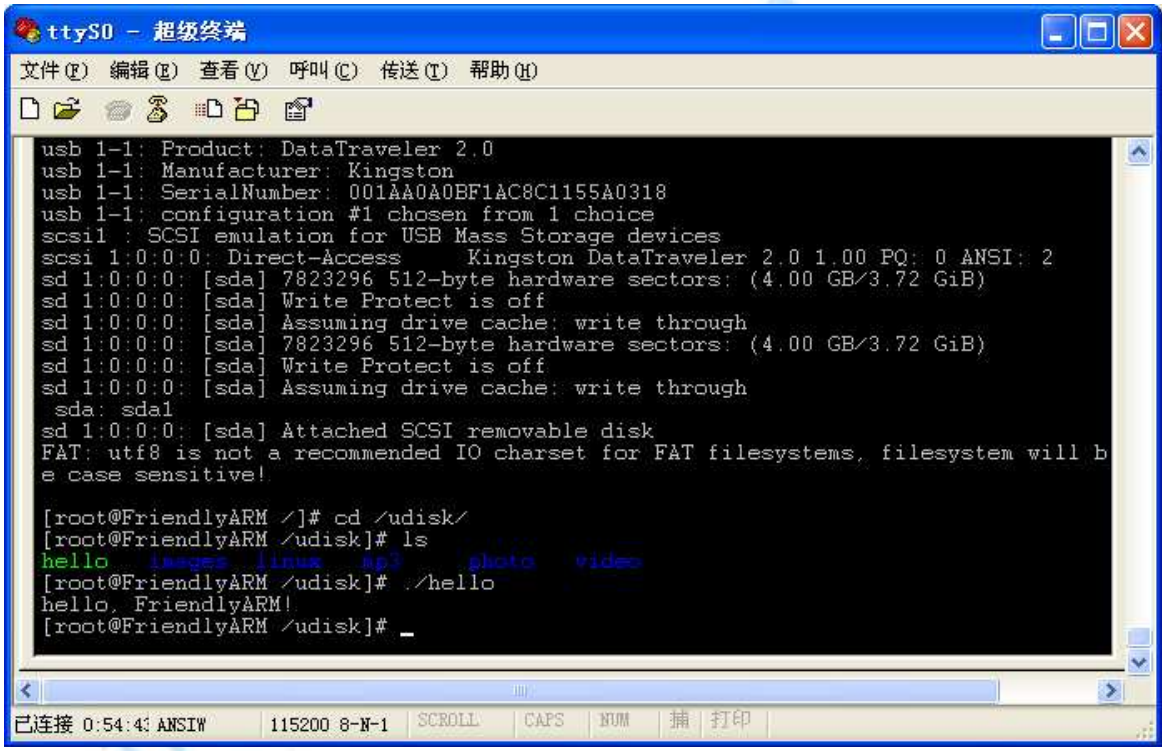
```
#mount /dev/sda1 /mnt       ; mount flash drive
#cp hello /mnt              ; copy the program to flash
#umount /mnt                ; uninstall USB
```

Step 2: Copy the program to the target board from the USB and run.

Insert USB flash drive into the development board USB Host port, USB flash drives will automatically mount to "/udisk" directory, execute the following command to run the hello program.

```
#cd /udisk
#./hello                    ; Hello program execution
```

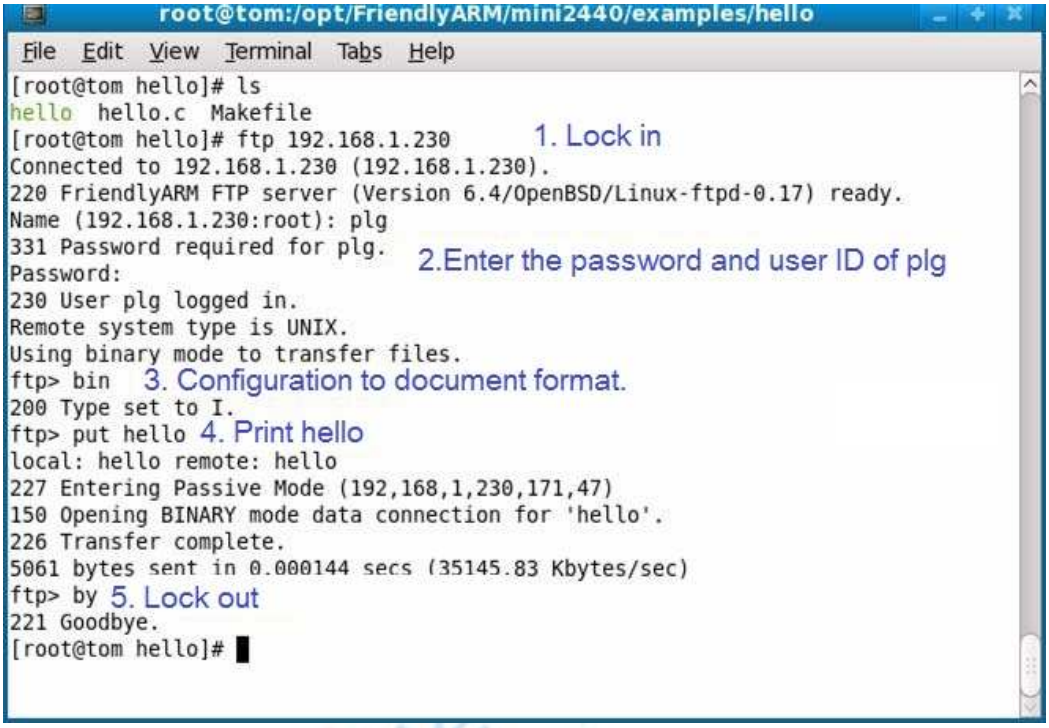
Note: If you forced unplug the USB at this time, you need to return to the root directory, then execute umount /udisk be mounted automatically for the next good preparation.



(2) Use ftp to transfer files (recommended)

Methods: ftp login to target board, upload the compiled program; then modify the upload process the target board executable, and implementation.

For execution the PC side, shown in the figure.



Then, one end of execution the target board, shown in the figure.

(3) Through serial port to transfer files to the development board

In chapter 2.5 we learn how to transfer files through the serial port to the development board, you can also send the same hello executable file, not have steps in detailed description, but remember that the properties of the file transfer is complete in execute to perform normal run.

```
#chmod +x hello
```

Note: Someone use a USB to serial cable because some adapter has performance is not good, so sometimes "transfer out" or simply can't be transferred to the development board, therefore we recommend the use of ftp transfer to the development board.

(4) Through execution Network File System (NFS)

Linux has used method into use NFS to execute various procedures, so that you can't use a lot of time to download the program, although hello program take a short time , but if your application have a more then you will find ease of execute where the use of NFS.

As previously described, first set up in accordance with chapter 4.3 a good NFS server system, then enter the following command at the command line (assuming the server's IP address is 192.168.1.111):

```
#mount -t nfs -o nolock 192.168.1.111:/opt/FriendlyARM
    /mini2440/root_qtopia /mnt
```

You enter the /mnt directory to operate on your PC Linux terminal to copy /opt/FriendlyARM/mini2440/root_qtopia/hello directory, then run the serial port terminal in the development board and execute.

```
#cd /mnt
#./hello
```