. 如何杀死守护进程 如何杀死守护进程的子进程

提前说明:此题实在受不了输出的信息影响输入和截图故将输出信息重定向到文件 file1 和 file2

程序同 test3-2 只是修改使子进程也进行死循环打印 进程如图

```
[root@RHEL-zby 04]# ./test4-1 >file1 &
[1] 116799
[root@RHEL-zby 04]# ps -a -l
F S
      UID
            PID
                  PPID C PRI NI ADDR SZ WCHAN TTY
                                                            TIME CMD
1 S
                                                         00:00:00 test4-1
       0 116800
                     1 0 80
                                0 - 1042 hrtime pts/1
1 S
       0 116801 116800 0
                           80
                                0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116802 116800 0
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-1
1 S
       0 116804 116800 0
                           80
                                0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116805 116800 0
                                0 - 1042 hrtime pts/1
                           80
                                                        00:00:00 test4-1
1 S
       0 116807 116800 0 80
                                0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
                               0 - 1042 hrtime pts/1
       0 116809 116800 0
                           80
                                                        00:00:00 test4-1
1 S
       0 116810 116800 0
                           80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116812 116800 0
                               0 - 1042 hrtime pts/1
                           80
                                                        00:00:00 test4-1
1 S
       0 116813 116800 0
                           80
                                0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116815 116800 0 80
                                0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
0 R
       0 116817 116039 0 80
                                0 - 37228 -
                                                pts/1
                                                        00:00:00 ps
                             ./test4-1 > file1
[1]+ 完成
[root@RHEL-zby 04]#
```

杀死一个子进程 直接 kill 进程号

```
[root@RHEL-zby 04]# kill 116801
[root@RHEL-zby 04]# ps -a -l
F S
            PID
                  PPID C PRI
                              NI ADDR SZ WCHAN TTY
     UID
                                                            TIME CMD
1 S
       0 116800
                     1
                       0
                          80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116802 116800
                          80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
                       0
 S
       0 116804 116800 0 80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116805 116800 0 80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
 S
       0 116807 116800 0 80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
                               0 - 1042 hrtime pts/1
1 S
       0 116809 116800 0 80
                                                        00:00:00 test4-1
 S
       0 116810 116800 0 80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116812 116800 0 80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
       0 116813 116800 0 80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
       0 116815 116800 0 80
                               0 - 1042 hrtime pts/1
                                                        00:00:00 test4-1
1 S
0 R
       0 116846 116039 0 80
                               0 - 37228 -
                                                pts/1
                                                        00:00:00 ps
```

杀死其全部子进程(但是这里产生了僵尸进程 在父进程退出后会被自动清理)显然还需要改进(之前版本的图 在此只表示修改代码过程)

```
[root@RHEL-zby 04]# for p_pid in `ps -ef | grep test4-1 | legrep -v grep | awk '{pri
t $2}'`
> do
> pkill -9 -P $p_pid
> done
[root@RHEL-zby 04]# ps -a -l
                                                          TIME CMD
F S
     UID
           PID PPID C PRI NI ADDR SZ WCHAN TTY
0 S
       0 21876 21832 0 80
                              0 - 1042 hrtime pts/5
                                                    00:00:00 test4-1
1 Z
       0 21879 21876 0 80
                              0 -
                                     0 do_exi pts/5 00:00:00 test <defunct:
1 Z
       0 21880 21876 0 80
                              0 -
                                     0 do_exi pts/5
                                                      00:00:00 test <defunct:
1 Z
       0 21881 21876 0 80
                                                      00:00:00 test <defunct:
                             0 -
                                     0 do_exi pts/5
1 Z
       0 21882 21876 0 80
                              0 -
                                     0 do_exi pts/5 00:00:00 test <defunct:
1 Z
       0 21883 21876 0 80
                              0 -
                                     0 do_exi pts/5      00:00:00 test <defunct:</pre>
1 Z
       0 21884 21876 0 80
                              0 -
                                     0 do_exi pts/5
                                                     00:00:00 test <defunct:
1 Z
       0 21885 21876 0 80
                             0 -
                                     0 do_exi pts/5 00:00:00 test <defunct:
1 Z
       0 21886 21876 0 80 0 -
                                     0 do_exi pts/5 00:00:00 test <defunct:
       0 21916 21832 0 80
                              0 - 37228 -
                                              pts/5
                                                      00:00:00 ps
[root@RHEL-zby 04]#
```

```
\bullet \bullet \bullet
                 root@RHEL-zby:/home/homework/1551265-000105-1/04 (ssh) 👃
include <stdio.h>
#include <sys/types.h>
#include <signal.h>
#include <string.h>
#include <sys/wait.h>
void func_waitpid(int signo) {
    pid_t pid;
    int stat;
    while( (pid = waitpid(-1, &stat, WNOHANG)) > 0 );
    return;
int main()
signal(SIGCHLD, &func_waitpid);
    int i,j;
pid_t pid1;
pid1=fork();
if(pid1==-1)
    return 0;
if(pid1==0)
    //fork a child process
    for(i=0;i<10;)
    pid_t pid = fork();
    if (pid == 0)
        //child process exit, and to be a zombie process
       for(;;)
           sleep(3);
    while(1)
       return 0;
if(pid1>0)
return 0;
```

重新执行并删除 达到预期效果

(PS:这里使用了一个 for 循环进行进程的查找 查找所有名为 test4-1 的进程号删除所有父进程为这些进程号的进程 即可实现此操作)

```
[root@RHEL-zby 04]# ps -a -l
F S
     UID PID PPID C PRI
                             NI ADDR SZ WCHAN TTY
                                                           TIME CMD
       0 116800
                  1 0 80
                              0 - 1042 hrtime pts/1
                                                       00:00:00 test4-1
1 S
       0 116802 116800 0 80
                              0 - 1042 hrtime pts/1
                                                       00:00:00 test4-1
1 S
       0 116804 116800
                      0 80
                             0 - 1042 hrtime pts/1
                                                       00:00:00 test4-1
1 S
       0 116805 116800
                      0 80
                              0 - 1042 hrtime pts/1
                                                       00:00:00 test4-1
1 S
       0 116807 116800
                       0 80
                              0 - 1042 hrtime pts/1
                                                       00:00:00 test4-1
                              0 - 1042 hrtime pts/1
0 - 1042 hrtime pts/1
1 S
       0 116809 116800
                       0 80
                                                       00:00:00 test4-1
1 S
       0 116810 116800
                       0
                         80
                                                       00:00:00 test4-1
                              0 - 1042 hrtime pts/1
1 S
       0 116812 116800
                       0 80
                                                       00:00:00 test4-1
       0 116813 116800
                      0 80
                              0 - 1042 hrtime pts/1
1 S
                                                       00:00:00 test4-1
                              0 - 1042 hrtime pts/1
1 5
       0 116815 116800 0 80
                                                       00:00:00 test4-1
0 R
       0 116846 116039 0 80
                              0 - 37228 -
                                              pts/1
                                                       00:00:00 ps
[root@RHEL-zby 04]# vi test4-1.c
[root@RHEL-zby 04]# for p_pid in `ps -ef|grep test4-1|egrep -v grep|awk '{print $2}'`
> do
> pkill -9 -P $p_pid
> done
[root@RHEL-zby 04]# ps -a -l
       UID
                                                           TIME CMD
                              0 - 1042 hrtime pts/1
1 S
                                                       00:00:00 test4-1
0 R
                                                       00:00:00 ps
                                               pts/1
[root@RHEL-zby 04]#
```

杀死其父进程 子进程正常运行未退出 但其父进程 PPID 全部变为 1(init)

F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD 1 S 0 117079 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117080 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117081 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117083 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117085 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117092 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 2 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 3 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 4 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 5 S 0 117101 117079 0 80 0 - 37228 - pts/1 00:00:00 ps 4 F S UID PID PPID C PRI NI ADDR SZ WCHAN TTY TIME CMD
1 S 0 117079 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117080 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117081 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117083 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117085 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117092 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04] kill 117079 [root@RHEL-zby 04] kill 117079
1 S
1 S 0 117081 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117083 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117085 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117092 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04]* kill 117079 [root@RHEL-zby 04]* kill 117079
1 S 0 117083 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117085 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117092 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04]* kill 117079 [root@RHEL-zby 04]* kill 117079
1 S 0 117085 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117092 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 OR 0 117110 116039 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 OR 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04]* kill 117079 [root@RHEL-zby 04]* kill 117079
1 S 0 117092 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 0 R 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04] kill 117079 [root@RHEL-zby 04] ps -a -L
1 S 0 117095 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 OR 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04]* kill 117079 [root@RHEL-zby 04]* kill 117079
1 S 0 117096 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 0 R 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04] kill 117079 [root@RHEL-zby 04] ps -a -L
1 S 0 117098 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 0 R 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04] kill 117079 [root@RHEL-zby 04] ps -a -L
1 S 0 117100 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 0 R 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04] kill 117079 [root@RHEL-zby 04] ps -a -l
1 S 0 117101 117079 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1 0 R 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04] kill 117079 [root@RHEL-zby 04] ps -a -I
0 R 0 117110 116039 0 80 0 - 37228 - pts/1 00:00:00 ps [root@RHEL-zby 04] kill 117079 [root@RHEL-zby 04] ps -a -L
[root@RHEL-zby 04]# kill 117079 [root@RHEL-zby 04]# ps -a -ı
[root@RHEL-zby 04]# ps -a -L
F S LITD PTD PPTD C PRT NT ADDR SZ WCHAN TTY TTMF (MD
1 3 GID TID CIRI NI ADDR 32 NCHAR TIT
1 S 0 117080 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117081 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117083 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117085 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117092 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117095 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117096 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117098 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117100 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
1 S 0 117101 1 0 80 0 - 1042 hrtime pts/1 00:00:00 test4-1
0 R 0 117128 110039 0 80 0 - 37228 - pts/1 00:00:00 ps

```
root@RHEL-zby:/home/homework/1551265-000105-1/04 (ssh)
minclude <stdio.h>
#include <sys/types.h>
#include <signal.h>
#include <string.h>
#include <sys/wait.h>
#include <stdlib.h>
#include <sys/prctl.h>
void func_waitpid(int signo) {
    pid_t pid;
    while( (pid = waitpid(-1, \&stat, WNOHANG)) > 0 );
    return;
int main()
f
signal(SIGCHLD, &func_waitpid);
  int i,j;
  pid_t pid1;
  pid1=fork();
  if(pid1==-1)
    return 0;
if(pid1==0)
     //fork a child process
     for(i=0;i<10;)
    pid_t pid = fork();
     if (pid == 0)
         while(1)
             prctl(PR_SET_PDEATHSIG, SIGHUP);
printf("%d %d 1551265 sub\n",(int)getppid(),(int)getpid());
sleep(15);
         exit(0);
         sleep(3);
    while(1)
         }
exit(0);
    system("killall test4-2");
if(pid1>0)
 return 0;
```

运行程序并 kill 父进程 查看可得子进程全部被杀掉

```
root@RHEL-zby:/home/homework/1551265-000105-1/04 (ssh)
[root@RHEL-zby 04]# ps -a -l
F S 1 S
           PID PPID C PRI NI ADDR SZ WCHAN TTY
                                                             TIME CMD
     UID
                   1 0 80
                               0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
       0 117278
1 S
       0 117279 117278 0
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
       0 117280 117278 0
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
       0 117282 117278 0
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
       0 117284 117278
                           80
                                0 - 1042 hrtime pts/1
                       0
                                                         00:00:00 test4-2
1 S
       0 117285 117278
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
                       0
 S
       0 117287 117278
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
                        0
 S
                                0 - 1042 hrtime pts/1
       0 117290 117278
                       0
                           80
                                                         00:00:00 test4-2
1 S
                                0 - 1042 hrtime pts/1
       0 117292 117278 0
                           80
                                                         00:00:00 test4-2
1 S
       0 117294 117278 0
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
1 S
       0 117295 117278 0
                           80
                                0 - 1042 hrtime pts/1
                                                         00:00:00 test4-2
                                0 - 37228 -
0 R
       0 117300 116039 0 80
                                                pts/1
                                                         00:00:00 ps
[root@RHEL-zby 04]# kill 117278
[root@RHEL-zby 04]# ps -a -l
            PID PPID C PRI NI ADDR SZ WCHAN TTY
F S
     UID
                                                             TIME CMD
       0 117304 116039 0 80
                               0 - 37227 -
0 R
                                                pts/1
                                                         00:00:00 ps
[root@RHEL-zby 04]#
```