Computer Organization and Architecture

Course

The course is concerned with design techniques for high performance computer systems. This course continues an undergraduate course in computer organization in more detail and explores advanced topics such as superscalar design. Other topics include the organization of the main/disk memory hierarchy and an introduction to multiprocessors.

Course Text

Barry Wilkinson, *Computer Architecture, Design and Performance 2nd Edition*, Prentice Hall 1996. On-line slides will be provided on home page.

Also see:

D. A. Patterson and J. L. Hennessy *Computer Architecture A Quantitative Approach 2nd edition*, Morgan Kaufmann, 1996

D. Sima, T. Fountain, and P. Kacsuk, *Advanced Computer Architecture A Design Space Approach*, Addison-Wesley, 1997.

Prerequisites

Basic knowledge of computer organization is expected.

Knowledge of C and an assembly language is also assumed.

Home page

For materials, assignments, annoucements, etc.

http://www.cs.uncc.edu/~abw/CSCI5141/

Course Outline

Broadly three parts, a review and discussion of CSCI 3182 material, further study of these topics (pipelined design, cache memory and memory management), and finally a detailed study of higher performance superscalar and multiprocessor systems:

- Review of the stored program concept
- Detailed study of pipelined processor design
- Cache memory
- Memory management

Assessment

Class test (1) 25%

Project (1) 50% The project will be in two phases, first to write a simple 5-stage pipelined processor simulator, and then later to modify this simulator to handle superscalar operation. (Obviously, you have to do the first part to do the second.)

Final exam 25%

The assessment and percentages may be modified.

All submitted assignments must be your own work. Copied work or work

Instructor

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Office Hours:

Tuesday/Thursday: 2:30 pm to 3:30 pm

7:20 pm onwards (Please come by 7:20 pm.)