ECE 411 MP3 CP4 AND CP5

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PERFORMANCE COUNTERS

• Stalls
• Branch prediction
• Cache hits/misses
STATIC BRANCH PREDICTION

- Support for speculative execution (flushing)
- 4 styles to choose from
EVICION WRITE BUFFER

• Defer writeback to service read miss first
• Services the writeback at the next available opportunity
• Place between L1 and L2 or L2 and main memory
• Use the same interface (rdata, wdata, resp, read, write)
• >= 1 entry
• Must check for “hits” or wait
GENERAL DESIGN GUIDELINES

• Decode in decode stage
• Use control word struct type
• Be mindful of critical path
• Parameterize modules
• Consider writing test benches for modules
• Write your own tests (will be graded in CP4)
DESIGN COMPETITION

- Best of 2 scales
- Must be correct (no buggy features)
- CPI and frequency
ADVANCED FEATURES

• Worth 20 points
• Select options for performance
• Suggest non-standard features to mentor TA
• Add new performance counters for added features
• Questions?