



## G51CSA Lecture Notes #6

Reading: Main text, Chapters 4, 5 + relevant Chapters in reference B and C

### Memory Systems

1. Characteristics of Memory Systems
  - Location: CPU, Internal, Secondary
  - Capacity: Number of words, word size
  - Transfer method: Word, Block
  - Access method: Sequential, Direct, Random, and Associative
2. Memory Hierarchy
  - CPU: Registers, Cache
  - System Internal: Main memory, Cache
  - System external: Disk, Secondary storage
3. Semiconductor Memory
  - Types: RAM, ROM, EPROM
  - Organisation and Chip Packaging
  - SRAM and DRAM
4. Cache System
  - Purpose
  - Locality principle
  - Definitions: Line, Block, Tag, Hit/Miss
  - Cache Architecture: Direct mapping; Associative mapping, Set associative mapping
  - Write policies: Write through, Write back
  - Line replacement policies: FIFO, LRU, LFU, Random
  - Related Issues: Performances, Coherency