**WRITE AN ASSEMBLY LEVEL PROGRAM TO PERFORM DIVISION OF TWO 16-BIT NUMBERS USING 8085.**

**ALGORITHM:**

1. Start the microprocessor.
2. Initialize ‘BC’ as ‘0000’ for Quotient.
3. Load the divisor in ‘HL’ pair and save it in ‘DE’ register pair.
4. Load the dividend in ‘HL’ pair.
5. Move the value of ‘a’ to register ‘E’.
6. Subtract the content of accumulator with ‘E’ register.
7. Move the content ‘A’ to ‘C’ & ‘H’ to ‘A’.
8. Subtract with borrow, the content of ‘A’ with ‘D’.
9. Move the value of ‘a’ to ‘H’.
10. If cy = 1, go to step 12, otherwise next step.
11. Increment ‘B’ register & jump to step ‘4’.
12. Add both contents of ‘DC’ and ‘HL’.
13. Store the remainder in memory.
14. Move the content of ‘C’ to ‘L’ & ‘B’ to ‘H’.
15. Store the Quotient in memory.
16. Stop the program.

**PROGRAM**:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **ADDRESS** | **LABEL** | **OPCODE/OPERAND** | **COMMENTS** |  |  |  |
|  |  | LXI B,0000 | Initialize Quotient as 0000H |  |  |  |
|  |  | LHLD 4802 | Load the divisor in HL |  |  |  |
|  |  | XCHG | Exchange HL and DE |  |  |  |
|  |  | LHLD 4800 | Load the dividend |  |  |  |
|  | LOOP2: | MOV A,L | Move the L value to A |  |  |  |
|  |  | SUB E | (A-E)=A |  |  |  |
|  |  | MOV L,A | Move A to L |  |  |  |
|  |  | MOV A,H | Move H to A |  |  |  |
|  |  | SBB D | Subtract (D) from (A) |  |  |  |
|  |  | MOV H,A | Then A is moved to H |  |  |  |
|  |  | JC LOOP1 | If carry =1 goto LOOP1 |  |  |  |
|  |  | INX B | Increment BC pair by 1 |  |  |  |
|  |  | JMP LOOP2 | Jump to LOOP2 |  |  |  |
|  | LOOP2: | DAD D | DE and HL pair all added |  |  |  |
|  |  | SHLD 4806 | HL is stored in memory |  |  |  |
|  |  | MOV L,C | Move (C) register data to L |  |  |  |
|  |  | MOV H,B | Move (B) register to H |  |  |  |
|  |  | SHLD 4804 | Store the result from HL pair |  |  |  |
|  |  | HLT | Halt the program |  |  |  |

**OBSERVATION:**

|  |  |
| --- | --- |
| 4800 | 04 |
| 4801 | 00 |
| 4802 | 02 |
| 4803 | 00 |
|  |  |
|  |  |

**OUTPUT:**

|  |  |
| --- | --- |
| 4804 | 02 |
| 4805 | 00 |
| 4806 | FE |
| 4807 | FF |
|  |  |
|  |  |