

HW08

tags: SP

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(1)從man capabilities 裡面隨便挑三個權限，並說明那三個權限是什麼樣的用途（大致上就是英文翻譯成中文再加上一點點自己的理解）

CAP_CHOWN:可以改變檔案的uid和gid

```
sudo setcap CAP_CHOWN+ep ./chown_super
```

讓chown_super擁有更改任意檔案的owner的權利

```
reki@reki002:~$ sudo setcap CAP_CHOWN+ep ./chown_super
reki@reki002:~$ ls -alh /bin/ls
-rwxr-xr-x 1 root root 139K 九  5 2019 /bin/ls
reki@reki002:~$ ./chown_super reki /bin/ls
reki@reki002:~$ ls -alh /bin/ls
-rwxr-xr-x 1 reki root 139K 九  5 2019 /bin/ls
reki@reki002:~$ ./chown_super root /bin/ls
reki@reki002:~$
```

CAP_SETUID:改變一個行程的uid(即使沒有用chmod設定set-bit也可以setuid)

CAP_SYS_NICE:允許提升一個優先順序，並設置其他進程的優先順序

```
sudo setcap CAP_SYS_NICE+ep ./nice-pro
```

在未設定之前無法執行-10的nice，設定之後就可以了

```
reki@reki002:~/sp/hw08$ sudo setcap CAP_SYS_NICE+ep ./nice-pro
reki@reki002:~/sp/hw08$ sudo chown root:root ./nice-pro-2
reki@reki002:~/sp/hw08$ sudo chmod +s ./nice-pro-2
reki@reki002:~/sp/hw08$ nice -n -10 ls
nice: cannot set niceness: Permission denied
makefile nice-pro nice-pro-2 nice_testing nice_testing.c test.c
reki@reki002:~/sp/hw08$ ./nice-pro -n -10 ls
makefile nice-pro nice-pro-2 nice_testing nice_testing.c test.c
```

(2)將nice複製到自己的目錄下，名為nice_pro，必且讓nice_pro擁有提高優先權的能力

```

reki@reki002:~/sp/hw08$ cp /usr/bin/nice nice-pro
reki@reki002:~/sp/hw08$ cp /usr/bin/nice nice-pro-2
reki@reki002:~/sp/hw08$ sudo setcap CAP_SYS_NICE+ep ./nice-pro
reki@reki002:~/sp/hw08$ sudo chown root:root ./nice-pro-2
reki@reki002:~/sp/hw08$ sudo chmod +s ./nice-pro-2
reki@reki002:~/sp/hw08$ nice -n -10 ls
nice: cannot set niceness: Permission denied
makefile nice-pro nice-pro-2 nice_testing nice_testing.c test.c
reki@reki002:~/sp/hw08$ ./nice-pro -n -10 ls
makefile nice-pro nice-pro-2 nice_testing nice_testing.c test.c
reki@reki002:~/sp/hw08$ ./nice-pro2 -n -10 ls
bash: ./nice-pro2: No such file or directory
reki@reki002:~/sp/hw08$ ./nice-pro-2 -n -10 ls
makefile nice-pro nice-pro-2 nice_testing nice_testing.c test.c
reki@reki002:~/sp/hw08$

```

(3)想辦法量測『優先權高一等級的task比正常優先權的task速度快多少』？

```

reki@reki002:~/sp/hw08$ ./nice_testing 5
cpp=140335110
cpp=45805558
reki@reki002:~/sp/hw08$

```

$140335110/45805558=3.06371$ 與 $1.25^5=3.05$ 相差不大

(4)

```

cpu_set_t mask; //CPU核的集合
CPU_ZERO(&mask);
CPU_SET(1,&mask); //先做好參數設定，綁在第一顆處理器
sched_setaffinity(0, sizeof(mask), &mask);

```

在fork()之後執行的結果如下，與之前沒什麼區別

```

reki@reki002:~/sp/hw08$ ./nice_testing
cpp=141173860
cpp=45401596
reki@reki002:~/sp/hw08$

```