

Name: \_\_\_\_\_ Student ID: \_\_\_\_\_ Section \_\_\_\_\_

PRINCE OF SONGKLA UNIVERSITY  
FACULTY OF ENGINEERING



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**Midterm Examination:** Semester 1

**Academic Year:** 2551

**Date:** 29 July 2551

**Time:** 13:30-16:30 (3 hours)

**Subject Code:** 240-322

**Location:** R300

**Subject Title:** Client/Server Distributed Systems

**Lecturer:** Aj. David , Aj. Worraprot

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**Exam Duration:** 3 hours

**Authorized Materials:**

- Writing instruments (e.g. pens, pencils).
- Books (e.g. dictionaries, textbooks), notes and calculators are **not** permitted.

**Instructions to Students:**

- Attempt all questions.
- The exam has 2 parts. Total score is 120 marks.
- You must answer in English; anything in any other language will not be graded.
- Write your answers under the question; the amount of space provided is an indication of the length of the answer desired.
- Any unreadable parts will be considered wrong.

When writing programs, use good layout and short comments; marks will not be deducted for minor syntax errors.

ทูลจริตในการสอบ โทษขั้นต่ำคือปรับตกในรายวิชาที่ทูลจริต และพักการเรียน 1 ภาคการศึกษา

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**Part I. Answer the following questions.** (100 marks)

1. Describe some of the 3-tiered model's advantages and disadvantages.

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2. Distinguish between a "fat server" and a "fat client."

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3. List two advantages of a fat server and two advantages of a fat client.

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4. Define "distributed programming."

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5. Name and describe three general approaches to accomplish “distributed programming”.

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6. Give an example of computation using a distributed programming.

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7. What English words does the acronym “P2P” stand for? Briefly define the phrase.

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8. Distinguish between reader-centric and publisher-centric P2P.

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9. What is a Unix “file descriptor?”

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10. Which file descriptor numbers are already open when a program starts? What are the C or C++ names for each number?

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11. What is wrong with the following code fragment?

```
int fd;  
fd=open("output.txt",O_APPEND|O_CREATE|O_TRUNC|O_WRONLY,0644);
```

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12. Describe each argument for call function read and what is a return number?

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n=read(arg1,arg2,arg3);
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13. What do the following system method calls do?

1) fork()

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2) exec()

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3) wait()

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14. What happens to a child that exits when its parent is not currently executing *wait()*?

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15. What happens if a parent exits when 1 or more children are still running?

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16. Describe the behavior of a server.

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17. Describe the behavior of a client.

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18. What do the methods htonl() and htons() do?

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19. Draw a picture of communication between 2 systems, in the simplification of the OSI model to four layers.

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20. Distinguish between TCP and UDP transport.

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21. Describe the `sockaddr_in` structure shown in the following listing. What values are used to initialize each element of a struct `sockaddr_in`?

```
struct sockaddr_in {
    short    sin_family;
    u_short  sin_port;
    struct in_addr  sin_addr;
    char     sin_zero[8];
};
```

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22. The function `tcp_serv_sock()` was written to hide the first 4 stages of the server's operation; it contains calls to `socket()`, `bind()` and `listen()`. What do 3 these methods do?

1) socket

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2) bind

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3) listen

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23. What does the method `accept()` do?

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24. What are the two commonest approaches for making a concurrent server, and what system methods do they use?

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25. What is the problem that the utility method `readline()` solves?

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