

## CS-341 Lecture 2

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## Instruction Set Architectures

- Complex
  - Each instruction does a lot of work, but takes several clock pulses to complete.
  - Pentium
- Reduced
  - Each instruction is simple, but requires just one clock pulse to complete; clock normally faster than CISC
  - Sparc
- Stack
  - Operands are held in a stack instead of in registers, requiring fewer bits per instruction.
  - JVM

## Parallelism

- Pipelining
- Superscalar
  - Multiple arithmetic units
- Processor-level
  - Single Instruction Multiple Data (SIMD)
    - Vector processors
    - Array processors
  - Multiple Instruction Multiple Data (MIMD)
    - Symmetric Multiprocessors (SMP)
    - Distributed Processors