1. **I型指令-Addi-Adi-ORI-XORI-SLTI**

Zero

**ALU**

ALU

result

A

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

Address

**Memory**

**MemData**

Write

data

**PC**

32

16

Read \

Register 1

Read

Read \ data 1

Register 2

**Registers**

Write \

Register

Read

Write\ data 2

data

RegWrite

IRWrite

MemRead

MemWrite

**ALUout**

1. **I型指令-BEQ-BGTZ-BLTZ**

Read \

Register 1

Read

Read \ data 1

Register 2

**Registers**

Write \

Register

Read

Write\ data2

data

16

32

ALUSrcB

ALUSrcA

PCwriteCond

PCwrite

MemRead

MemWrite

IRWrite

A

**ALUout**

B

Zero/fp/fn

**ALU**

ALU

result

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

Address

**Memory**

**MemData**

Write

data

**PC**

1. **I型指令-LW**

PCWrite

MemRead

16

32

Read \

Register 1

Read

Read \ data 1

Register 2

**Registers**

Write \

Register

Read

Write\ data 2

data

**MDR**

**PC**

Address

**Memory**

**MemData**

Write

data

**ALUout**

A

Zero

**ALU**

ALU

result

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

RegWrite

MemWrite

IRWrite

1. **I型指令-SW**

16

PCWrite

MemRead

RegWrite

MemWrite

IRWrite

**PC**

Address

**Memory**

**MemData**

Write

data

**ALUout**

Read \

Register 1

Read

Read \ data 1

Register 2

**Registers**

Write \

Register

Read

Write\ data data

data

A

B

Zero

**ALU**

ALU

result

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

32

1. **J型指令-J**

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

Address

**Memory**

**MemData**

Write

data

**PC**

PC[31:28]

32

28

26

IRWrite

MemRead

MemWrite

RegWrite

PCwrite

[25:0]

1. **R型指令-Add-Sub-Xor-And-Or-Nor-SLT-SLLV-SRAV**

[15:11]

Funct[5:0]

Read \

Register 1

Read

Read \ data 1

Register 2

**Registers**

Write \

Register

Read

Write\ data 2

data

**ALUout**

B

Zero

**ALU**

ALU

result

A

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

Address

**Memory**

**MemData**

Write

data

**PC**

RegWrite

IRWrite

MemRead

MemWrite

1. **R型指令-Jr**

IRWrite

MemRead

MemWrite

Zero

**ALU**

ALU

result

A

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

Address

**Memory**

**MemData**

Write

data

**PC**

Funct[5:0]

PCwrite

Read \

Register 1

Read

Read \ data 1

Register 2

**Registers**

Write \

Register

Read

Write\ data 2

data

RegWrite

**ALUout**

1. **R型指令-SLL-SRL-SRA**

[10:6]]

0

MUX

1

Funct[5:0]

A

Read \

Register 1

Read

Read \ data 1

Register 2

**Registers**

Write \

Register

Read

Write\ data 2

data

[15:11]

RegWrite

IRWrite

MemRead

MemWrite

**ALUout**

B

Zero

**ALU**

ALU

result

Instruction

[31:26]

Instruction

[25:21]

Instruction

[20:16]

Instruction

[15:0]

**Instruction**

**register**

Address

**Memory**

**MemData**

Write

data

**PC**