

Group project assignment 10% (By the end of 13 (last possible delivering))

(Oral discussion 3%, Code 4%, and report evaluation 3%)

You should write a HDL code and report that implement a MIPS ALU unit and Control unit CIRCUIT

1. Define what are the required functions in **ALU unit and Control unit**.
2. Implement a complete **ALU unit** of the arithmetic and logic operations: add, sub, not, and, or and xor instructions based on MIPS ISA instruction size.
3. Implement a complete **Control unit** of the MIPS data path to generate the required nine control signals.
4. Make a complete description of **ALU unit and Control unit** required as one design.
5. Define the Input and output ports.
6. Define the output of the nine control signals of Control unit as well as the Result and output Zero bit of ALU
7. Your report should represent all the above points in details
8. Submission: Soft copy code and report in addition with printed code and report
9. Report structure should be followed

Report structure (3 points)

Project title (18 font size)

Student names (12 font size)

Academic numbers (12 font size)

Email addresses (12 font size)

Abstract (5 lines at least with 10 font size)



1. Introduction ((use at least two references to discuss definition of **ALU unit and Control unit**, and any information you would like to share it with us) (12 font size)

2. Make a complete description of ALU for MIPLS ISA for that family based on operands size, different operation types, (explain by drawing with the“circuit”)
3. Make a complete description of **ALU unit and Control unit**.
4. References (at least 2 references) (12 font size)
 - a. Author name(s), book title, year or
 - b. Web page title, Web link
5. The Code
6. The simulation
7. Appendix
8. Any other information can be added (in the above 1, 2, 3, and 4)