看门狗

实验目的

1. 掌握看门狗的概念
2. 掌握 RPi 上编写看门狗程序的方法

实验器材

硬件

Raspberry Pi 板一块；

5V/1A 电源一个；

microUSB 线一根；

USB-TTL 串口线一根（FT232RL 芯片或 PL2303 芯片）。

自备器材：

PC（Windows/Mac OS/Linux）一台。

无线网卡

软件

PC 上的 USB-TTL 串口线配套的驱动程序；
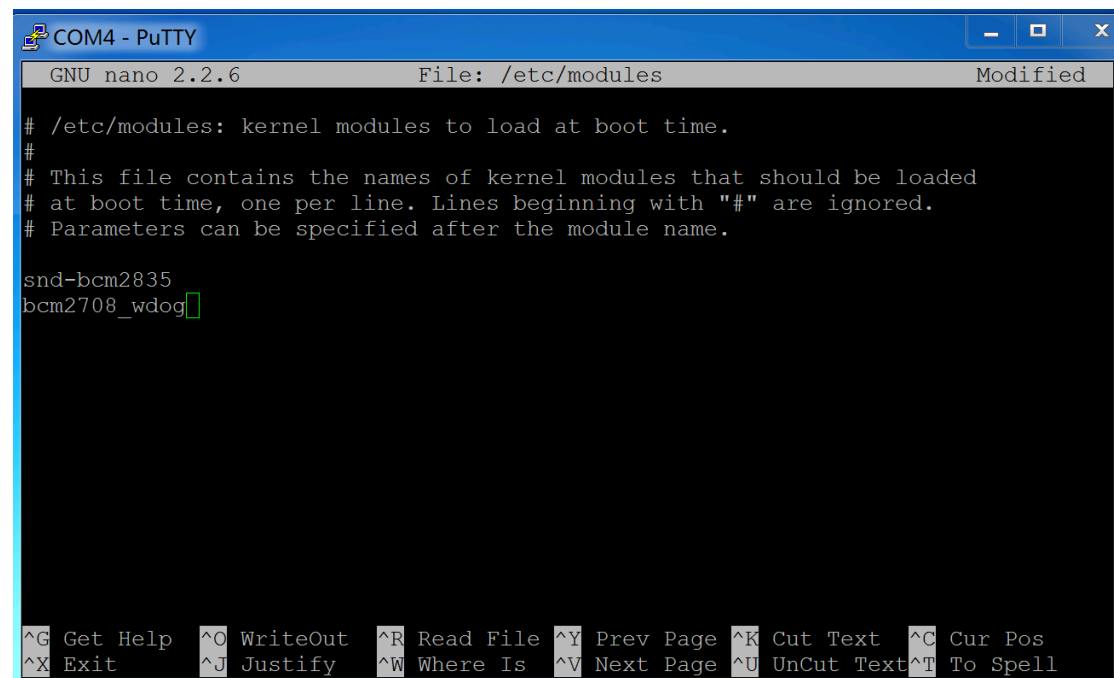
PC 上的串口终端软件， putty

实验步骤

1.给树莓派安装看门狗

modprobe bcm2708_wdog

编写/etc/modules 模块，添加 bcm2708_wdog

```
pi@raspberrypi:~$ sudo modprobe bcm2708_wdog
pi@raspberrypi:~$ sudo nano /etc/modules
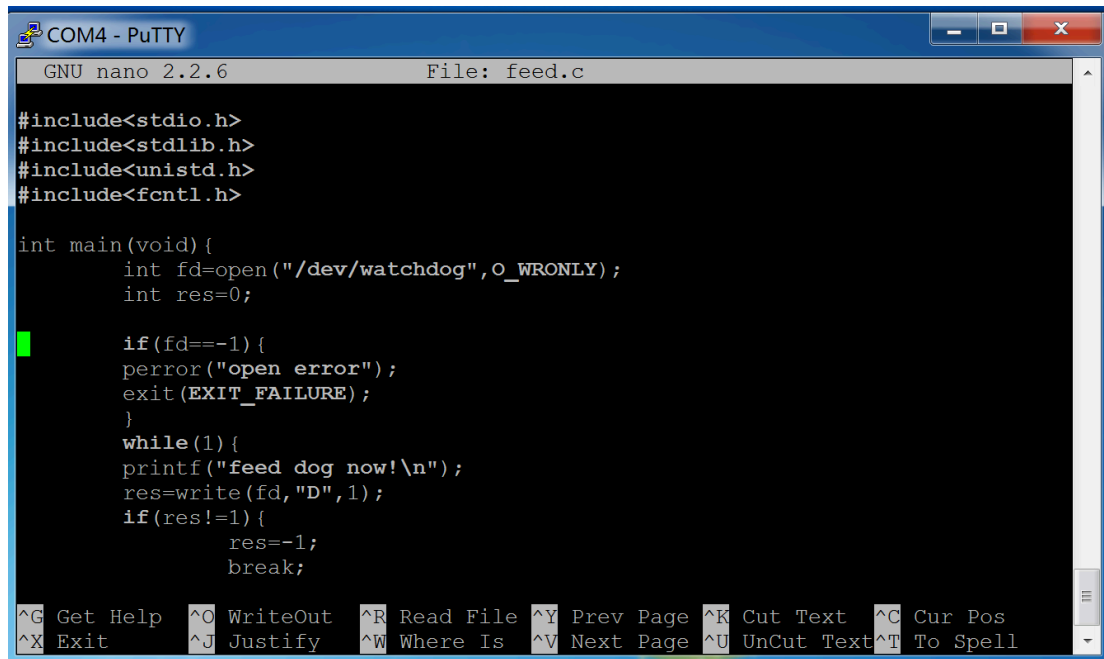```

```
COM4 - PuTTY

  GNU nano 2.2.6          File: /etc/modules                Modified

# /etc/modules: kernel modules to load at boot time.
#
# This file contains the names of kernel modules that should be loaded
# at boot time, one per line. Lines beginning with "#" are ignored.
# Parameters can be specified after the module name.

snd-bcm2835
bcm2708_wdog

^G Get Help   ^O WriteOut   ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit       ^J Justify    ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```

3. 编写喂狗程序

每过 10s 向/dev/watchdog 文件写字母''

```
GNU nano 2.2.6          File: feed.c

#include<stdio.h>
#include<stdlib.h>
#include<unistd.h>
#include<fcntl.h>

int main(void){
        int fd=open("/dev/watchdog",O_WRONLY);
        int res=0;

        if(fd==-1){
        perror("open error");
        exit(EXIT_FAILURE);
        }
        while(1){
        printf("feed dog now!\n");
        res=write(fd,"D",1);
        if(res!=1){
                res=-1;
                break;

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text   ^C Cur Pos
^X Exit      ^J Justify   ^W Where Is   ^V Next Page  ^U UnCut Text ^T To Spell
```
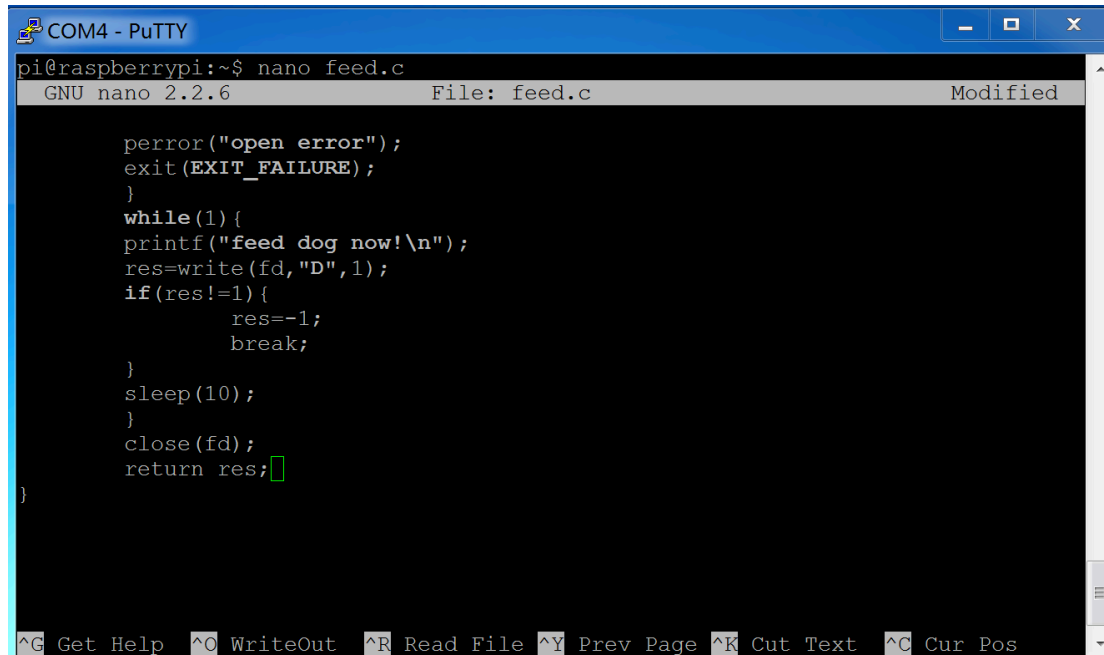
```
pi@raspberrypi:~$ nano feed.c
GNU nano 2.2.6          File: feed.c                         Modified

        perror("open error");
        exit(EXIT_FAILURE);
        }
        while(1){
        printf("feed dog now!\n");
        res=write(fd,"D",1);
        if(res!=1){
                res=-1;
                break;
        }
        sleep(10);
        }
        close(fd);
        return res;
}

^G Get Help  ^O WriteOut  ^R Read File  ^Y Prev Page  ^K Cut Text  ^C Cur Pos
```
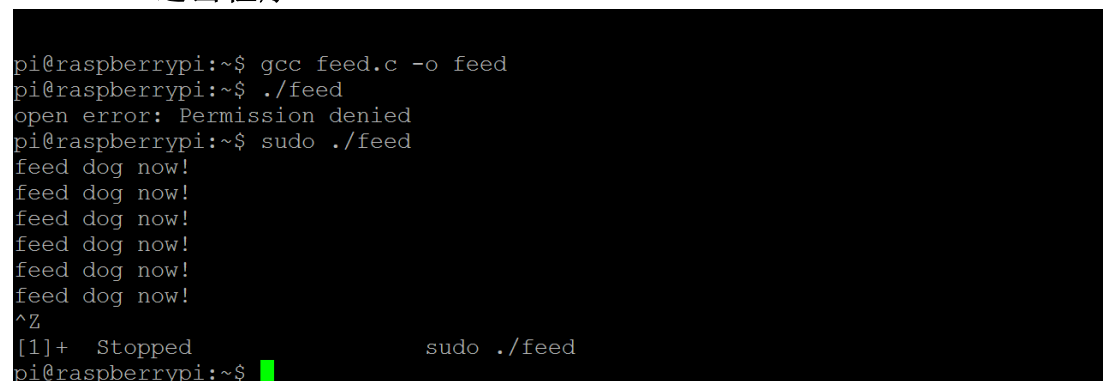
4. 编译运行喂狗程序
ctrl+z 退出程序

```
pi@raspberrypi:~$ gcc feed.c -o feed
pi@raspberrypi:~$ ./feed
open error: Permission denied
pi@raspberrypi:~$ sudo ./feed
feed dog now!
feed dog now!
feed dog now!
feed dog now!
feed dog now!
feed dog now!
^Z
[1]+  Stopped                 sudo ./feed
pi@raspberrypi:~$
```

5. 验证

程序退出后，系统重启

```
[    7.306259] udevd[159]: starting version 175
[   13.150080] EXT4-fs (mmcblk0p2): re-mounted. Opts: (null)
[   13.853085] EXT4-fs (mmcblk0p2): re-mounted. Opts: (null)
[   14.478798] random: nonblocking pool is initialized
[   14.825293] bcm2708 watchdog, heartbeat=10 sec (nowayout=0)

Raspbian GNU/Linux 7 raspberrypi ttyAMA0

raspberrypi login: pi
Password:
Last login: Sun Mar 29 10:20:06 UTC 2015 on ttyAMA0
Linux raspberrypi 3.18.7+ #755 PREEMPT Thu Feb 12 17:14:31 GMT 2015 armv6l

The programs included with the Debian GNU/Linux system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.

NOTICE: the software on this Raspberry Pi has not been fully configured. Please
run 'sudo raspi-config'

pi@raspberrypi:~$
```

重启信息里有 watchdog 程序相关信息