

# Hw10

在「自己的」系統上，產生 100 個 zombie，

並說明如何刪除這 100 個 zombie

系級：資工二 學號：409410114 姓名：周述君

### 一、產生 zombie 以後是否可以使用 kill 指令將 zombie 殺掉？

You can't kill a zombie process because it's already dead. It won't respond to any signals because it's been removed from memory—there's nowhere to send a `SIGKILL` signal. You can try sending the `SIGCHLD` signal to the parent process, but if it didn't work when the child process terminated, it's unlikely to work now, either.

不行，只能試著傳送 "SIGCHILD" 給 parent process。

二、請附上截圖證明『zombie』的確會產生 10 個 zombie

```
[~] sujean@sujean: ~/sp/sphw10
gcc -g zombie.c -o zombie
sujean@sujean:~/sp/sphw10$ ./zombie 10000
total 60K
drwxrwxr-x 2 sujean sujean 4.0K 五 15 17:59 .
drwxrwxr-x 12 sujean sujean 4.0K 五 14 14:19 ..
-rw-rw-r-- 1 sujean sujean 162 五 11 08:48 makefile
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 NoZombie
-rw-rw-r-- 1 sujean sujean 468 五 11 08:48 NoZombie.c
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 zombie
-rw-rw-r-- 1 sujean sujean 457 五 15 17:57 zombie.c
total 60K
drwxrwxr-x 2 sujean sujean 4.0K 五 15 17:59 .
drwxrwxr-x 12 sujean sujean 4.0K 五 14 14:19 ..
-rw-rw-r-- 1 sujean sujean 162 五 11 08:48 makefile
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 NoZombie
-rw-rw-r-- 1 sujean sujean 468 五 11 08:48 NoZombie.c
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 zombie
-rw-rw-r-- 1 sujean sujean 457 五 15 17:57 zombie.c
total 60K
drwxrwxr-x 2 sujean sujean 4.0K 五 15 17:59 .
drwxrwxr-x 12 sujean sujean 4.0K 五 14 14:19 ..
-rw-rw-r-- 1 sujean sujean 162 五 11 08:48 makefile
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 NoZombie
-rw-rw-r-- 1 sujean sujean 468 五 11 08:48 NoZombie.c
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 zombie
-rw-rw-r-- 1 sujean sujean 457 五 15 17:57 zombie.c
total 60K
drwxrwxr-x 2 sujean sujean 4.0K 五 15 17:59 .
drwxrwxr-x 12 sujean sujean 4.0K 五 14 14:19 ..
-rw-rw-r-- 1 sujean sujean 162 五 11 08:48 makefile
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 NoZombie
-rw-rw-r-- 1 sujean sujean 468 五 11 08:48 NoZombie.c
-rwxrwxr-x 1 sujean sujean 18K 五 15 17:59 zombie
-rw-rw-r-- 1 sujean sujean 457 五 15 17:57 zombie.c
```

```
sujean@sujean: ~/sp/sphw10
sujean@sujean:~/sp/sphw10$ ps -a
PID TTY TIME CMD
1101 tty2 00:00:50 Xorg
1249 tty2 00:00:00 gnome-session-b
247655 pts/0 00:00:00 zombie
247656 pts/0 00:00:00 zombie <defunct>
247659 pts/0 00:00:00 zombie <defunct>
247662 pts/0 00:00:00 zombie <defunct>
247665 pts/0 00:00:00 zombie <defunct>
247668 pts/0 00:00:00 zombie <defunct>
247671 pts/0 00:00:00 zombie <defunct>
247674 pts/0 00:00:00 zombie <defunct>
247677 pts/0 00:00:00 zombie <defunct>
247680 pts/0 00:00:00 zombie <defunct>
247683 pts/0 00:00:00 zombie <defunct>
247696 pts/1 00:00:00 ps
sujean@sujean:~/sp/sphw10$
```

Zombie 會產生 10 個 child，每個 child 都執行 ls -alh。

在 parent wait 前，或 parent 沒有 wait，child 就 exit，child 就會成為 zombie。

三、請附上截圖證明『nozombie』幾乎不會產生 zombie

```
sujean@sujean: ~/sp/sphw10
sujean@sujean:~/sp/sphw10$ ps -a
PID TTY      TIME CMD
1101 tty2      00:01:46 Xorg
1249 tty2      00:00:00 gnome-session-b
249298 pts/0      00:00:00 NoZombie
249440 pts/0      00:00:00 NoZombie
249555 pts/0      00:00:00 NoZombie
249564 pts/0      00:00:00 NoZombie
249565 pts/0      00:00:00 NoZombie
249566 pts/0      00:00:00 NoZombie
249567 pts/0      00:00:00 NoZombie
249568 pts/0      00:00:00 NoZombie
249569 pts/0      00:00:00 NoZombie
249570 pts/0      00:00:00 NoZombie
249571 pts/0      00:00:00 NoZombie
249572 pts/0      00:00:00 NoZombie
249573 pts/0      00:00:00 NoZombie
249574 pts/0      00:00:00 NoZombie
249575 pts/0      00:00:00 NoZombie
249576 pts/0      00:00:00 NoZombie
249577 pts/0      00:00:00 NoZombie
249578 pts/0      00:00:00 NoZombie
249579 pts/0      00:00:00 NoZombie
249580 pts/0      00:00:00 NoZombie
249581 pts/0      00:00:00 NoZombie
249582 pts/0      00:00:00 NoZombie
249583 pts/0      00:00:00 NoZombie
249584 pts/0      00:00:00 NoZombie
249585 pts/0      00:00:00 NoZombie
249586 pts/0      00:00:00 NoZombie
249587 pts/0      00:00:00 NoZombie
249588 pts/0      00:00:00 NoZombie
249589 pts/0      00:00:00 NoZombie
249590 pts/0      00:00:00 NoZombie
249591 pts/0      00:00:00 NoZombie
249592 pts/0      00:00:00 NoZombie
249593 pts/0      00:00:00 NoZombie
249594 pts/0      00:00:00 NoZombie
249595 pts/0      00:00:00 NoZombie
249596 pts/0      00:00:00 NoZombie
249597 pts/0      00:00:00 NoZombie

sujean@sujean:~/sp/sphw10$ ps -aux | grep "defunct"
sujean    249711  0.0  0.0  9340   720 pts/1    S+   21:58   0:00 grep --color=auto defunct
```

四、請說明你的系統中『task\_struct』到底有多大，並附上截圖證明你的說法

```
sujean@sujean:~/sp/sphw10$ sudo cat /proc/slabinfo | grep task_struct
[sudo] password for sujean:
task_struct 806 892 7872 4 8 : tunables 0 0 0 : slabdata 223 223 0
```

大小為 7872bytes。

五、在網路上找一張你覺得最能描述「辛棄疾」的『風景畫』。用 10 到 20 個字說明你選這張圖的理由。



「茅檐低小，溪上青青草。醉里吳音相媚好，白髮誰家翁媪？大兒鋤豆溪東，中兒正織雞籠。最喜小兒亡賴，溪頭臥剝蓮蓬。」

詞中農村和平寧靜、樸素安逸的生活，以及優美的環境都是他所嚮往的，反映了他抗擊金兵、收復中原、統一祖國的愛國情操。

參考資料：

<https://www.howtogeek.com/701971/how-to-kill-zombie-processes-on-linux/>

<https://www.runoob.com/linux/linux-comm-ps.html>