

ELC 363 - LABORATORY #7

MIPS MICRO-CODE

In this laboratory, the micro-code for all the instructions of the multi-cycle MIPS microprocessor in the attached ISA (core ISA from the class textbook) will be developed. First, the attached slides (from the Chapter 4 lectures) are to be studied: 54, 80-82, and 84-85. Then, the micro-code for the MIPS microprocessor is to be formulated to support the given ISA, with the exceptions noted. If necessary, the architecture shown in slide 54 is to be expanded to support the ISA, as well as the control signaling, but the dispatch scheme shown in slide 81 still will be used. The deliverables are the following:

- a) New data-path block diagram if it has to be changed from the one in slide 54.
- b) New dispatch details if it has to be changed from slide 81.
- c) Microinstruction format if it has to be changed to augment it from the table in slide 85.
- d) Micro-code table like the one in slide 84, but with two additional columns that show the applicable instruction(s) and the resulting CPIs.

A report with, at a minimum, all the items requested to be turned in is to be submitted by each team by the due date discussed in class. All reports should be written in a word processor and similar productivity computer tools; no hand written reports will be accepted.

GRADING RUBRIC: The total grade for this assignment will be 19 points normalized to 100% for your report. Parts (a) and (b) above will be worth 2 points each. Part (c) will be worth 3 points. And part (d) will be worth 6 points. The rest of your report will be worth 6 points, for a total of 19 points.

REPORT FORMAT: Free form, but it must be:

- a. One report per team.
- b. Have a cover sheet with identification: Title, Class, Your Name, etc.
- c. COMPLETELY word-processed

- d. Double spaced
- e. 12 pt Times New Roman font
- f. Fully justified (optional)
- g. Outline of the body of the report: Introduction, Problem Description, Results, Discussion, and Conclusions.