|  |  |
| --- | --- |
| add | Listo |
| sw | Listo |
| lui | Listo |
| li | Listo |
| lw | Listo |
| sll | Listo |
| sub | Listo |
| and | Listo |
| xor | Listo |

|  |  |
| --- | --- |
| Binario | 1111 1101 0000 0001 0000 0001 0001 0011 |
| Instrucción | addi sp, sp, -48 |

**Formato I:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| imm[11:0] | rs1 | funct3 | rd | opcode |
| 1111 1101 0000 | 0001 0 | 000 | 0001 0 | **001 0011** |
| -48 | x2 | **ADDI** | x2 | I |

|  |  |
| --- | --- |
| Binario | 0000 0010 1000 0001 0010 0110 0010 0011 |
| Instrucción | sw s0, 44(sp) |

**Formato S:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| imm[11:5] | rs2 | rs1 | funct3 | imm[4:0] | opcode |
| 0000 001 | 0 1000 | 0001 0 | 010 | 0110 0 | **010 0011** |
| 44 | x8 | x2 | **SW** | 44 | S |

|  |  |
| --- | --- |
| Binario | 0000 0000 0000 0000 1011 0111 1011 0111 |
| Instrucción | lui a5, 0xb |

**Formato U:**

|  |  |  |
| --- | --- | --- |
| imm[31:12] | rd | opcode |
| 0000 0000 0000 0000 1011 | 0111 1 | 011 0111 |
| b=11 | x15 | U - **lui** |

|  |  |
| --- | --- |
| Binario | 0000 0000 1111 0111 0000 0111 1011 0011 |
| Instrucción | add a5, a4, a5 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| funct7 | rs2 | rs1 | funct3 | rd | opcode |
| **0000 000** | 0 1111 | 0111 0 | **000** | 0111 1 | **011 0011** |
|  | x15 | x14 | **ADD** | x15 | R |

|  |  |
| --- | --- |
| Hexadecimal | 00f7f793 |
| Binario | 0000 0000 1111 0111 1111 0111 1001 0011 |
| Instrucción | **andi** a5, a5, 15 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| imm[11:0] | rs1 | funct3 | rd | opcode |
| 0000 0000 1111 | 0111 1 | **111** | 0111 1 | **001 0011** |
|  |  | **AND-I** |  | I |

|  |  |
| --- | --- |
| Binario | 0000 0000 1111 0111 0100 0111 1011 0011 |
| Instrucción | xor a5, a4, a5 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| funct7 | rs2 | rs1 | funct3 | rd | opcode |
| **0000 000** | 0 1111 | 0111 0 | **100** | 0111 1 | **011 0011** |
|  | x15 | x14 | **XOR** | x15 | R |

Interfaz de usuario gráfica, Texto, Aplicación, Tabla

Descripción generada automáticamente

|  |  |
| --- | --- |
| Binario | 0000 0000 1111 0111 0001 0111 1011 0011 |
| Instrucción | sll a5, a4, a5 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| funct7 | rs2 | rs1 | funct3 | rd | opcode |
| **0000 000** | 0 1111 | 0111 0 | **001** | 0111 1 | **011 0011** |
|  | x15 | x14 | **SLL** | x15 | R |

|  |  |
| --- | --- |
| Binario | 0100 0000 1111 0111 0000 0111 1011 0011 |
| Instrucción | sub a5, a4, a5 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| funct7 | rs2 | rs1 | funct3 | rd | opcode |
| **0100 000** | 0 1111 | 0111 0 | **000** | 0111 1 | **011 0011** |
|  | x15 | x14 | **SUB** | x15 | R |

Load inmediate: carga en un registro el valor de un número – Tipo I

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| imm[11:0] | rs1 | funct3 | rd | opcode |
| 0000 0000 1110 | 0000 0 | 000 | 0111 1 | **001 0011** |
| 14 | 0 | **suma** | x15 | I |

|  |  |
| --- | --- |
| Binario | 0000 0000 1110 0000 0000 0111 1001 0011 |
| Instrucción | li a5, 14 |

Load word: carga en un registro el valor de memoria

|  |  |
| --- | --- |
| Binario | 1111 1110 1000 0100 0010 0111 0000 0011 |
| Instrucción | lw a4, -24(s0) |

Carga en el registro x14 (a4) lo que tenga el espacio de memoria (x8 (s0) – 24 ).



|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| imm[11:0] | rs1 | funct3 | rd | opcode |
| 1111 1110 1000 | 0100 0 | 010 | 0111 0 | **000 0011** |
| -24 | x8 | **Load - suma** | x14 | I - Loader |

Interfaz de usuario gráfica, Aplicación

Descripción generada automáticamente

TABLA DE INSTRUCCIONES:

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Instrucción | Entradas | | | Salidas | | | | | | |
|  | Funct7 | Funct3 | opcode | RegWrite | ALUControl | MemWrite | WDSrc | ImmReg | ALUSrc | MemToReg |
| Format - R |  |  |  |  |  |  |  |  |  |  |
| ADD | 0000 000 | 000 | 011 0011 | 1 | 000 | 0 | 1 | X | 1 | 0 |
| SUB | 0100 000 | 000 | 011 0011 | 1 | 001 | 0 | 1 | X | 1 | 0 |
| AND | X | 111 | 011 0011 | 1 | 010 | 0 | 1 | X | 1 | 0 |
| XOR | X | 100 | 011 0011 | 1 | 011 | 0 | 1 | X | 1 | 0 |
| SLL | X | 001 | 011 0011 | 1 | 100 | 0 | 1 | X | 1 | 0 |
| Format -S |  |  |  |  |  |  |  |  |  |  |
| sw | X | 010 | 010 0011 | 0 | 000 | 1 | X | 1 | 0 | 0 |
| Format - U |  |  |  |  |  |  |  |  |  |  |
| lui | X | X | 011 0111 | 1 | X | 0 | 0 | X | X | 0 |
| Format - I |  |  |  |  |  |  |  |  |  |  |
| addi | X | 000 | 001 0011 | 1 | 000 | 0 | 1 | 0 | 0 | 0 |
| andi | X | 111 | 001 0011 | 1 | 010 | 0 | 1 | 0 | 0 | 0 |
| li | X | 000 | 001 0011 | 1 | 000 | 0 | 1 | 0 | 0 | 0 |
| lw | X | 010 | 000 0011 | 1 | 000 | 0 | 1 | 0 | 0 | 1 |

Diagrama

Descripción generada automáticamente