

16-BIT DIVISION

EXP NO: 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:

| Address (Hex) | Address | Data |
|---------------|---------|------|
| 2134 | 8500 | 15 |
| 2135 | 8501 | 6 |
| 2136 | 8502 | 3 |
| 2137 | 8503 | 0 |

OUTPUT:

The screenshot displays the GNUSim8085 - 8085 Microprocessor Simulator interface. The main window is divided into several sections:

- Registers:** A table showing the current values of the 8085 registers. The Accumulator (A) contains 03, BC contains 06 02, DE contains 00 00, HL contains 00 00, PSW contains 00 00, PC contains 42 1B, SP contains FF FF, and Int-Reg contains 00. The Status (S) flag is 1, Zero (Z) flag is 0, Auxiliary Carry (AC) flag is 0, Parity (P) flag is 0, and Carry (C) flag is 1.
- Assembly Code:** A list of assembly instructions with line numbers. The code includes: 1 LDA 8501, 2 MOV B,A, 3 LDA 8500, 4 MVI C, 00, 5 LOOP: CND 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, and 15 |.
- Memory:** A table showing the memory contents starting from address 8500. The data is as follows:

| Address (Hex) | Address | Data |
|---------------|---------|------|
| 2134 | 8500 | 15 |
| 2135 | 8501 | 6 |
| 2136 | 8502 | 3 |
| 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 |
| 2140 | 8512 | 0 |
| 2141 | 8513 | 0 |
- I/O Ports:** A section for monitoring and controlling I/O ports, currently showing 0.
- Assembler Message:** A log showing the message "Program assembled successfully" at line 0.

The bottom status bar indicates the simulator is idle, the temperature is 95°F, and the system time is 17:11 on 24-07-2024.

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