

CS152
Computer Architecture and Engineering
Lecture 6

Divide, Floating Point, Pentium Bug

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lecture slides: <http://www-inst.eecs.berkeley.edu/~cs152/>

Outline of Today's Lecture

- **Recap of Last Lecture and Introduction of Today's Lecture (4 min.)**
- **Divide (20 min.)**
- **Questions and Administrative Matters (2 min.)**
- **Floating-Point (25 min.)**
- **Questions and Break (5 min.)**
- **Pentium Bug (25min.)**

Recap of Last Lecture: Summary

- **Intro to VHDL**
 - **entity = symbol, architecture ~ schematic, signals = wires**
 - **behavior can be higher level**
 - **`x <= boolean_expression(A,B,C,D);`**
- **On-line Design Notebook**
 - **Open a window with editor, or our tool, => cut&paste**
- **Multiply: successive refinement to see final design**
 - **32-bit Adder, 64-bit shift register, 32-bit Multiplicand Register**
 - **Booth's algorithm to handle signed multiplies**
 - **There are algorithms that calculate many bits of multiply per cycle (see exercises 4.36 to 4.39 in COD)**
- **Shifter: Best implemented with technology-specific methodologies**
- **What's Missing from MIPS is Divide & Floating Point Arithmetic:
Next time the Pentium Bug**