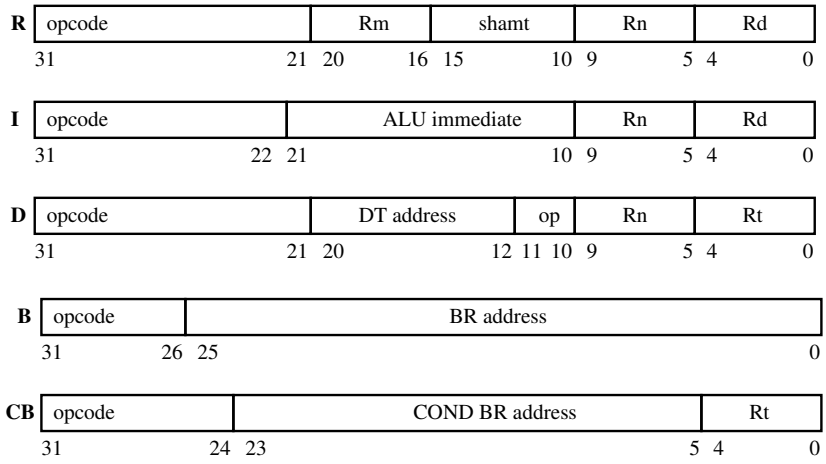
CS 251 ARM Instruction Summary

ARM Assembly Instructions

Instruction	Format	Example	Meaning	Fields
add	R-format	`ADD X1,X2,X3`	`X1 = X2 + X3`	Rn=X2, Rm=X3, Rd=X1
subtract	R-format	`SUB X1,X2,X3`	`X1 = X2 - X3`	Rn=X2, Rm=X3, Rd=X1
addi	I-format	`ADDI X1,X2,#C`	`X1 = X2 + C`	Rn=X2, Rd=X1
subi	I-format	`SUBI X1,X2,#C`	`X1 = X2 - C`	Rn=X2, Rd=X1
load word	D-format	`LDUR X1,[X2,#Imm]`	`X1` = Memory[`X2+Imm`]	Rn=X2, Rt=X1
store word	D-format	`STUR X1,[X2,#Imm]`	Memory[`X2+Imm`] = `X1`	Rn=X2, Rt=X1
branch	B-format	`B #Imm`	`PC = PC +` $4 \times$ `Imm`	
branch on zero	CB-format	`CBZ X1,#Imm`	if (`X1==0`) PC = PC + $4 \times$ `Imm` else PC = PC + 4	Rt=X1
branch on non-zero	CB-format	`CBNZ X1,#Imm`	if (`X1!=0`) PC = PC + $4 \times$ `Imm` else PC = PC + 4	Rt=X1

ARM Instruction Type and Format



ARM Instruction Opcodes

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