

# มหาวิทยาลัยสงขลานครินทร์

## คณะวิศวกรรมศาสตร์

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สอบปลายภาค: ภาคการศึกษาที่ 1

ปีการศึกษา: 2550

วันที่สอบ: 6 ตุลาคม 2550

เวลา: 0900-1200

วิชา: 240-620 Advanced Unix Network Programming ห้อง: R201

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คำสั่ง:

อนุญาตให้นำหนังสือหรือเอกสารเข้าห้องสอบได้

ข้อสอบมีทั้งหมด 17 ข้อ คะแนนรวม 50 คะแนน ให้ทำทุกข้อ

ทุจริตในการสอบโทษสูงสุดให้ออก

## Signal Handling (1-5)

(10 marks)

1. What is meaning of 'signal' in UNIX system?
2. How to handle signal event using `signal()` function?
3. How to handle signal event using `sigaction()` function?
4. What is the meaning of `SIG_DFL` and `SIG_IGN`?
5. If not set, what is the default behaviour to handling `SIGINT`?
  
6. Write a complete program to intercept signal `SIGINT` that decrease variable `count` every time it receive `SIGINT` signal, and intercept signal `SIGHUP` that will print out `count` variable every time it receive `SIGHUP` signal. You can use `signal()` function for handle these signals.

(10 marks)

## Interprocess Communication

### Popen, Pipe and FIFO

(10 marks)

7. What is the different between `system()` and `popen()` functions?
8. What is the major different with pipe and named-pipe?
9. Why single pipe can't be used for two-way communication?
10. How pipe can be used for two-way communication?
11. How can you create a fifo, using a system call (not a shell command)?
  
12. Write a pair of client/server type of program that use FIFO for communication. The client should interact with user by receive command from user, and then pass that command it receive from user to server via the FIFO, the server then using `system()` to execute that command and sending the result back to client, the client program will then printout the result to the user. The server program should handle the FIFO creation if one doesn't exist yet.

(10 marks)

- Note:
1. You will need 2 FIFO.
  2. Server need to redirection both standard input/standard output before using `system()` to execute the command.

Semaphore, Shared Memory and Message Queues

(10 marks)

13. What does key value `IPC_PRIVATE` mean in term of System V IPC?

14. How can you create a single semaphore to be used by two different processes?

Note: those two processes can be started by different user.

Hint: function and flags!

15. How can you destroy the semaphore? (Function and flag!)

16. How can shared memory can be shared between two processes, if shared memory had already created?

17. What is the major different between named-pipe and message queues?