

Läsanvisningar

Datorarkitektur - TDDI03

In order to complete the course and enrich your knowledge in the subject area you should read all the course material: textbook and lecture notes.

The following materials will be *directly* covered by the written examination; this material you have to understand and, at the same time, know how to apply to solve problems:

1. **Lecture notes and seminar problems:** *all the material* presented in the lecture notes and the two seminars may appear in the examination.
2. **Textbook:** you find below chapters and paragraphs from Stallings' book "Computer Organization and Architecture" (tenth edition), which are directly related to the examination topics.

Chapter 4. Cache Memory

- 4.1 Computer Memory System Overview
- 4.2 Cache Memory Principles
- 4.3 Elements of Cache Design
- 4.4 Pentium 4 Cache Organization

Chapter 8. Operating System Support

- 8.3 Memory Management

Chapter 14. Processor Structure and Function

- 14.1 Processor Organization
- 14.2 Register Organization
- 14.3 Instruction Cycle
- 14.4 Instruction Pipelining

Chapter 15. Reduced Instruction Set Computers

- 15.1 Instruction Execution Characteristics
- 15.2 The Use of a Large Register File
- 15.4 Reduced Instruction Set Architecture
- 15.5 RISC Pipelining
- 15.8 The RISC versus CISC Controversy

Chapter 16. Instruction Level Parallelism and Superscalar Processors

- 16.1 Overview
- 16.2 Design Issues
- 16.3 Intel Core Microarchitecture
- 16.4 ARM Cortex-A8

Chapter 17. Parallel Processing

- 17.1 Multiple Processor Organizations
- 17.4 Multithreading and Chip Multiprocessors

Chapter 18. Multicore Computers

- 18.1 Hardware Performance Issues
- 18.2 Software Performance Issues
- 18.3 Multicore Organization
- 18.5 Intel Core i7
- 18.6 ARM Cortex-A15

Chapter 19. General-Purpose Graphic Processing Units

- 19.2 GPU versus CPU
- 19.3 GPU Architecture Overview
- 19.5 When to Use a GPU as a Coprocessor

Don't forget lecture one!!! There we discussed several issues which are supposed to be known by you from previous courses you have taken. If this is not exactly the case for you, you have to look into one or several of the following chapters:

Chapter 1&2. Basic Concepts&Performance Issues

- 1.3 A Brief History of Computers
- 2.1 Designing for Performance

Chapter 3. A Top-Level View of Computer Function and Interconnection

- 3.1 Computer Components
- 3.2 Computer Function
- 3.3 Interconnection Structures
- 3.4 Bus Interconnection

Chapter 5. Internal Memory

- 5.1 Semiconductor Main Memory

Chapter 6. External Memory

- 6.1 Magnetic Disk
- 6.3 Solid State Drives
- 6.4 Optical Memory
- 6.5 Magnetic Tape

Chapter 7. Input/output

- 7.1 External Devices
- 7.2 I/O Modules
- 7.3 Programmed I/O
- 7.4 Interrupt-Driven I/O
- 7.5 Direct Memory Access
- 7.7 I/O Channels and Processors

Chapter 12. Instruction Sets: Characteristics and Functions

- 12.1 Machine Instruction Characteristics
- 12.2 Types of Operands
- 12.4 Types of Operations

Chapter 13. Instruction Sets: Addressing Modes and Formats

- 13.1 Addressing Modes
- 13.3 Instruction Formats

The maximal number of points for the exam will be 40.

In order to pass the exam you have to collect a total of minimum 21 points.