Parallel Processing Lab
0907537

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Review:
What is Parallel Processing?

- Parallel processing is using *multiple processors in parallel* to solve a computation problem **more quickly** than a single processor

- Parallel computing requires parallel machines + parallel programs

    - Parallel machines (aka multiprocessors) have hardware organizations such that multiple processors can perform multiple jobs in parallel

    - Parallel programs are programs that explicitly specify how computation and data are divided among the multiple processors of a parallel machine

Lab Objectives

1. To gain hands-on parallel programming skills beyond the parallel processing course

2. To become more familiar with Linux environment

3. To apply the knowledge learned from the course into parallelizing an algorithm chosen from other domains such image processing, linear algebra, scientific computing, and so on.

Prerequisites

- Already finished the parallel processing course
- Know how to write programs in C++
- Know how to write programs in Java

Instructor Information

- Fahed Jubair
- B.Sc., University of Jordan
- Ph.D., Purdue University

Lab Experiments

- Lab preparation (1 experiment)

- Linux Basics (1 experiment)

- CUDA programming (3 experiments)

- CUDA Project Demonstration (1 experiment)

- Java multithreading (2-3 experiments)

- Java Project Demonstration (1 experiment)

Grading Policy

- Lab sheets   20%
- Linux Quiz   5%
- CUDA project   15%
- Practical Exam   20%
- Final Exam   40%

CUDA Project

- Each two students will work as a team on parallelizing an algorithm from domains such as image processing, linear algebra, etc.

- Ideally, students will choose the algorithm of their projects (but I will make suggestions as well).

- Projects will be graded based on a submitted report and a demonstration in the lab

Java Project

- I will announce a problem statement for the Java project

- Students can work on the project in teams of two students

- Projects will be graded based on a submitted report and a demonstration in the lab

Lab Policy

- Attendance is important

- Do not come late

- Cheating will **NOT** be tolerated

- No makeup exams

- Late submissions will not be accepted

- Lab website: Microsoft teams

- Contact: f.jubair@ju.edu.jo

Questions?