

PRINCE OF SONGKLA UNIVERSITY
FACULTY OF ENGINEERING

Final Examination: Semester 2

Academic Year: 2009

Date: 17 February 2010

Time: 09.00-12.00 (3 hours)

Subject Number: 241-530

Room: R300

Subject Title: Parallel and Distributed Computing

Exam Duration: 3 hours

This paper has 13 pages, 7 questions and 135 marks (30%).

Authorised Materials:

- Writing instruments (e.g. pens, pencils).
- Textbooks, a notebook, handouts, and dictionaries are permitted.

Instructions to Students:

- Scan all the questions before answering so that you can manage your time better.
- Answers **must** be written in **Thai**.
- Write your name and ID on every page.
- Any unreadable parts will be considered wrong.

When drawing diagrams or coding, use good layout, and short comments; marks will not be deducted for minor syntax errors.

Cheating in this examination

Lowest punishment: Failed in this subject and courses dropped for next semester.

Highest punishment: Expelled.

NO	Time (Min)	Marks	Collected	NO	Time (Min)	Marks	Collected
1	40	41		5	15	14	
2	30	28		6	10	5	
3	20	16		7	10	5	
4	20	20		Total	145	135	

Question 1

(41 marks; 40 minutes)

1) Compare *Static* and *Dynamic* Load Balancing?

(6 marks)

<i>Static Load Balancing</i>	<i>Dynamic Load Balancing</i>

2) What are Dynamic Load Balancing factors?

(4 marks)

3) Compare the following approaches of System Information exchange policy.

(10 marks)

Approach	Policy
limited approach	

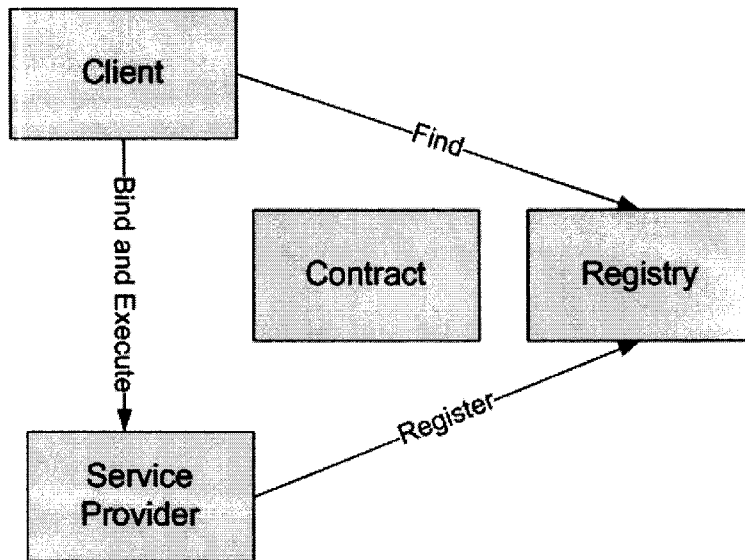
Approach	Policy
paring approach	
load vector approach	
broadcast approach	
global system load approach	

3) Give three forms of Grid Applications.

(3 marks)

4) From the following diagram, explain Service Oriented Architecture (SOA).

(5 marks)



4) Manager-Worker

(4 marks)

Question 4

(20 marks; 20 minutes)

1) What are performance matrices

(4 marks)

2) What is Memory Performance and what are the three important parameters?

(4 marks)

Name _____ ID _____

3) What is the limitation of Amdahl Law? (2 marks)

4) Treats problem size as a constant, draw a graph to show how execution time decreases as number of processors increases. (5 marks)

5) Plot and explain a graph of a scalable system that the speedup and efficiency are fixed by increasing both the size of problem and number of processor.

(5 marks)

Question 5

(14 marks; 15 minutes)

- 1) Explain the limitation of the Amdahl's law and the effects of each parameter in the Amdahl's law (4 marks)

- 2) What is granularity? (2 marks)

- 3) Compare fine grain and coarse grain parallelism. (8 marks)

Fine grain	Coarse grain

Question 6

(5 marks; 10 minutes)

Explain Virtualization in Grid Computing in details.

Question 7

(5 marks; 10 minutes)

Compare MPI and OpenMP in terms of architecture, methods, usage and tradeoffs.

----End of Examination----

Pichaya Tandayya Lecturer