

# Neu32 Specs

## Instruction Set

a) Arithmetic Instructions:

1. Add.
2. Add immediate.
3. Sub.
4. Multiply.

b) Logical Instructions:

1. And.
2. Or immediate.
3. Shift left logical.
4. Shift right logical.

c) Data Transfer Instructions:

1. Load word.
2. Store word.

d) Conditional Branch Instructions:

1. Branch on not equal.
2. Branch on greater than.

e) Comparison Instructions:

1. Set on less than.

f) Unconditional Jump Instructions:

1. Jump.

R: Add, Sub, Multiply, And, slt

I: addi, ori, sll, srl, lw, sw, bne, bgt

J: jump

R: 4 bits opcode, 5 bits r1, 5 bits r2, 5 bits r3, 13 bits funct

I: 4 bits opcode, 5 bits r1, 5 bits r2, 18 bits imm

J: 4 bits opcode, 28 bits addr

## Memory & Registers

- 32 registers, and since data is 32 bits, then registers can carry 32 bits
- ONE memory - Von Neumann
- Instruction and Data Memory size: 1024x32 (entries x bits)
- We will do byte addressing!