

# CS220 ASSIGNMENT 7(PROJECT REPORT)

Harshini Dola(210418)

Mondem Shanwitha Yadav(210628)

PDS1)

Registers and usage protocol:

- 1.reg[0] always holds the value 0
- 2.reg[1],reg[2],reg[3] function results and expression evaluation
- 3.reg[4]-reg[5] function parameters
- 4.reg[6]-reg[8] saved values
- 5.reg[9]-reg[23] temporary values
- 6.reg[24]-reg[25] reserved by operating system
- 7.reg[26] reserved by assembler
- 8.reg[27] stack pointer
- 9.reg[28] frame pointer
- 10.reg[29] global pointer
- 11.reg[30] for large constants
- 12.reg[31] return address

PDS2) Size for data memory= 32 words of 32 bits(first 32)

Size for instruction memory=32 words of 32 bits(next 32)

PDS3) Instruction Layout of R-type,I-type,J-type Instructions

1)R-type

opcode	rs	rt	rd	shamt	Func
6 bits	5 bits	5 bits	5 bits	5 bits	6 bits

2) I-type

opcode	rs	rt	imm
6 bits	5 bits	5 bits	16 bits

### 3)J-code

opcode	addr
6 bits	26 bits

Instruction	opcode/function
add	op: 000000 func: 100000
addu	op:000000 func:100001
and	op:000000 func:100100
div	op:000000 func:011010
mult	op:000000 func:011000
or	op:000000 func:100101
nor	op:000000 func:100111
mult	op:000000 func:011000
sll	op:000000 func:000000
sub	op:000000 func:100010
xor	op:000000 func:100110
addi	op:001000
addiu	op:001001
andi	op:001100
ori	op:001101
beq	op:000100
bne	op:000101
lw	op:100011
sw	op:101011
j	op:000010
jal	op:000011
slt	op:000000 func:101010