Notes on EE 2310 Test #2

Conditions

1. **As this is effectively a take-home test, it is considered fully open-book and open-notes. You may use notes taken in class, homeworks, lecture slides, etc.**
2. **No calculators will be needed (as usual).**
3. **ASCII codes will be provided if required in a problem.**
4. **When turning in the test, you must digitally sign (including UTD ID), verifying that you completed the test on your own, that is, without help from anyone else.**

Items Potentially Covered on the Test

1. **Master-slave flip-flops (T, D, J-K).**
2. **Clocks and timing diagrams.**
3. **Synchronous (parallel) counters. Emphasis will be on counters!**
4. **Shift registers.**
5. **Diagnosing and describing the operation of a complex sequential circuit, which might be made up of both combinational and sequential circuits.**
6. **Combinational logic concepts (necessary with many sequential circuits).**
7. **Hexadecimal and binary arithmetic as needed to interpret assembly instructions.**
8. **All standard assembly instructions, including reg.-reg., shift and rotate, memory access (lw, sw, lb, sb), jump (j, jal, jr), branch (bne, bgtz, etc.). No "set" (such as slt) or shift.**
9. **Syscalls, directives, and use of labels.**
10. **Use of the stack.**
11. **More complex loop programs.**
12. **Basic computer architecture, concentrating mainly on the MIPS pipeline.**
13. **The concepts of hazards, forwarding, and stalls.**
14. **Showing how an instruction goes through the pipeline, including what control lines are active and register identifications that must accompany the partial calculations.**
15. **Branch decision-making and how the pipeline can be modified to eliminate much of the overhead of incorrect branch decisions.**
16. **Bonus questions as listed in the 35-question homework (most from Lectures 17-21). Five of these questions, exactly as shown in the 35-question list, will be on the test.**

Not on the Test:

Only those items specifically named above will be included in the test possibilities—and not all of them may be on the test.