

CSE 331/503

Computer Organization

Homework 2

Due Date 15/11/2021 Monday 23:50

In this assignment you will write a MIPS assembly program and test it using MARS instruction set simulator.

Definition: This program takes one input from an input file, this is an integer array. This program finds a sequence according to increasing order, this program can find more than one sequence but has to return only one sequence that has a maximum length. The outputs of the program are the sequence and the length of the array, the outputs should be written the file.

Example: Array_inp: [3, 10, 7, 9, 4, 11], Array_outp: [3, 7, 9, 11] size = 4

Let's examine program inner results:

- candidate sequence : [10,11] , size = 2
- candidate sequence : [3,7,9,11] , size = 4
- candidate sequence : [3,10,11] , size = 3
- candidate sequence : [7,9,11] , size = 3
- candidate sequence : [4,11] , size = 2

The inps/outps of the program have to read/write a text file. Showing inner results in console will bring extra points.

You need to write and explain your pseudocode in report file, you have to add time and space complexity. If you add some optimization parts/tricks, please explain in the report file.

Rules:

- Honor code: It is not a group project. Do not take any code from Internet. Any cheating means at least **-100pt** for both sides. Do not share your codes and design to any one in any circumstance. Be honest and uncorrupt not to win but because it is RIGHT!

Submission Rules:

- **Platform: Teams** CSE 331 page
- For late submission: -25pt for each day, end of the 3 days submission will be closed.
- **Submission format must be as follows:**
 - StudentNo.zip -> StudentNo (folder) -> hw1.asm, Report_hw1.pdf , (inp/outp files, header files if need)
- **Report file must be include:**
 - Readable explanation of functions in your code (explanation of inputs and outputs, shortly explanation of function) (not copy all code line by line and insert comment)
 - Result of test cases with screenshots & basic explanation.
 - For assembly part need to show least 6 test result.
 - Explain if you have a missing parts, bonus parts or adding parts.
 - 2-3 pages will suffice.
- **Assembly file must be as follows:**
 - Anyone using a compiler instead of writing the assembly manually will get **0pts.**
 - Assembly that cannot be executed or designs that are not even simulating can at most get **20pts.**
 - You can use pseudo instructions in MARS.
 - Obey the contract, which defines the usage of MIPS registers.
 - This program has to include at least one **procedure (jal&jr usage)**