FDT-16 ISA

Nr.	Instr.	Parameters	Description
1	LDA	Rs/#immediate	Load value into accumulator
2	STA	Rd	Store value from accumulator into memory
3	BRZ	Addr	Branch if zero flag set
4	BRN	Addr	Branch if negative flag is set
5	BRC	Addr	Branch if carry flag is set
6	BRO	Addr	Branch if overflow
7	BRA	Addr	Branch Always
8	JMP	Addr	Jump to subroutine/specific address(Pushes PC to stack)
9	RET	-	Return from subroutine(Pops to PC)
10	ADD	Rd, Rs/#immediate	Adds two numbers
11	SUB	Rd, Rs/#immediate	Subtracts two numbers
12	LSR	Rt	Logical shift right
13	LSL	Rt	Logical shift left
14	RSR	Rt	Rotate shift right
15	RSL	Rt	Rotate shift left
16	MOV	Rd, Rs/#immediate	Move data from one place to another
17	MUL	Rd, Rs/#immediate	Multiplies two numbers
18	DIV	Rd, Rs/#immediate	Divides one number by another
19	MOD	Rd, Rs/#immediate	Computes remainder of division
20	AND	Rd, Rs/#immediate	Performs bitwise AND
21	OR	Rd, Rs/#immediate	Performs bitwise OR
22	XOR	Rd, Rs/#immediate	Performs bitwise XOR
23	NOT	Rd, Rs/#immediate	Inverts all bits(bitwise NOT)
24	CMP	Rd, Rs/#immediate	Compares two values(for branches) by substracting to set flags
25	TST	Rd, Rs/#immediate	Tests if two values are equal by bitwise AND
26	INC	Rs	Increments value by one
27	DEC	Rs	Decrements value by one

Instruction	Opcode	Address
BRZ	100 000	xx xxxx xxxx
BRN	100 001	xx xxxx xxxx
BRC	100 010	xx xxxx xxxx
BRO	100 011	xx xxxx xxxx
BRA	100 100	xx xxxx xxxx
JMP	100 101	xx xxxx xxxx
RET	100 110	xx xxxx xxxx

1xx xxx – Branch instructions

Instruction	Opcode	Register	Immediate
LDA	000 101	x	x xxxx xxxx
STA	000 110	x	x xxxx xxxx
ADD	010 001	x	x xxxx xxxx
SUB	010 010	x	x xxxx xxxx
LSR	001 000	x	x xxxx xxxx
LSL	001 001	x	x xxxx xxxx
RSR	001 010	x	x xxxx xxxx
RSL	001 011	x	x xxxx xxxx
MOV	000 111	x	x xxxx xxxx
MUL	010 011	x	x xxxx xxxx
DIV	010 100	x	x xxxx xxxx
MOD	010 101	x	x xxxx xxxx
AND	001 100	x	x xxxx xxxx
OR	001 101	x	x xxxx xxxx
XOR	001 110	x	x xxxx xxxx
NOT	001 111	x	x xxxx xxxx
CMP	010 110	x	x xxxx xxxx
TST	010 111	x	x xxxx xxxx
INC	011 000	x	x xxxx xxxx
DEC	011 001	x	x xxxx xxxx

000 1xx – memory instructions
01x xxx – ALU instructions
001 xxx – logical instructions