

Spring 2024

Project II

In this project, you are going to design your own 8-bit MIPS like processor. with the following features.

The processor should have at least 8 general purpose registers having 8 bits each.

The instruction size should be 16 bits.

You should include PC, hi, lo registers as in MIPS.

The size of the data memory and instruction memory should be 256 bytes each.

- conditional and unconditional branches should be supported
- The processor should support procedure calls and implementations
- The processor should include at least the following instructions.
- add, sub, and, or, addi, andi, ori, xor,
- slt, slti, j, jr
- jal, beq, bne
- mul, muli
- lw, sw, mfhi, mflo
- immediate form of sll, srl, sra (implementing/limiting shift instructions in/to immediate form will help you to increase the number of instructions)

Implementing as much as additional (meaningful) instructions will bring bonus grades.