Fall 2005 Midterm Exam Review

When / Where

Monday, 24 October 2005, 12:40-13:30 CDT

CEBA 2142 (Here)

Conditions

Closed Book, Closed Notes

Bring one sheet of notes (both sides), $216\,\mathrm{mm} \times 280\,\mathrm{mm}$.

No use of communication devices.

Format

Several problems, short-answer questions.

Resources

Solved tests and homework:. `http://www.ece.lsu.edu/ee4720/prev.html`

Study Recommendations

Study this semester's homework assignments. Similar problems may appear on the exam.

Solve Old Problems—memorizing solutions **is not the same** as solving.

Following and understanding solutions **is not the same as** solving.

Use the solutions for brief hints and to check your own solutions.

Previous Midterms

Emphasis

MIPS Programming and Instruction Use

Should be able to easily understand and write MIPS programs.

Should be able to use other instructions in examples.

For example, SPARC, DLX, etc.

Not required to memorize instruction names, except for common MIPS instructions.

Topics

Introductory Material

    ISA v. Implementation.

    CPU Performance Equation

    Benchmark types.

    Compiling and Optimization

SPEC Benchmark Suite

    SPEC membership and their interests.

    Benchmark programs (types, how they were selected).

    Rules for running benchmarks and disclosing results.

Compilers and Optimization

Steps in building and compiling.

Basic optimization techniques, compiler optimization switches.

Profiling.

Compiler ISA and implementation switches.

How programmer typically uses compiler switches (options).

Instruction Set Design

Data Types: What to include, what to leave out.

Basic integer and floating point

Packed types: BCD, integer, saturating integer.

Size choices.

Addressing Modes: What they do, which ones to include.

Register, Immediate, Direct, Register Deferred (Register Indirect), Displacement, Indexed, Memory Indirect, Autoincrement, Autodecrement, Scaled.

Synthetic Instructions

EE 4720 Lecture Transparency. Formatted 13:44, 21 October 2005 from lslimr.

Statically Scheduled MIPS Implementations

Unpipelined Implementation

Understand relationship between insn format and connections to register file, etc.