

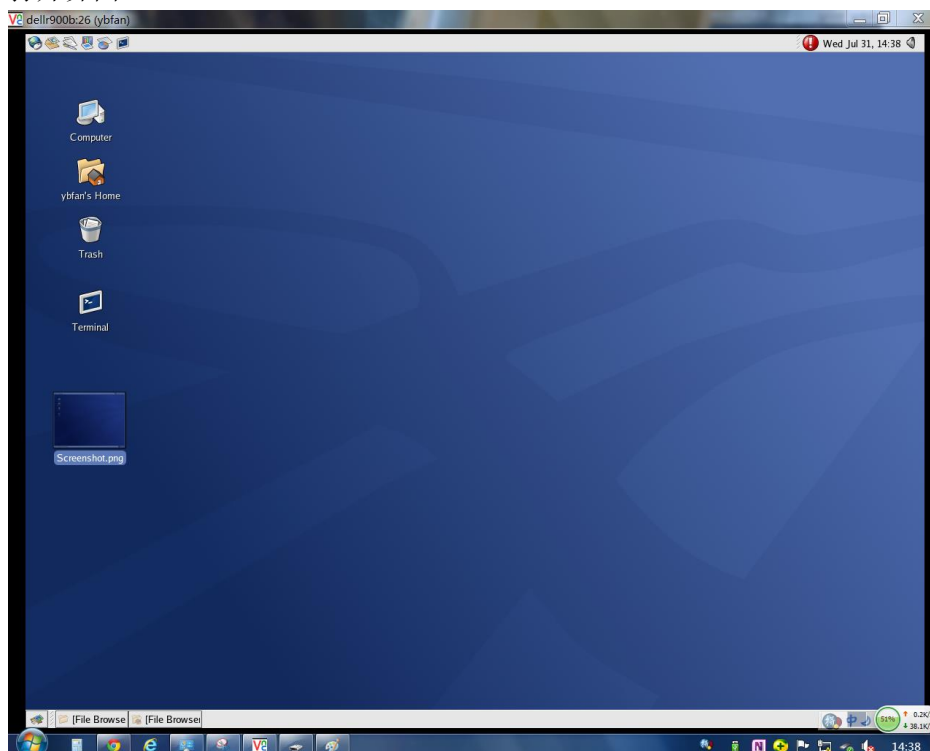
# 多核编程步骤

Yize Jin

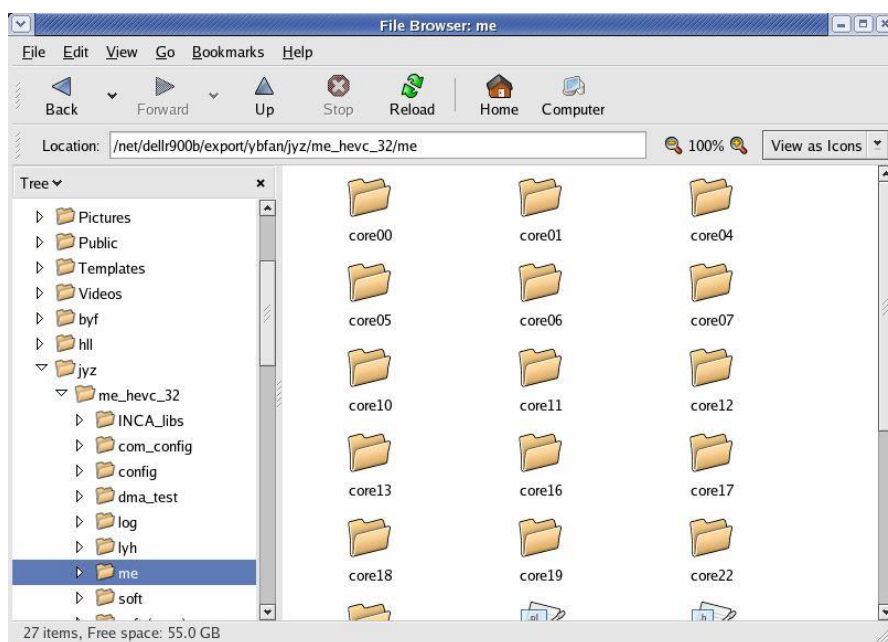
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1. 打开界面。



2. 找到 core 所在文件夹:



3. 进入每个 core，为各个 core 进行编程（也可以从外部导入.c 文件）（我选用的是 0，1，6，7，这四个 core 都在一个 cluster 中）

```

21#define FLAG_1 *(volatile int*) 0x00001050
22#define FLAG_2 *(volatile int*) 0x00001150
23#define FLAG_3 *(volatile int*) 0x00001250
24#define FLAG_4 *(volatile int*) 0x00001350
25#define denote_1 *(volatile int*) 0x00001450
26#define denote_2 *(volatile int*) 0x00001550
27#define denote_3 *(volatile int*) 0x00001650
28#define denote_4 *(volatile int*) 0x00001750
29
30//*****
31//main function
32//*****
33int main()
34{
35    denote_1=0,denote_2=0,denote_3=0,denote_4=0;
36    int i=1,sum;
37    FLAG_1=0;
38    for(i=1;i<=2500;i++)
39        FLAG_1+=i;
40    //_flag_2NaN = 65535;
41    denote_1=1;
42    while(1)
43        if(denote_1==1&&denote_2==1&&denote_3==1&&denote_4==1) break;
44    sum=FLAG_1+FLAG_2+FLAG_3+FLAG_4;
45    echo1=sum;
46    return 0;
47}

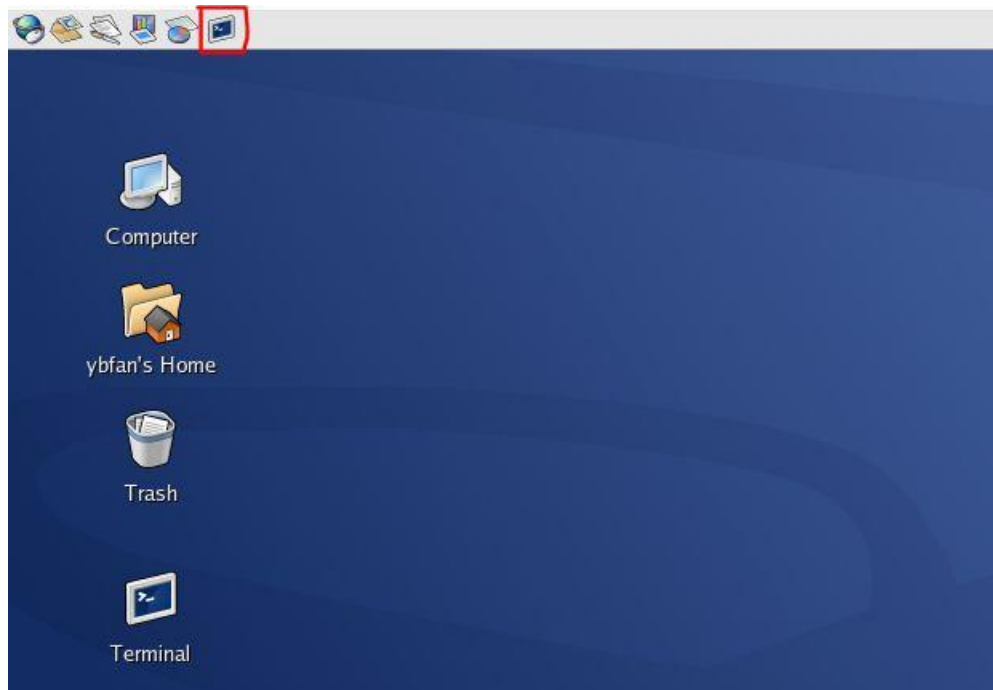
18//*****
19//memory communication
20//*****
21#define FLAG_1 *(volatile int*) 0x00005050
22#define FLAG_2 *(volatile int*) 0x00005150
23#define FLAG_3 *(volatile int*) 0x00005250
24#define FLAG_4 *(volatile int*) 0x00005350
25#define denote_1 *(volatile int*) 0x00005450
26#define denote_2 *(volatile int*) 0x00005550
27#define denote_3 *(volatile int*) 0x00005650
28#define denote_4 *(volatile int*) 0x00005750
29
30//*****
31//main function
32//*****
33int main()
34{
35    int i;
36    FLAG_3=0;
37    for(i=5001;i<=7500;i++)
38        FLAG_3+=i;
39    denote_3=1;
40    return 0;
41}

//*****
//memory communication
//*****
#define FLAG_1 *(volatile int*) 0x00007050
#define FLAG_2 *(volatile int*) 0x00007150
#define FLAG_3 *(volatile int*) 0x00007250
#define FLAG_4 *(volatile int*) 0x00007350
#define denote_1 *(volatile int*) 0x00007450
#define denote_2 *(volatile int*) 0x00007550
#define denote_3 *(volatile int*) 0x00007650
#define denote_4 *(volatile int*) 0x00007750
//*****
//main function
//*****
int main()
{
    int i=1;
    FLAG_2=0;
    for(i=2501;i<=5000;i++)
        FLAG_2+=i;
    denote_2=1;
    return 0;
}

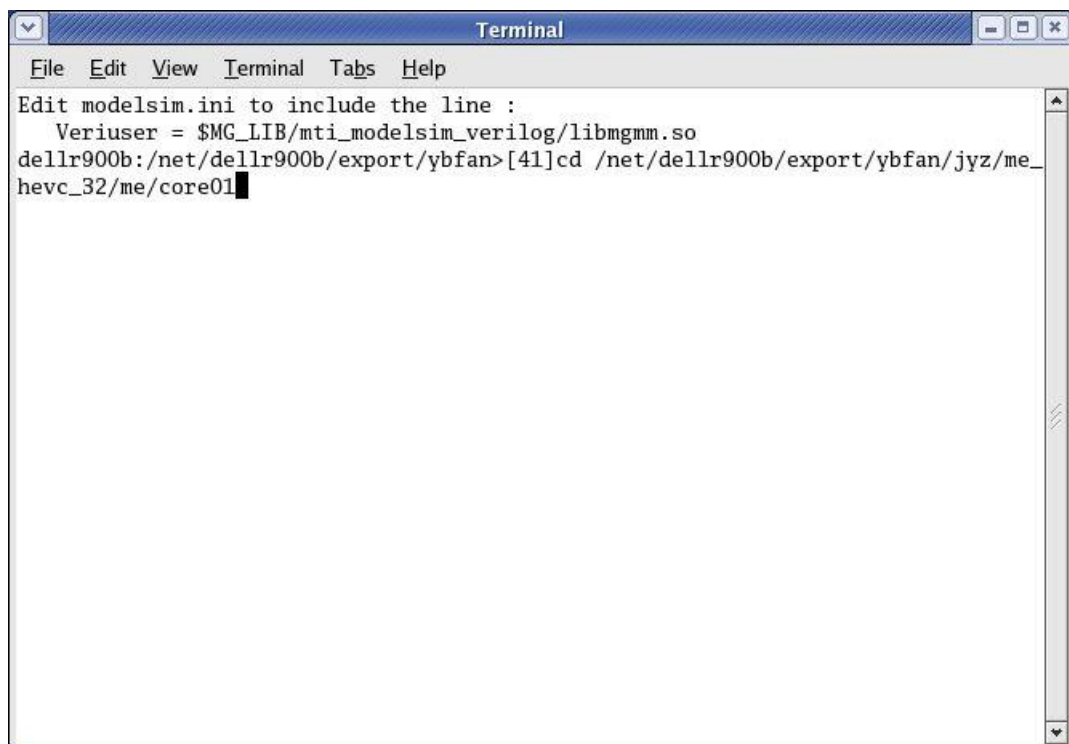
18//*****
19//memory communication
20//*****
21#define FLAG_1 *(volatile int*) 0x00003050
22#define FLAG_2 *(volatile int*) 0x00003150
23#define FLAG_3 *(volatile int*) 0x00003250
24#define FLAG_4 *(volatile int*) 0x00003350
25#define denote_1 *(volatile int*) 0x00003450
26#define denote_2 *(volatile int*) 0x00003550
27#define denote_3 *(volatile int*) 0x00003650
28#define denote_4 *(volatile int*) 0x00003750
29
30//*****
31//main function
32//*****
33int main()
34{
35    int i;
36    FLAG_4=0;
37    for(i=7501;i<=10000;i++)
38        FLAG_4+=i;
39    denote_4=1;
40    return 0;
41}

```

4. 编好程序后，打开 telnet，或者直接在每个 core 文件夹内双击 run\_script 程序（缺点是无法 debug）



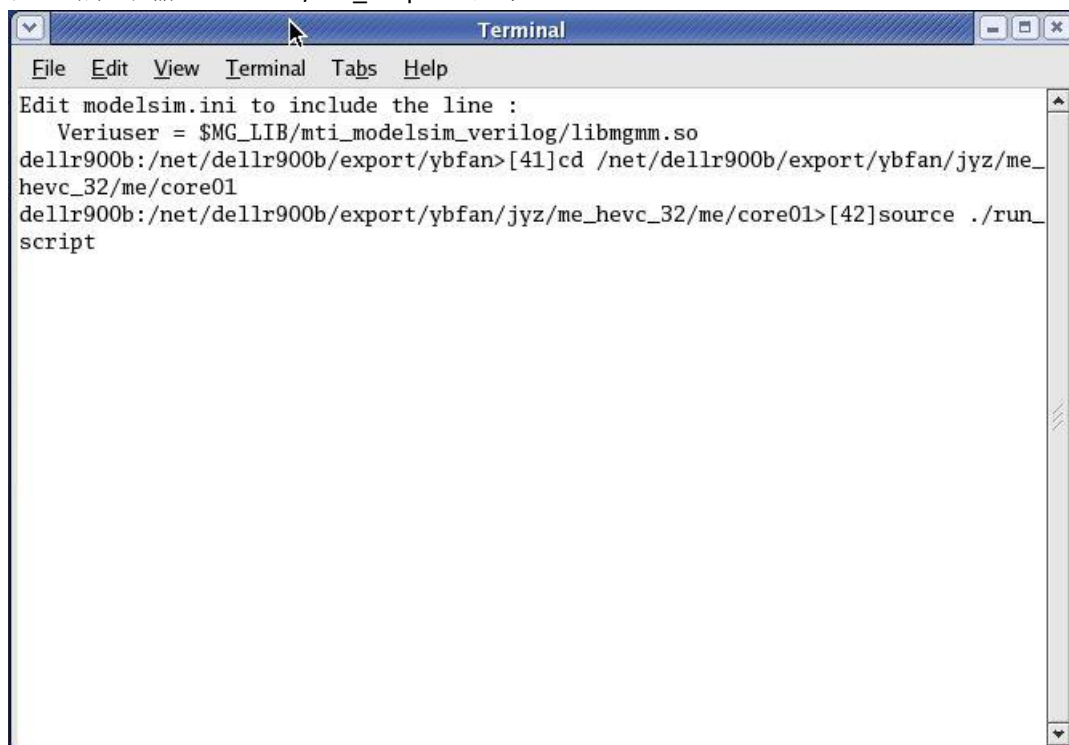
5. 在 telnet 中输入一个核中.c 文件的路径，格式为“cd+空格+路径”，回车



A terminal window titled "Terminal" with a menu bar (File, Edit, View, Terminal, Tabs, Help). The text inside shows the user editing modelsim.ini to include a line: Veriuser = \$MG\_LIB/mti\_modelsim\_verilog/libmgmm.so. The prompt is dellr900b:/net/dellr900b/export/ybfan>. The user enters [41]cd /net/dellr900b/export/ybfan/jyz/me\_hevc\_32/me/core01 and the prompt changes to dellr900b:/net/dellr900b/export/ybfan/jyz/me\_hevc\_32/me/core01.

```
Terminal
File Edit View Terminal Tabs Help
Edit modelsim.ini to include the line :
  Veriuser = $MG_LIB/mti_modelsim_verilog/libmgmm.so
dellr900b:/net/dellr900b/export/ybfan>[41]cd /net/dellr900b/export/ybfan/jyz/me_
hevc_32/me/core01
```

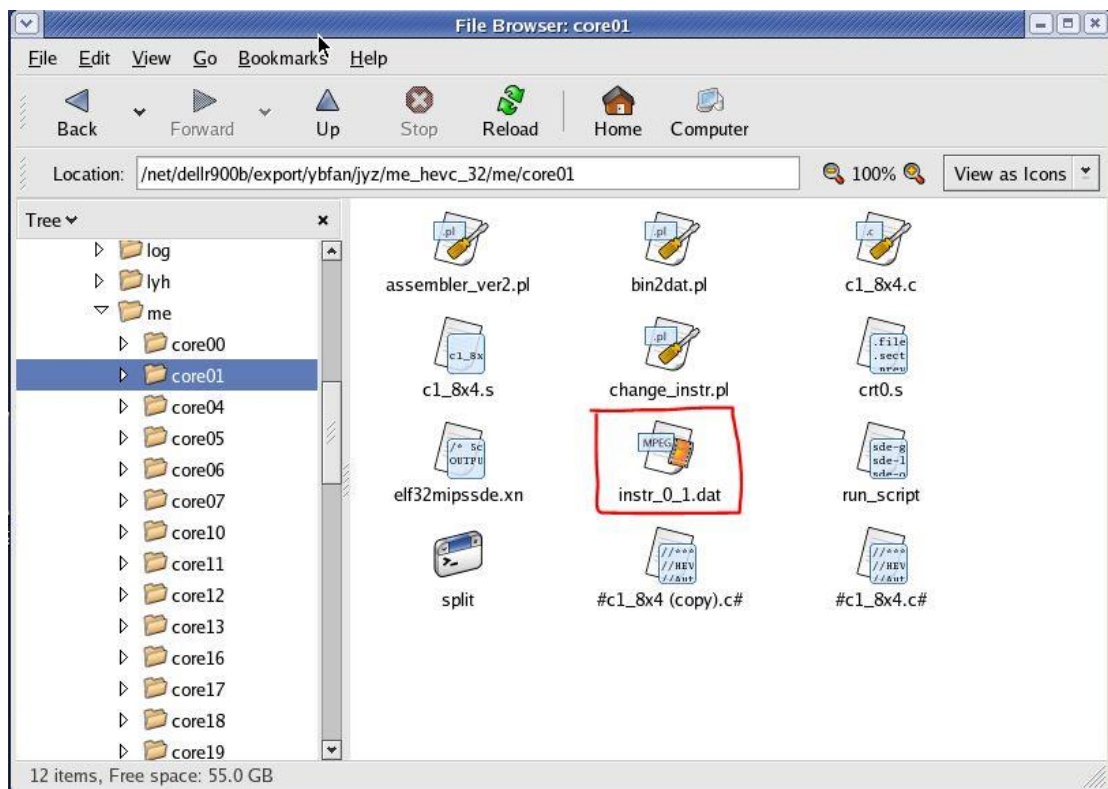
6. 在此路径下输入“source ./run\_script”，回车。



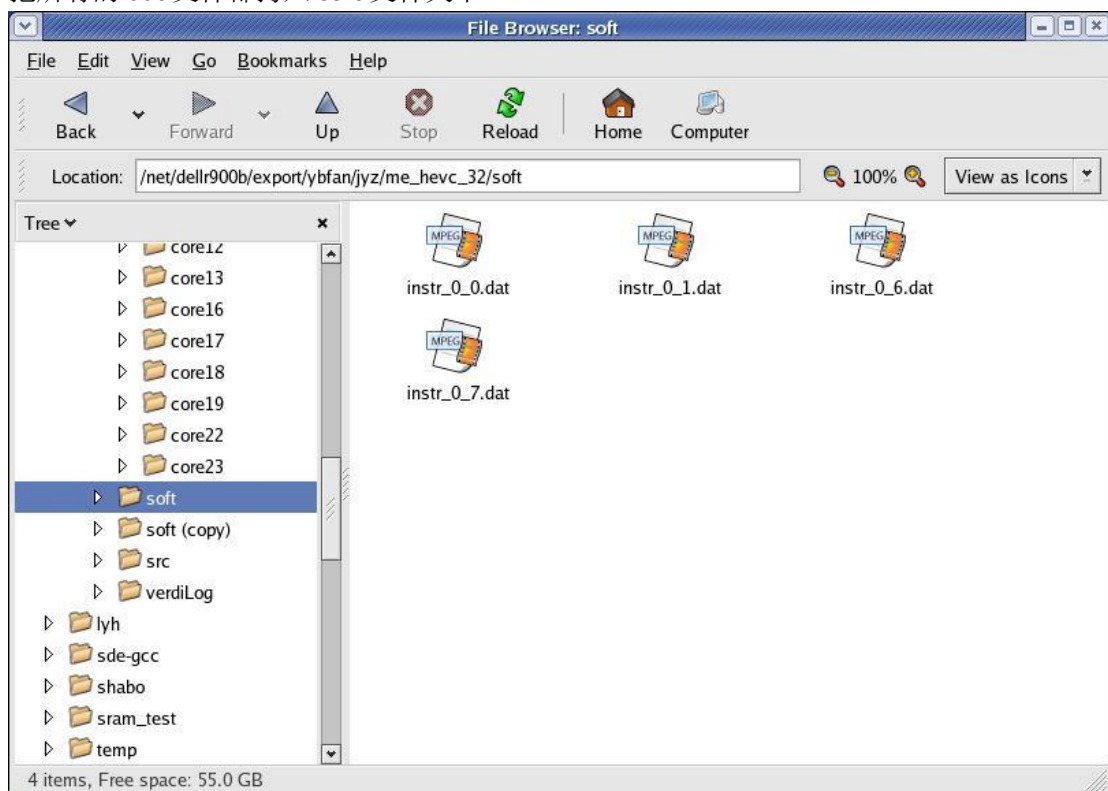
A terminal window titled "Terminal" with a menu bar (File, Edit, View, Terminal, Tabs, Help). The text inside shows the user editing modelsim.ini to include a line: Veriuser = \$MG\_LIB/mti\_modelsim\_verilog/libmgmm.so. The prompt is dellr900b:/net/dellr900b/export/ybfan>. The user enters [41]cd /net/dellr900b/export/ybfan/jyz/me\_hevc\_32/me/core01 and the prompt changes to dellr900b:/net/dellr900b/export/ybfan/jyz/me\_hevc\_32/me/core01. The user then enters [42]source ./run\_script and the prompt remains the same.

```
Terminal
File Edit View Terminal Tabs Help
Edit modelsim.ini to include the line :
  Veriuser = $MG_LIB/mti_modelsim_verilog/libmgmm.so
dellr900b:/net/dellr900b/export/ybfan>[41]cd /net/dellr900b/export/ybfan/jyz/me_
hevc_32/me/core01
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32/me/core01>[42]source ./run_
script
```

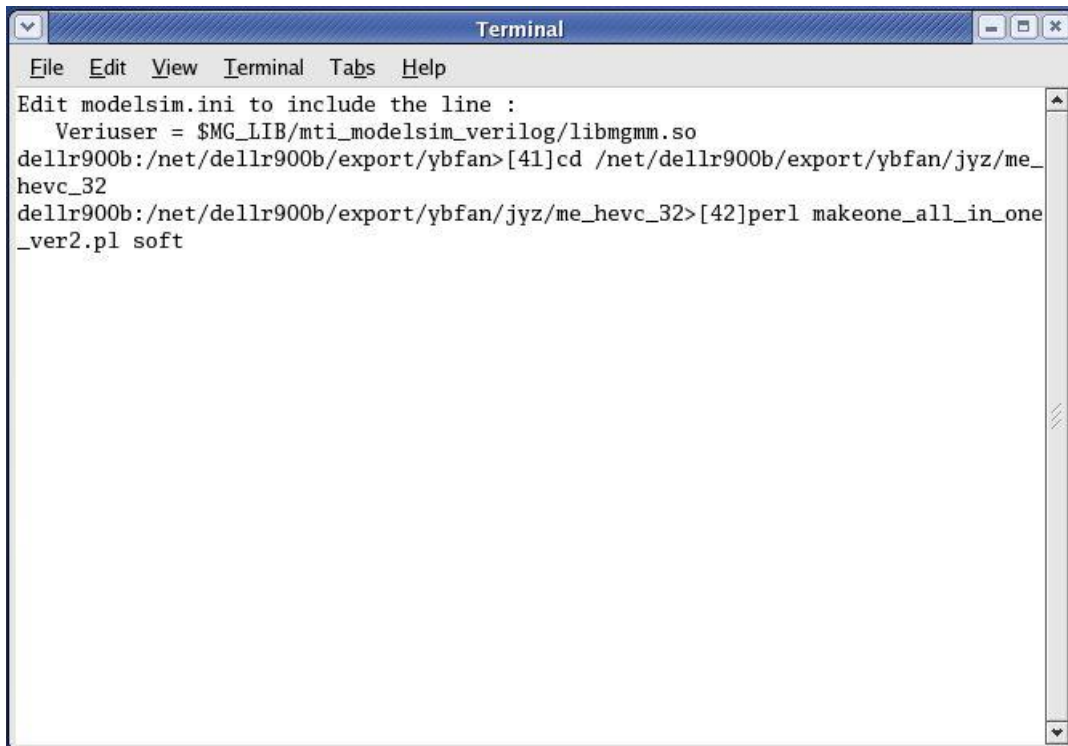
7. core01 文件夹内就会生成两个.dat 文件（一个是储存 instruction，另一个是储存 data，储存 data 的文件可能根据.c 文件的不同而不生成），对另外三个 core 中的.c 文件都进行一遍这样的操作



8. 把所有的.dat 文件都拷入 soft 文件夹中

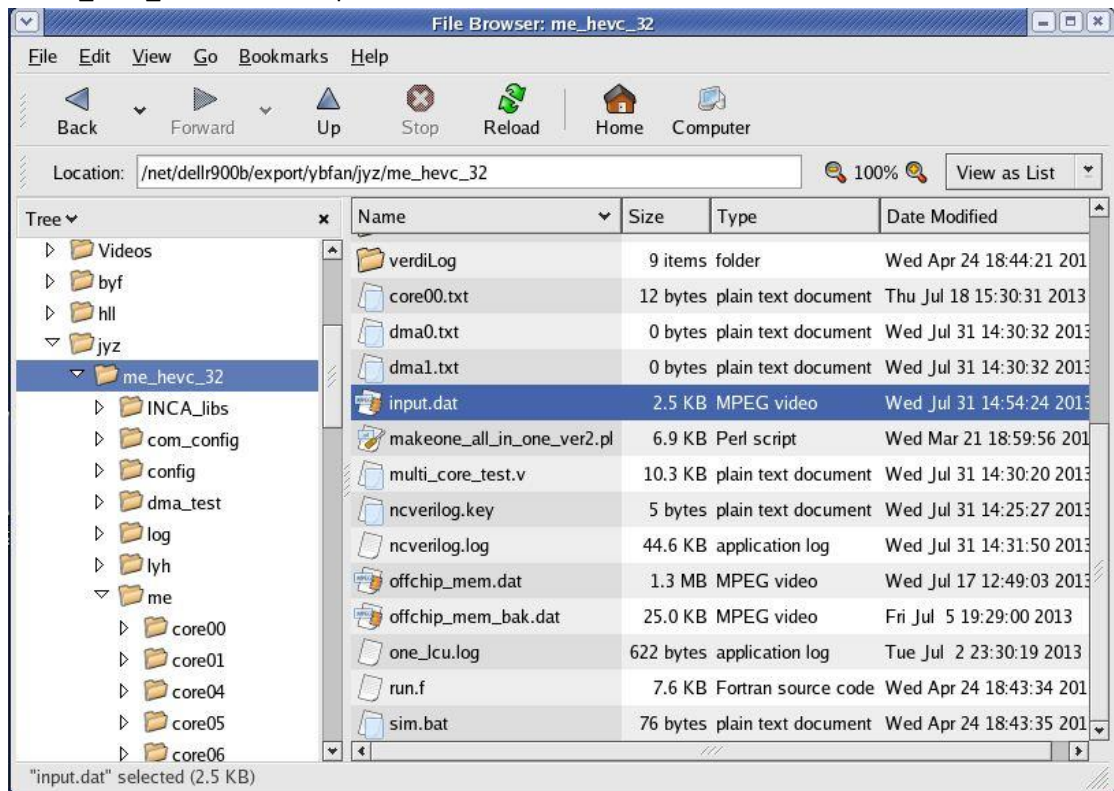


9. 在 me\_hevc\_32 路径下用 telnet 运行 "perl makeone\_all\_in\_one\_ver2.pl soft", 回车。



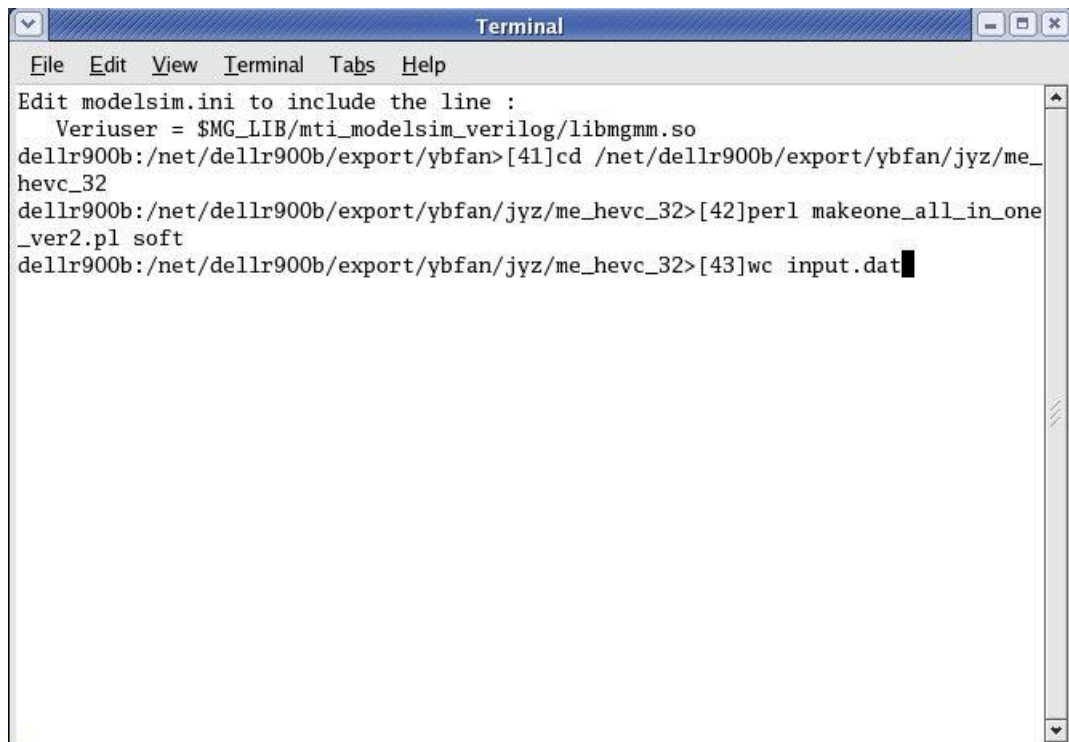
```
Terminal
File Edit View Terminal Tabs Help
Edit modelsim.ini to include the line :
Veriuser = $MG_LIB/mti_modelsim_verilog/libmgmm.so
dellr900b:/net/dellr900b/export/ybfan>[41]cd /net/dellr900b/export/ybfan/jyz/me_
hevc_32
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[42]perl makeone_all_in_one
_ver2.pl soft
```

10. 在 me\_hevc\_32 中会生成 input.dat 文件



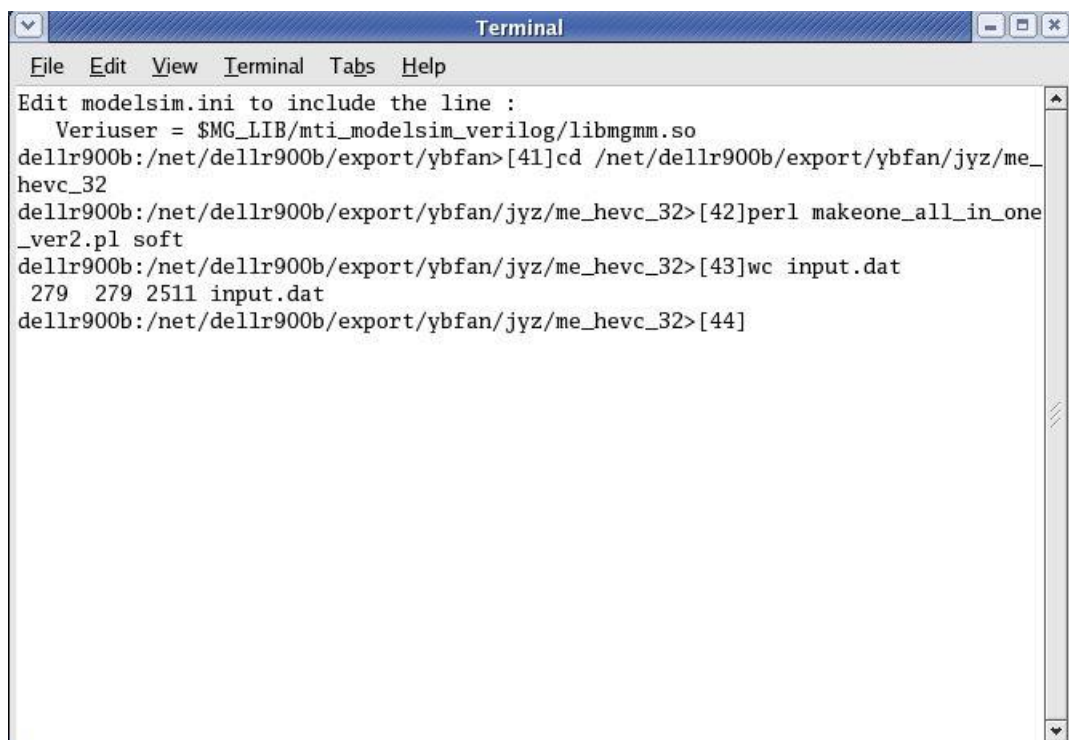
11. 再打开 telnet, 运行“wc input.dat”, 查看指令数





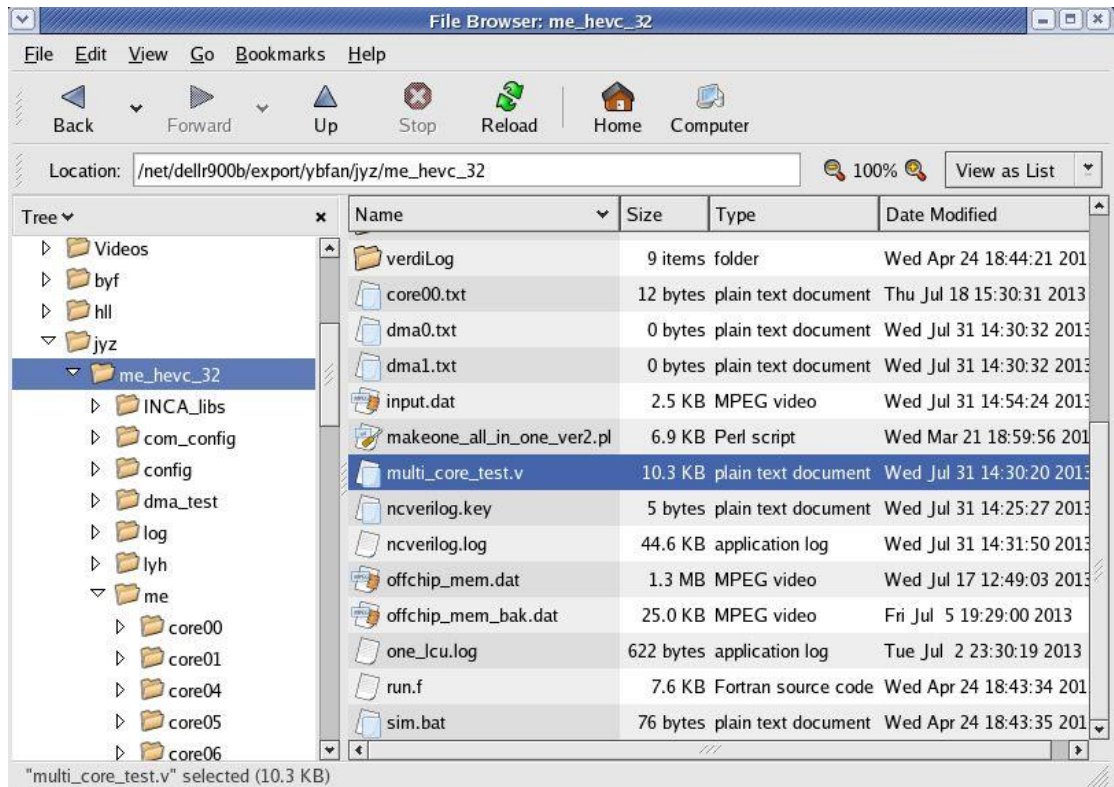
```
Terminal
File Edit View Terminal Tabs Help
Edit modelsim.ini to include the line :
  Veriuser = $MG_LIB/mti_modelsimplerilog/libmgmm.so
dellr900b:/net/dellr900b/export/ybfan>[41]cd /net/dellr900b/export/ybfan/jyz/me_
hevc_32
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[42]perl makeone_all_in_one
_ver2.pl soft
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[43]wc input.dat
```

查看指令数，值为 279

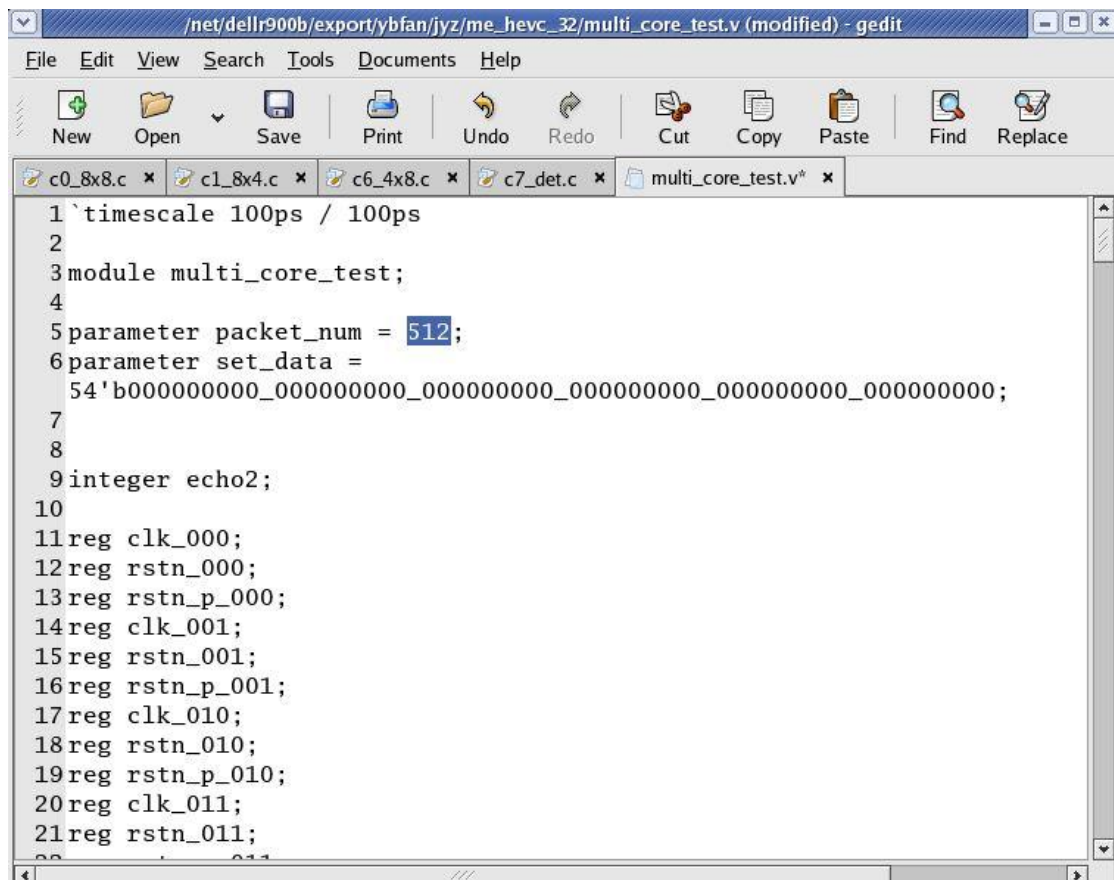


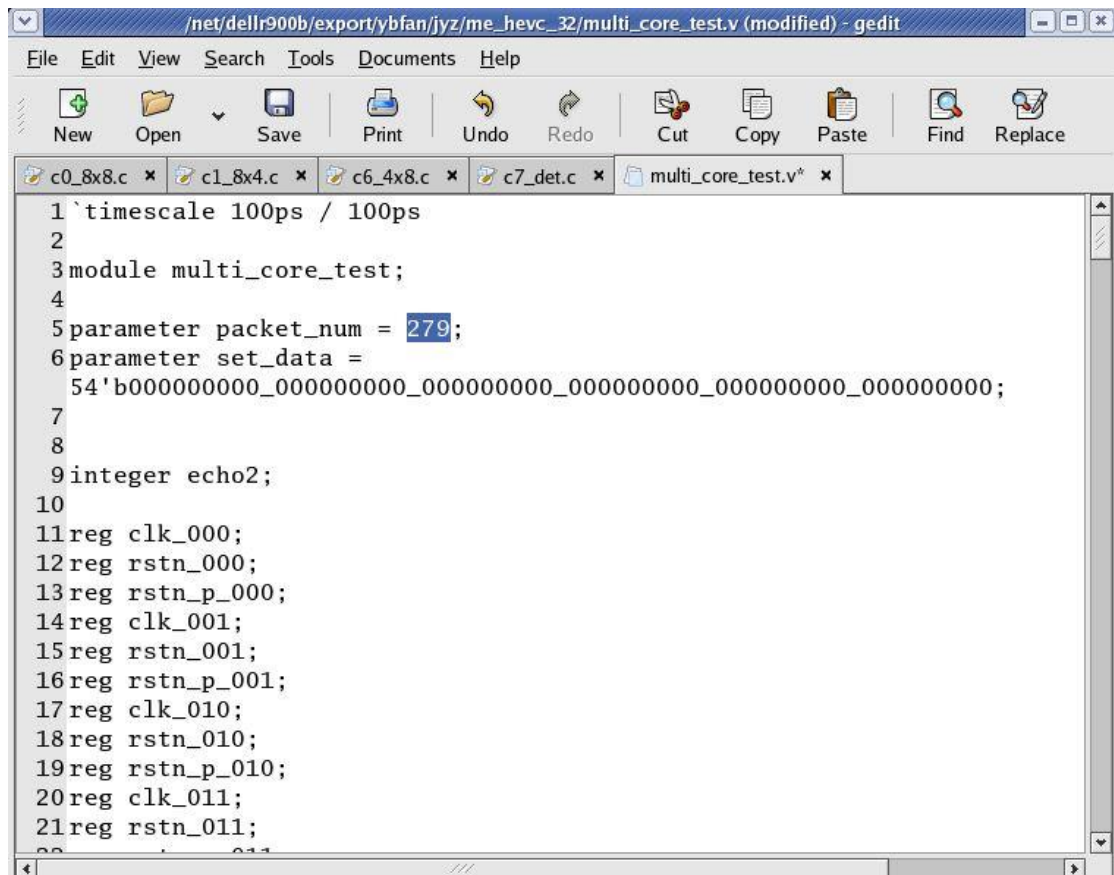
```
Terminal
File Edit View Terminal Tabs Help
Edit modelsim.ini to include the line :
  Veriuser = $MG_LIB/mti_modelsimplerilog/libmgmm.so
dellr900b:/net/dellr900b/export/ybfan>[41]cd /net/dellr900b/export/ybfan/jyz/me_
hevc_32
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[42]perl makeone_all_in_one
_ver2.pl soft
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[43]wc input.dat
 279  279 2511 input.dat
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[44]
```

## 12. 打开 testbench



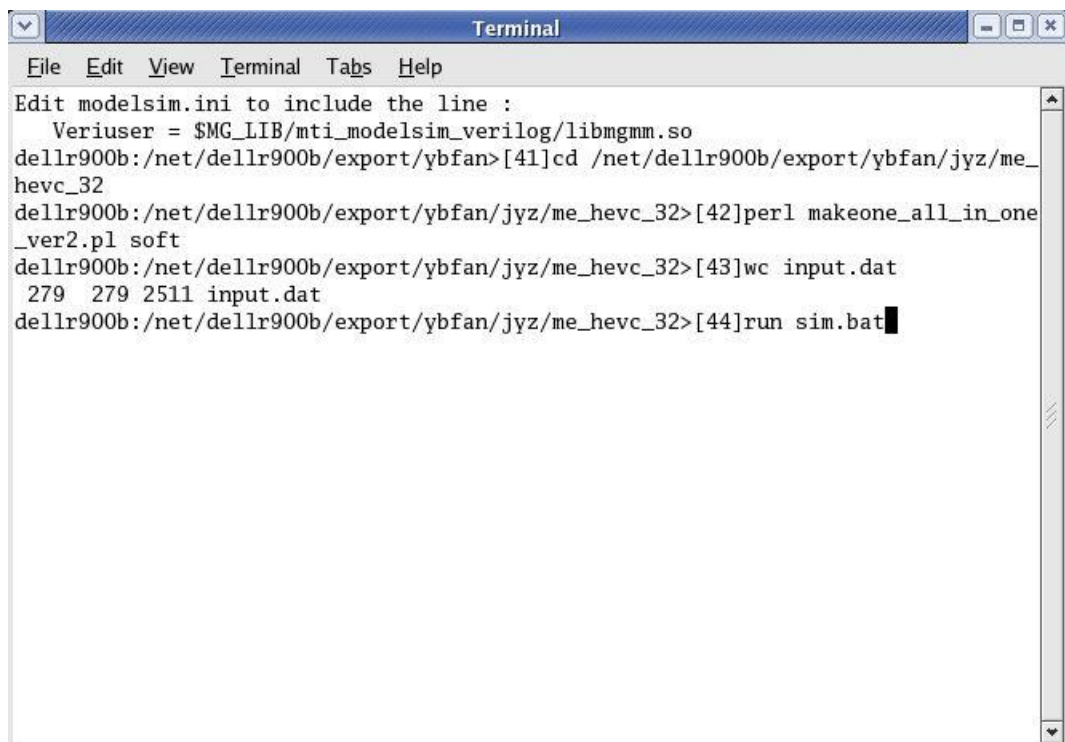
### 13. 修改 testbench 中的 packet\_num





```
1 `timescale 100ps / 100ps
2
3 module multi_core_test;
4
5 parameter packet_num = 279;
6 parameter set_data =
7     54'b000000000_000000000_000000000_000000000_000000000_000000000;
8
9 integer echo2;
10
11 reg clk_000;
12 reg rstn_000;
13 reg rstn_p_000;
14 reg clk_001;
15 reg rstn_001;
16 reg rstn_p_001;
17 reg clk_010;
18 reg rstn_010;
19 reg rstn_p_010;
20 reg clk_011;
21 reg rstn_011;
```

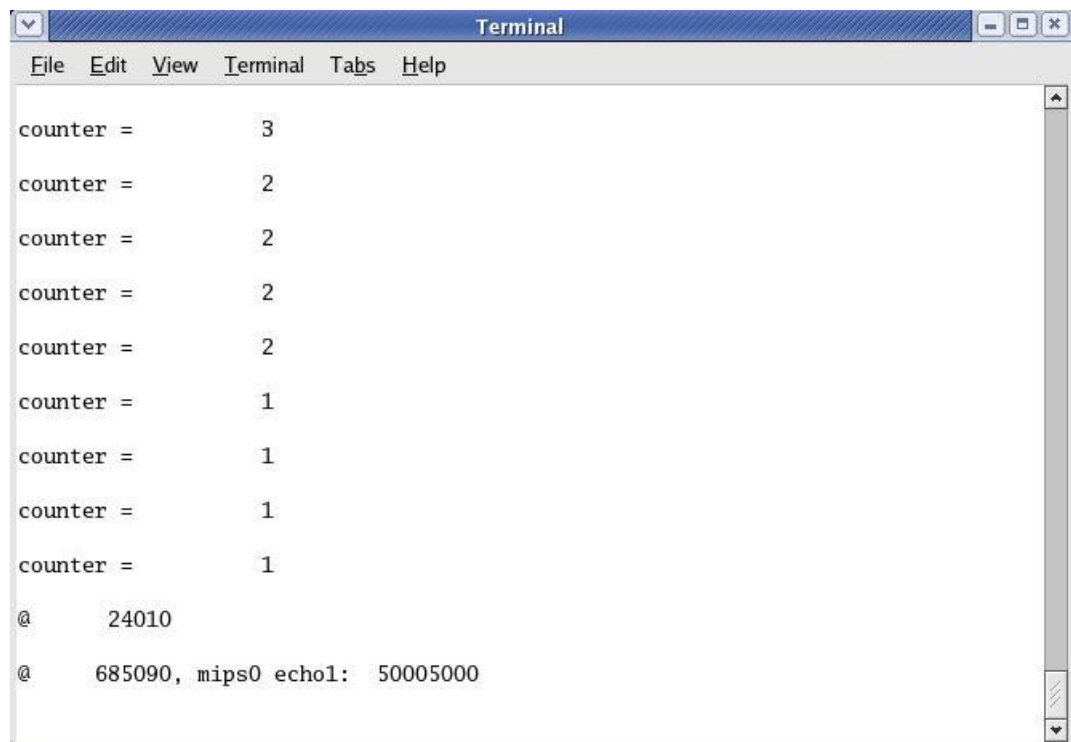
14. 在 telnet 中输入 run sim.bat，运行程序



```
Edit modelsim.ini to include the line :
Veriuser = $MG_LIB/mti_modelsim_verilog/libmgmm.so
dellr900b:/net/dellr900b/export/ybfan>[41]cd /net/dellr900b/export/ybfan/jyz/me_
hevc_32
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[42]perl makeone_all_in_one
_ver2.pl soft
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[43]wc input.dat
279 279 2511 input.dat
dellr900b:/net/dellr900b/export/ybfan/jyz/me_hevc_32>[44]run sim.bat
```

15. 程序结果





A screenshot of a terminal window titled "Terminal". The window has a menu bar with "File", "Edit", "View", "Terminal", "Tabs", and "Help". The main area displays assembly code and register values. The code consists of several "counter =" statements followed by a loop labeled "@ 24010" and a final instruction "@ 685090, mips0 echo1: 50005000".

```
counter =      3
counter =      2
counter =      2
counter =      2
counter =      2
counter =      1
counter =      1
counter =      1
counter =      1
@      24010
@      685090, mips0 echo1: 50005000
```