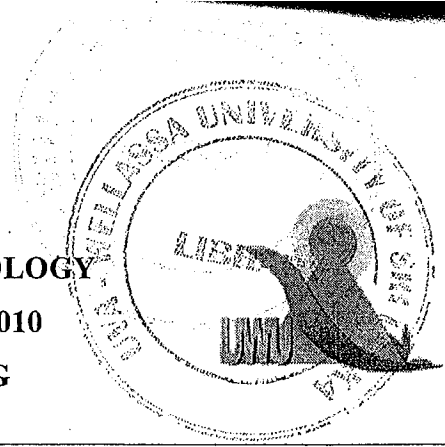


UVA WELLASSA UNIVERSITY
DEPARTMENT OF COMPUTER SCIENCE & TECHNOLOGY
END SEMESTER EXAMINATION – JUNE/JULY– 2010
CST309-2 DISTRIBUTED AND PARALLEL COMPUTING



Time Allowed: **Two hours**

Answer all five Questions. And attach your question paper to the answer script

Q1.

- i. What is parallel computation? Give three examples. (6 marks)
- ii. Explain performance limits of parallel programs. (3 marks)
- iii. Explain about the memory distribution of a parallel system. (3 marks)
- iv. Give two examples for the following memory types.
 - a. Distributed Memory
 - b. Shared Memory
 - c. Hybrid (SMP Cluster)
 - d. Middleware and Network Operating System (NOS) (8 marks)

Q2.

- a) Compare the following parallel architectures. Describe two unique features of each of them that cannot be found in any of the other architectures.
 - i. Parallel vector processor (PVP)
 - ii. Symmetric multiprocessor (SMP)
 - iii. Massively parallel processor (MPP)
 - iv. Cluster of workstations (COW)
 - v. Distributed shared machine (DSM) (10 marks)
- b) Five different real-life parallel architectures and applications models are given below. Explain how they differ, and what are their strengths and weaknesses.
 - i. PRAM
 - ii. EREW-PRAM
 - iii. CREW-PRAM
 - iv. CRCW-PRAM
 - v. VLSI (10 marks)

Q3.

- i. Explain the use of cryptography.
- ii. Describe classes of cryptographic algorithms.
- iii. Write the algorithm for Dense Matrix-Matrix multiplications.
- iv. Write the algorithm for Dense Matrix-Vector multiplications.

(20 marks)

Q4. Describe the followings with an example for each.

- i. Secret communication with a shared secret key
- ii. Authenticated communication with public keys
- iii. Digital signatures with a secure digest function
- iv. Cryptographic Algorithms
- v. Symmetric key and Asymmetric

(20 marks)

Q5.

- a) Prove Gustafson's law and Amdahl's law.
- b) Explain the file service architecture of a distributed system.
- c) What is the Secure Socket Layer (SSL)?
- d) Draw the following architectures.

(6 marks)

(3 marks)

(3 marks)

- i. Embedding $p=32$ hypercube in to 2-D mesh
- ii. Typical Network File System (NFS) architecture
- iii. Distribution of processes in the Andrew File System
- iv. Parallel Processor Layout of Shared Memory and the Distributed Memory

(8 marks)