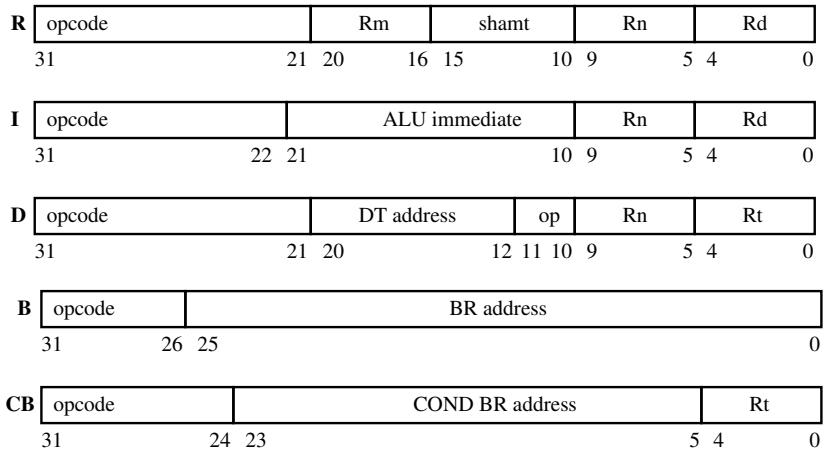
CS 251 ARM Instructions Summary



Instruction words

Instruction	Format	Example	Meaning	Fields
add	R-format	`ADD s1,s2,s3`	`s1 = s2 + s3`	Rn=s2, Rm=s3, Rd=s1
subtract	R-format	`SUB s1,s2,s3`	`s1 = s2 - s3`	Rn=s2, Rm=s3, Rd=s1
addi	I-format	`ADDI s1,s2,#C`	`s1 = s2 + C`	Rn=s2, Rd=s1
subi	I-format	`SUBI s1,s2,#C`	`s1 = s2 - C`	Rn=s2, Rd=s1
load word	D-format	`LDUR s1,[s2,#100]`	`s1` = Memory[`s2+100`]	Rn=s2, Rt=s1
store word	D-format	`STUR s1,[s2,#200]`	Memory[`s2+200`] = `s1`	Rn=s2, Rt=s1
branch	B-format	`B #A`	`PC = PC + 4*A`	
branch on zero	CB-format	`CBZ s1,#25`	if (`s1==0`) go to PC + 25x4	Rt=s1
branch on non-zero	CB-format	`CBNZ s1,#25`	if (`s1!=0`) go to PC + 25x4	Rt=s1

ARM assembly language

Instruction	Opcode	Format
B	0001 01	B-format
ADD	1000 1011 000	R-format
ADDI	1001 0001 00	I-format
CBZ	1011 0100	CB-format
CBNZ	1011 0101	CB-format
SUB	1100 1011 000	R-format
SUBI	1101 0001 00	I-format
STUR	1111 1000 000	D-format
LDUR	1111 1000 010	D-format