

Homework 2

Only the required submission format will be graded. Other formats or late submission will be zero with no exceptions and no extension due to any reasons.

In this homework, you need to submit three pdf files and one video.

[20 points] Question 1: Submit one single pdf file for this question.

Download the MARS software from

<http://courses.missouristate.edu/KenVollmar/mars/>.

Find any tutorials for MARS. Read and study the manual/tutorials. Write a MIPS instructions-based program and run it in MARS to find the min and max numbers in an array. In your submission, show your code and a screenshot of the output.

Note: Each computer is different. The instructor cannot help you to download and install MARS. MARS needs JDK. It is your responsibility to download the JAVA JDK that fits your computer.

[50 points] Question 2: Submit one single pdf and one single video. The video has to be small size to be uploaded to the 2SU course page. No emails submissions will be accepted. No dropbox or google drive or similar submissions will be accepted. The video must show your voice and screen. If you cannot create this video, contact 2SU, they will teach you how to use zoom to create this video.

After study MARS and MIPS, propose your own instruction set (as many instructions as you can).

You are required to develop a smaller/simpler/easier/humbler/limited version of the MARS software to run your new proposed instructions. Your proposed instructions have to be different than MIPS. You cannot just use the java file from MARS.

Minimum requirements:

When you enter any instruction (from your proposed instruction set) to the new developed editor, your editor must interpret the instruction and print the opcode and other fields of the instruction in binary or Hex, execute the instruction one at a time, show the registers used before and after each instruction, and show the memory contents as well. You can feed the instructions to the editor one by one or you can read from a file or you can type them in the editor. You can use any programming language to develop the editor.

Graphical user interface is recommended.

You are required to submit a pdf file that includes the code for your new editor (if the code is small but if the code is hundreds or thousands of lines, feel free to zip the code and submit the zipped folder) and the documentation for your new proposed instruction set with a few snapshots of the outputs.

You are also required to submit a video to explain the code in less than 2 minutes and show the results in less than 3 minutes. The instructor has the right to send you any questions or requests to test and evaluate your code and make sure that nothing is hardcoded. You need to show more than one scenario to make sure that it is not hardcoded.

You may need to submit a zipped folder of the coding files if code is huge.

Video submission:

1. You can use zoom or any other software to record your video.
2. Your video should be max 5 minutes and small size to be uploaded to 2SU.
3. No links are allowed and no shared drive is allowed and no youtube upload is allowed and no one drive is allowed and no dropbox is allowed.
4. Your video should start with explaining the code very fast and then going through the output. Show many outputs.
5. Your video should show your screen and your voice. Your face is an option. Video file extension should be mp4.
6. If you decided to use zoom, zoom that is provided by 2SU does not allow you to locally record to your machine.

So, you can use another zoom free account (not the 2su) one. In other words, you can just use any email such as yahoo or google to login in to zoom. Then, in this case, this zoom free account will provide you to record locally to your machine.

[30 points] Question 3: Submit one single pdf file for this question.

Write a report about computer pipelining. The report must be more than four full pages in any format. Use your own words. Plagiarism will be tested and penalty will be forced in case of plagiarism.