

sllv (Shift Word Left Logical Variable)

introduction:

sllv an (R type) instraction for shifting left a word by variable number

machine code

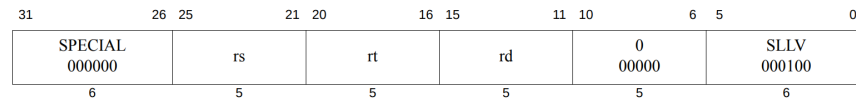


Figure 1: sllv machine code division

opcode	function
000000	000100

assembly format

sllv **rd**, rs, **rt**

operation

sllv would shit the value in reg(rs) ,by a number stored in low five bits in reg(rt),saving result in reg(rd)

implentaion

- add sllv operation in alu

controls r-type_controls

signal	value
REgWrite	1
RegDST	0
ALUSrc	11
Branch	0
MemWrite	0
MemtoReg	0
Jump	0
jr	0
aluop	1111
ne	0

signal	value
half	0
b	0
lbu	0
link	0

code changes:

alu.sv

add shift left operationg

```
y = b << a[4:0]
```

aludec.sv

chage the alucontrol to sllv

function	alucontrol
000100	< sllv operation >

schematic:

Reference:

MIPS® Architecture for Programmers set manulal 2016 pg377

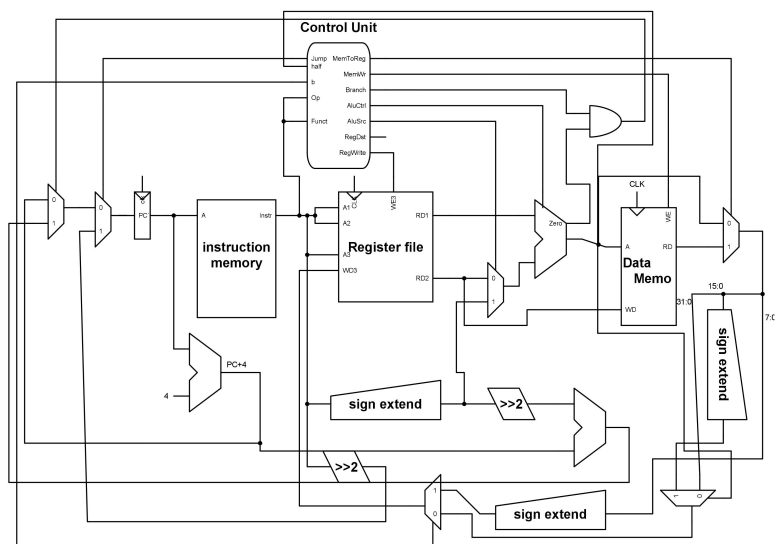


Figure 2: alt text