12장 과제

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1. pipe.c

```
hey@ubuntu:~/system$ gcc -o pipe pipe.c
pipe.c: In function 'main':
pipe.c:13:1: warning: implicit declaration of function 'sprintf' [-Wimplicit-function-declaration]
 sprintf(msg, "Hello from PID %d\n",
 ^~~~~~~
pipe.c:13:1: warning: incompatible implicit declaration of built-in function 'sprintf'
pipe.c:13:1: note: include '<stdio.h>' or provide a declaration of 'sprintf'
pipe.c:15:10: warning: implicit declaration of function 'strlen' [-Wimplicit-function-declaration]
 length = strlen(msg)+1;
          ^~~~~~
pipe.c:15:10: warning: incompatible implicit declaration of built-in function 'strlen'
pipe.c:15:10: note: include '<string.h>' or provide a declaration of 'strlen'
pipe.c:20:1: warning: implicit declaration of function 'printf' [-Wimplicit-function-declaration]
 printf("[%d] %s", getpid(), line);
 ^~~~~~
pipe.c:20:1: warning: incompatible implicit declaration of built-in function 'printf'
pipe.c:20:1: note: include '<stdio.h>' or provide a declaration of 'printf'
pipe.c:22:1: warning: implicit declaration of function 'exit' [-Wimplicit-function-declaration]
 exit(0);
 ^~~~
pipe.c:22:1: warning: incompatible implicit declaration of built-in function 'exit'
pipe.c:22:1: note: include '<stdlib.h>' or provide a declaration of 'exit'
hey@ubuntu:~/system$ ./pipe
[2577] Hello from PID 2578
hey@ubuntu:~/system$
```

2. stdpipe.c

```
hey@ubuntu:~/system$ gcc -o stdpipe stdpipe.c
stdpipe.c: In function 'main':
stdpipe.c:13:1: warning: implicit declaration of function 'sprintf' [-Wimplicit-function-declaration]
 sprintf(msg, "Hello from PID %d\n",
 ^~~~~~~
stdpipe.c:13:1: warning: incompatible implicit declaration of built-in function 'sprintf'
stdpipe.c:13:1: note: include '<stdio.h>' or provide a declaration of 'sprintf'
stdpipe.c:15:10: warning: implicit declaration of function 'strlen' [-Wimplicit-function-declaration]
 length = strlen(msg)+1;
          ^~~~~~
stdpipe.c:15:10: warning: incompatible implicit declaration of built-in function 'strlen'
stdpipe.c:15:10: note: include '<string.h>' or provide a declaration of 'strlen'
stdpipe.c:20:1: warning: implicit declaration of function 'printf' [-Wimplicit-function-declaration]
 printf("[%d] %s", getpid(), line);
 ^~~~~~
stdpipe.c:20:1: warning: incompatible implicit declaration of built-in function 'printf'
stdpipe.c:20:1: note: include '<stdio.h>' or provide a declaration of 'printf'
stdpipe.c:22:1: warning: implicit declaration of function 'exit' [-Wimplicit-function-declaration]
 exit(0);
 ^~~~
stdpipe.c:22:1: warning: incompatible implicit declaration of built-in function 'exit'
stdpipe.c:22:1: note: include '<stdlib.h>' or provide a declaration of 'exit'
hey@ubuntu:~/system$ ./stdpipe
[2593] Hello from PID 2594
hey@ubuntu:~/system$
```

3. pexec1.c

```
hey@ubuntu:~/system$ ./pexec1 who|sort
자식 프로세스로부터 받은 결과
hey       :0           2021-05-26 19:05 (:0)
hey@ubuntu:~/system$ 
```

4. shellpipe.c

```
hey@ubuntu:~/system$ ./shellpipe
[shell]who|sort
hey       :0           2021-05-26 19:05 (:0)
hey@ubuntu:~/system$
```
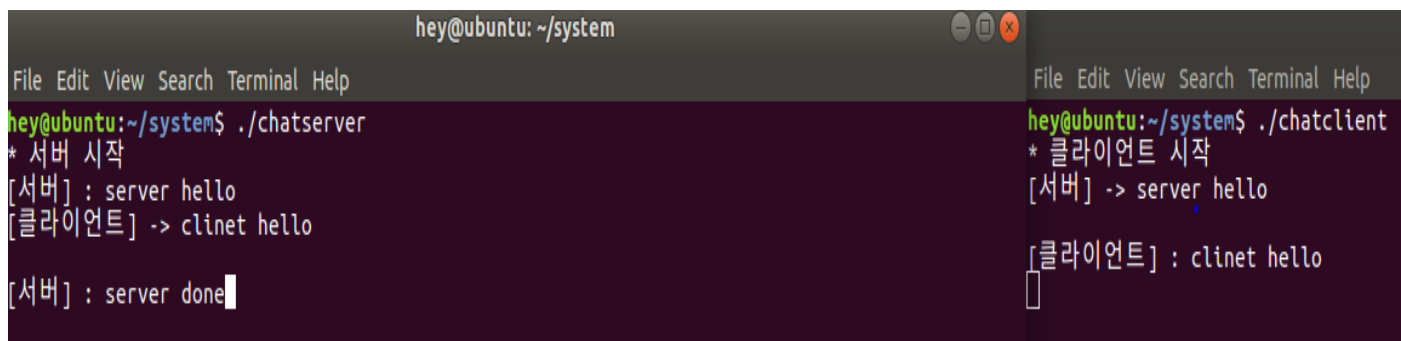
5. pexec2.c

```
hey@ubuntu:~/system$ ./pexec2 who|sort
자식 프로세스로부터 받은 결과
hey       :0           2021-05-26 19:05 (:0)
hey@ubuntu:~/system$
```

6. npreader.c, npwriter.c

```
hey@ubuntu:~/system$ ./npreader &
[3] 2695
hey@ubuntu:~/system$ ./npwriter &
[4] 2697
hey@ubuntu:~/system$ Hello from PID 2697
Hello from PID 2697
Hello from PID 2697
Hello from PID 2697

[3]-  Done                    ./npreader
[4]+  Done                    ./npwriter
hey@ubuntu:~/system$
```

7. chatserver.c, chatclient.c


```
hey@ubuntu: ~/system

File  Edit  View  Search  Terminal  Help
hey@ubuntu:~/system$ ./chatserver
* 서버 시작
[서버] : server hello
[클라이언트] -> clinet hello

[서버] : server done
```

```
File  Edit  View  Search  Terminal  Help
hey@ubuntu:~/system$ ./chatclient
* 클라이언트 시작
[서버] -> server hello

[클라이언트] : clinet hello
```