Laboratory Options for Computer Science Majors

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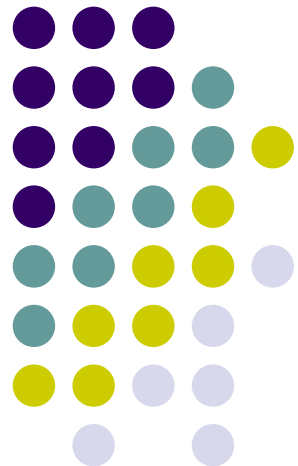
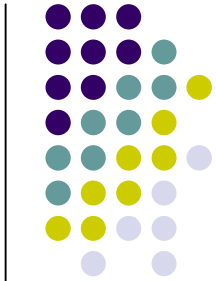


Outline

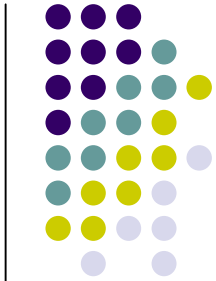
- Computer Science, Engineering, and Architecture
- Laboratory Models
- Software Options
- Hardware Platforms
- Conclusions

CS, CE, and CA



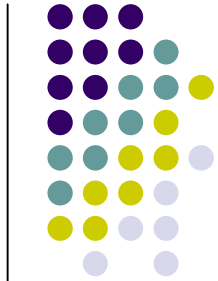
- The role of CS graduates in system design
  - Codesign can mean initial software description of entire system
  - Engineer wannabes or productive designers?
  - Is system design computer architecture?

Laboratory Models



- Possible Goals
  - CPU Design
    - Paper machines, Subsets, IP cores
  - “Hardware Appreciation”
  - System Design
    - Architectures, Platforms, Systems, Circuits
- Simulation *vs.* Hardware Implementation
  - Hear, See, Do aphorism

Software Options

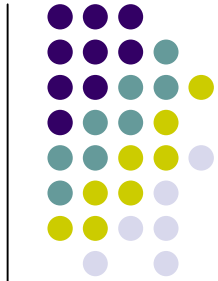


- Use C/C++/Java for simulation projects
- Use HDLs and simulation tools from vendors
  - Verilog and/or VHDL?
- Embedded systems software
  - Esterel …
- System Implementation Languages
  - SystemC, SuperLog, Handel-C

Hardware Platforms

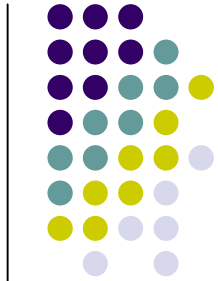
- Circuit Breadboards
- FPGA Product Prototyping Boards
  - No peripherals, yet very expensive
- Student Laboratory Kits
  - Suitable for Logic Design
  - Suitable for System Design

Conclusions



- CS Students need to understand architecture, as always
- CS Students will be candidates for system design tasks previously in the CE-only realm
- Laboratory kits and development systems are available with very rich hardware feature sets accessible to people with software skills
- Our new environment: Handel-C and RC200
  - (Short demo)

Additional References



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