Name: **ID:**
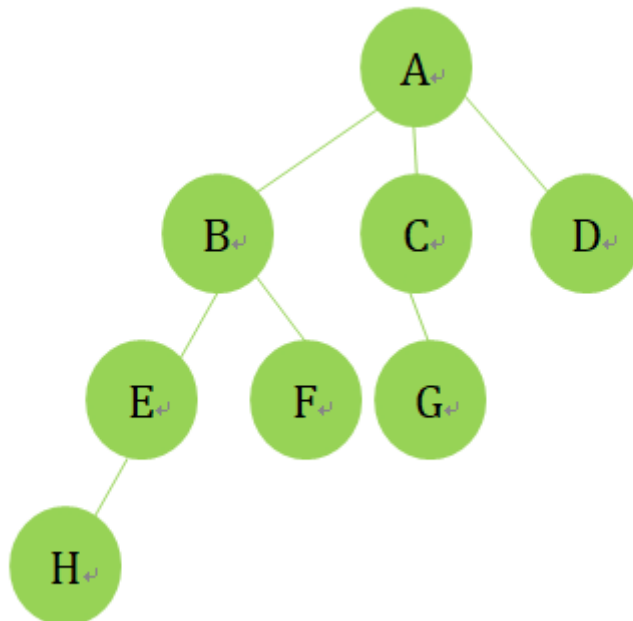
Notice

The slides are stored on Desktop

When you finish the exam, TA will copy your code.

[Your ID].zip (test1.c & test2.c)

1. **Write a program that creates 8 processes, forming a tree configuration illustrated in the following figure. All of the processes need to print their PID and parent's PID**

Result:

```
popo@popo-VirtualBox:~/os/exam$ ./onhand
I'm process D:
PID:3428
Parent PID:3425
I'm process G:
PID:3429
Parent PID:3427
I'm process C:
PID:3427
Parent PID:3425
I'm process F:
PID:3431
Parent PID:3426
I'm process H:
PID:3432
Parent PID:3430
I'm process E:
PID:3430
Parent PID:3426
I'm process B:
PID:3426
Parent PID:3425
I'm process A:
PID:3425
Parent PID:2147
```

2. 請建立兩個 process，client 與 server，使用 socket 互相溝通

(1) 在 server 端設初始數字 7 並打印出來 eg. number is 7

(2) Client 產生數字 0，並打印出來 eg. msg is 0

(3) Client 將該數字藉由 socket 傳送給 server 端

(4) Server 端將收到訊息打印出來 eg. client:0

(5) Server 端將 client 端輸入的數字 0 與自身數字 7 做比較

　　相同回傳 ”correct!” 並結束程式
　　不相同回傳 ”wrong!”

(6) Client 端收到 Server 端回信後，將訊息打印出來 eg. server:wrong!

(7) Client 端判斷回傳的訊息是否為 ”correct!”

是，則結束

否，則將數字增加一，回到步驟 3.

Hint: 字串比較
#include <string.h>
int strcmp(const char* str1, const char* str2)

Returns an integral value indicating the relationship between the strings:

return value	indicates
<0	the first character that does not match has a lower value in *ptr1* than in *ptr2*
0	the contents of both strings are equal
>0	the first character that does not match has a greater value in *ptr1* than in *ptr2*

正確結果:

先執行 server 端程式，並印出初始數字 7


```
hyam@hyam-VirtualBox: ~

檔案(F)  編輯(E)  檢視(V)  搜尋(S)  終端機(T)  求助(H)

hyam@hyam-VirtualBox:~$ ./server
number is 7
```

再執行 client 端程式開始發送訊息


```
hyam@hyam-VirtualBox: ~

檔案(F)  編輯(E)  檢視(V)  搜尋(S)  終端機(T)  求助(H)

hyam@hyam-VirtualBox:~$ ./client
msg is 0
server:wrong!
msg is 1
server:wrong!
msg is 2
server:wrong!
msg is 3
server:wrong!
msg is 4
server:wrong!
msg is 5
server:wrong!
msg is 6
server:wrong!
msg is 7
server:correct!
hyam@hyam-VirtualBox:~$
```

```
hyam@hyam-VirtualBox: ~

檔案(F)  編輯(E)  檢視(V)  搜尋(S)  終端機(T)  求助

hyam@hyam-VirtualBox:~$ ./server
number is 7
client:0
client:1
client:2
client:3
client:4
client:5
client:6
client:7
hyam@hyam-VirtualBox:~$
```