LSU EE 4720 **Homework 6** **Due: 29 April 2024**

Collaboration Rules

Each student is expected to complete his or her own assignment. It is okay to work with other students and to ask questions in order to get ideas on how to solve the problems or how to overcome some obstacle (be it a question of MIPS or assembler syntax, interpreting error messages, how a part of the problem might be solved, etc.) It is also acceptable to seek out assembly language resources for help on MIPS, etc. It is okay to make use of AI LLM tools such as ChatGPT and Copilot to generate sample code. (Do not assume LLM output is correct. Treat LLM output the same way one might treat legal advice given by a lawyer character in a movie: it may sound impressive, but it can range from sage advice to utter nonsense.)

After availing oneself to these resources **each student is expected to be able to complete the assignment alone**. Test questions will be based on homework questions and **the assumed time needed to complete the question will be for a student who had solved the homework assignment on which it was based**.

Student Expectations

Some of the problems require thought, and students are expected to persevere until they find a solution. A very good strategy for those who are completely lost is to solve simpler problems on the same topic. It is each student's duty to himself or herself to resolve frustrations and roadblocks quickly, perhaps just by first solving easier problems, perhaps by asking for help. There are plenty of old problems and solutions to look at.

For EE 4720 exams, homework assignments, and their solutions visit
`https://www.ece.lsu.edu/ee4720/prev.html`.

Problem 1: Solve 2023 Final Exam Problems 5(c) and 5(d). Problem 5(c) asks about the difficulty of implementing typical CISC instructions in a RISC pipeline. In Problem 5(d) the cost advantages of a VLSI ISA are to be illustrated by comparing a 4-way superscalar implementation of a RISC ISA to a similar implementation of a four-slot VLIW ISA.

Problem 2: Solve 2022 Final Exam Problem 4, in which the prediction accuracy and several other characteristics of some branch predictors is to be analyzed. Note that the solution to this problem is not yet available, you'll really need to solve it.