- 16 BITS For Any Instruction

1) Two operands instructions

   Opcode : 4 BITS (The First 9 Combinations Only)

   Src , Dest : 6 BITS => 3 BITS Register & 3 BITS Addressing Mode

Opcode (15:12)	Src (11:6)	Dest (5:0)

Instruction	Opcode
Mov	0000
ADD	0001
ADC	0010
SUB	0011
SBC	0100
AND	0101
OR	0110
XOR	0111
CMP	1000

2) One operand instructions

   Opcode : 8 BITS (1101 + Operation Combination)

Opcode		(Don't Care)	Operand
(15:12)	(11:8)	(7:6)	(5:0)
1101	4 BITS (Operation's Combination)	2 BITS	6 BITS For Registers

Instruction	Opcode	
INC	1101	0000
DEC	1101	0001
CLR	1101	0010
INV	1101	0011
LSR	1101	0100
ROR	1101	0101
ASR	1101	0110
LSL	1101	0111
ROL	1101	1000

3) Branch Instructions

   Opcode : 7 BITS (1100 + Operation Combination)

Opcode		(Don't Care)	Offset
(15:12)	(11:9)	(7)	
1100	3 BITS (Branch Operation)	1 BIT	8 BITS

Instruction	Opcode	
BR	1100	000
BEQ	1100	001
BNE	1100	010
BLO	1100	011
BLS	1100	100
BHI	1100	101
BHS	1100	110

4) No operands
Opcode: 4 BIT (111 + Combination)

Opcode		(Don't Care)
111	1 BIT (Operation combination)	12 BITS

Instruction	Opcode	
RESET	111	0
HLT	111	1

5) Registers

Register	Combination
R0	000
R1	001
R2	010
R3	011
R4	100
R5	101
R6	110
R7	111

6) Addressing Modes

Mode	Combination
Register direct	000
Autoincrement direct	001
Autodecrement direct	010
Index direct	011
Register indirect	100
Autoincrement indirect	101
Autodecrement indirect	110
Index indirect	111