**ISA DESIGN DOCUMENT**

**PROJECT NAME :** 12 BIT CUSTOM RISC-V MICROPROCESSOR

GROUP NUMBER : 02

GROUP MEMBER NAME AND ID :

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**ISA DESIGN DOCUMENT :**

1. How many types of instruction (R-Type, I-Type, J-Type, etc.)?

ANSWER :

There are two types of instructions that was used to make this project. They are 1: R-type

2: I-type

1. Describe each of the formats (fields and field length)

ANSWER :

**R type instruction format:**

|  |  |  |  |
| --- | --- | --- | --- |
| Opcode: 3 bit  bit(9 – 11) | rs: 3bit  bit(6– 8) | rt: 3 bit  bit(3– 5) | rd: 3 bit  bit(0 – 2) |

Total 12 bit instruction. There are no bit for shift and function.

**I type instruction format:**

|  |  |  |  |
| --- | --- | --- | --- |
| Opcode: 3 bit  bit(9 – 11) | rs: 3bit  bit(6– 8) | rd: 3 bit  bit(3– 5) | immediate: 3 bit  bit(0 – 2) |

3. How many operands? (3 operands, 2 operands)

ANSWER :

The answer is two operands.

4. How many operations?

ANSWER :

There are total 7 operations.

5. Types of operations? (Arithmetic, logical, branch type?? How many from each category? List the   
opcodes and respective binary values

ANSWER :

There are 3 arithmetic operations(add,sub,addi), 2 data transfer type operations(lw,sw), 2 conditional branch type operation(beq,slt)

The list of the opcodes and respective binary values :

