Visualization Software for Computer Systems Organization and Architecture

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Software Design Goals

• Concentrate on visual aspects of simulation
• Interactive component
• Simplified simulations to explain basic concepts
• Work in conjunction with the textbook *Computer Systems Organization and Architecture*
Software Design Standards

- All simulators coded as Java applets
  - Platform independent
  - Accessible using any Java-enabled web browser
  - Promotes code reuse
- All simulators and source code freely available under the GNU Public License
Relatively Simple CPU Simulator - Features

- Fixed architecture, 16-instruction CPU
- Animates data flow within the CPU
- Hardwired or microcoded control unit
- Simulates execution of user specified assembly language program
- Single step, breakpoint, or continuous execution
Relatively Simple CPU – Register Section
Relatively Simple Computer Simulator - Features

- Fixed system architecture: Relatively Simple CPU, memory, I/O port
- Animates data flow between components
- Simulates execution of user specified assembly language program
- Single step, breakpoint, or continuous execution; trace option available
Relatively Simple Computer System - Architecture
PLD Visualization Tool - Features

- More visualization than simulation
- Up to four inputs and four outputs
- User makes and breaks PLD connections
- Output functions displayed: updated as connections are changed
PLD Visualization Tool - Organization
Future Development Plans

• Very Simple CPU Simulator
• DMA Controller Simulator
• Computer Arithmetic Hardware Simulator
• Cache Memory Simulator
• Virtual Memory Simulator