BAG Reference Data

CORE INSTRUCTION SET

NAME,MNEUMONIC		FORMAT	OPERATIONS	OPCODE	FUNCT
ADD	add	R	R[rt] = R[rs] + R[rt]	000	1
NAND	nand	R	R[rt] = NAND(R[rs],R[rt])	001	1
SET LESS THAN (slt_0)	slt_0	R	R[rs] < R[rt] ? 1 : 0	010	0
SET LESS THAN (slt_1)	slt_1	R	R[rs] < R[rt] ? 1 : 0	010	1
SHIFT LEFT	sl	R	R[rs] = R[rt] << 1	011	0
SHIFT RIGHT	sr	R	R[rs] = R[rt] >> 1	011	1
LOAD WORD	lw	I	R[rs] = Mem(R[sp] + immediate)	100	0
SAVE WORD	sw	I	Mem(R[sp] + immediate) = R[rs]	100	1
ADDI	addi	I	R[rs] = R[rs] + immediate	101	0
BRANCH IF EQUAL	beq	J	if R[slt_0]=R[slt_1]; PC = PC+immediate	110	n/a
JUMP AND LINK	jal	J	R[ra]=PC+1; PC = PC+immediate	111	n/a
JUMP REGISTER*	jr	JR	PC = R[ra]	101	1
LOAD ADDRESS**	la		R[rs] = label		

* jr only jumps to R[ra] and has opcode 10110011

** Pseudo Instruction loads address using shift left and add immediate

BASIC INSTRUCTION FORMAT

Type	7	6	5	4	3	2	1	0
R	opcode			func	rt		rs	
I	opcode			func	immediate		rs	
J	opcode			PC relative immediate				
JR	1	0	1	1	0	0	1	1

REGISTER NAME, NUMBER, USE, CALL CONVENTION

REGISTER NAME	NUMBER	USE	PRESERVED ACROSS A CALL?
$s1	00	Saved Temporary	Yes
$s2	01	Saved Temporary	Yes
$sp	10	Stack Pointer	Yes
$ra	11	Return Address	Yes