CS61第六次课程记录

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Contents

1 Topics

内存(Memory)及存储(Storage)技术，缓存(Caching)

2 Progress

早上9点开始，9:00 - 10:50 学习 Lec12-Memory_and_Storage_Technologies.pdf 和 Lec13-Caching.pdf 两张课程讲义，然后10:50开始讨论学习过程中遇到的问题 。

3 Learning Details

3.1 Course Sketch

3.1.1 Memory

- 静态RAM和动态RAM
- 动态内存常见组织结构，$d \times w$: d supercells of size w bits
- 内存模块
- 加强的DRAM??
  - 同步DRAM
  - 双倍速同步DRAM
  - RamBus DRAM
- 过时的技术
  - FPM DRAM
  - EDO DRAM
  - Video RAM

  - CDRAM, GDRAM

- 非易失性内存ROM， MRAM， FeRAM, PROM, EPROM, EEPROM
- 传统内存总线
- 总线容错，Hamming码

3.1.2 Disk Drives

- 记录密度
- 道密度
- 面密度
- 寻道时间
- 旋转延迟
- 传输时间
- ...
- 逻辑块

3.1.3 IO and Memory Buses

3.1.4 Solid-state Disks

3.1.5 The Principle of Locality

- 局部性原理：时间局部性和空间局部性
- 时间局部性：Recently referenced memory addresses are likely to be referenced in the near future.
- 空间局部性：Similar memory addresses tend to be referenced close together in time.

3.1.6 Memory Hierarchies

- 关键点

3.1.7 Caching Concepts

3.1.8 Direct-Mapped Cache Organization

- Cache失效：冷失效，容量失效，冲突失效
- 工作集:working set

3.1.9 Set-Associative Cache Organization

3.1.10 Multi-level caches

3.1.11 Cache Writes

- 写穿策略
- 写回策略

3.2 Problems

3.3 Solutions