

## **16-BIT DIVISION**

### **EXP:8**

**AIM:** To write an assembly language program to implement 16-bit divided by 8-bit using 8085 processor.





### **ALGORITHM:**

- 1) Read dividend (16 bit)
- 2) Read divisor
- 3) count <- 8
- 4) Left shift dividend
- 5) Subtract divisor from upper 8-bits of dividend
- 6) If CS = 1 go to 9
- 7) Restore dividend
- 8) Increment lower 8-bits of dividend
- 9) count <- count - 1
- 10) If count = 0 go to 5
- 11) Store upper 8-bit dividend as remainder and lower 8-bit as quotient
- 12) Stop

### **PROGRAM:**

```
LDA 8501
MOV B,A
LDA 8500
MVI C,00
LOOP: CMP B
JC LOOP1
SUB B
INR C
JMP LOOP
STA 8503
DCR C
MOV A,C
LOOP1: STA 8502
RST 1
```

INPUT:

 Data	 Stack	 KeyPad	<b>Memory</b>	 I/O Ports																																							
Start	8500			OK																																							
<table><thead><tr><th>Address (Hex)</th><th>Address</th><th>Data</th></tr></thead><tbody><tr><td>2134</td><td>8500</td><td>2</td></tr><tr><td>2135</td><td>8501</td><td>4</td></tr><tr><td>2136</td><td>8502</td><td>2</td></tr><tr><td>2137</td><td>8503</td><td>0</td></tr><tr><td>2138</td><td>8504</td><td>0</td></tr><tr><td>2139</td><td>8505</td><td>0</td></tr><tr><td>213A</td><td>8506</td><td>0</td></tr><tr><td>213B</td><td>8507</td><td>0</td></tr><tr><td>213C</td><td>8508</td><td>0</td></tr><tr><td>213D</td><td>8509</td><td>0</td></tr><tr><td>213E</td><td>8510</td><td>0</td></tr><tr><td>213F</td><td>8511</td><td>0</td></tr></tbody></table>					Address (Hex)	Address	Data	2134	8500	2	2135	8501	4	2136	8502	2	2137	8503	0	2138	8504	0	2139	8505	0	213A	8506	0	213B	8507	0	213C	8508	0	213D	8509	0	213E	8510	0	213F	8511	0
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Line No    Assembler Message																																											
0	Program assembled successfully																																										

OUTPUT:

File Reset Assembler Debug Help

Registers

A	02	S	1
BC	04 00	Z	0
DE	00 00	AC	0
HL	00 00	P	0
PSW	00 00	C	1
PC	42 1B		
SP	FF FF		
Int-Reg	00		

Flag

Decimal - Hex Conversion

I/O Ports

Memory

Load me at:

```
1 LDA 8500
2 MOV B,A
3 LDA 8501
4 MVI C,09
5 LOOP: CMP B
6 JC LOOP1
7 SUB B
8 INR C
9 JND LOOP
10 STA 8503
11 DCR C
12 MOV A,C
13 LOOP1: STA 8502
14 RST 1
```

Start 8500 OK

Address (Hex)	Address	Data
2134	8500	2
2135	8501	4
2136	8502	2
2137	8503	0
2138	8504	0
2139	8505	0
213A	8506	0
213B	8507	0
213C	8508	0
213D	8509	0
213E	8510	0
213F	8511	0

Line No Assembler Message

0 Program assembled successfully

Simulator: Idle

**RESULT:** Thus the program was executed successfully using 8085 processor simulator.