CSE 240: PRINCIPLES in COMPUTER ARCHITECTURE

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1. FUNDAMENTALS of COMPUTER DESIGN

Trends. Measuring Performance. Quantitative Principles of Computer Design.

2. INSTRUCTION SET PRINCIPLES

Classifying Instruction Set Architectures. General Purpose Register Machines. Memory Addressing. Operations in Instruction Set. Role of Compilers. The DLX Architecture.

3 PIPELINING

Pipeline Hazards. Data Hazards. Control Hazards. Extensions for Multicyle Operations.

4 ADVANCED PIPELINING and INSTRUCTION LEVEL PARALLELISM

Instruction Level Parallelism. Dynamic Scheduling. Dynamic Hardware Prediction. Multiple Issue. Compiler Support for Increased ILP. Hardware Support for Increased ILP .

5. MEMORY-HIERARCHY DESIGN

Caches. Reducing Cache Misses, Miss Penalty, Hit Time. Main Memory. Virtual Memory.

6 I/O

Storage Devices. Buses. Performance Measures.