

Chapter 5: Memory

5 classic components of a computer

- Datapath
- Control
- Memory
- Input
- Output

Memory is composed of Cache, Main Memory, and Secondary Memory

- Cache memory is composed of Flip-Flops
- Cache is physically larger than RAM memory (main memory)
- RAM has one transistor and one capacitor; cache has two AND gates

Memory Types

RAM

- Main Memory
- **DRAM**: High density, low power, cheap, slow
- **SDRAM**: Faster than DRAM
- **DDR RAM**: Twice the amount of data in a single bus clock cycle
- **SRAM**: Does not refresh and stays as long as there is power.
 - Three levels
 - More complex: 6 - 8 transistors
 - Fast: very close to the CPU
 - Used for cache memory

Larger capacity memory is usually slower

Performance