

Experiment:- 1.1

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**Branch:** BE CSE (Leet) **Section/Group:** 809/A

**Semester:** 4th **Date of performance:** 18/02/2022

**Subject Name:** MPI Lab **Subject Code:** 22E-20CSP-253

1. **Aim/Overview of the practical:**

Addition of two 8-bits numbers.

# Task to be done:

To add a two 8-bit numbers in 8085 microprocessor.

1. **Example:**

|  |  |
| --- | --- |
| **F9**  Input data→  Memory Address→ | **3B** |
| **2051** | **2050** |

**Carry**

**↓**

|  |  |
| --- | --- |
| **01**  Output data→  Memory Address→ | **34** |
| **3051** | **3050** |

1. **Algorithms:**

* Load the first number from memory location 2050 to accumulator.
* Move the content of accumulator to register H.
* Load the second number from memory location 2051 to accumulator.
* Then add the content of register H and accumulator using “ADD” instruction and storing result at 3050
* The carry generated is recovered using “ADC” command and is stored at memory location 3051

1. **Programs:**

|  |  |  |
| --- | --- | --- |
| **Memory Address** | **Mnemonics** | **Comment** |
| 2000 | LDA 2050 | A<-[2050] |
| 2003 | MOV H, A | H<-A |
| 2004 | LDA 2051 | A<-[2051] |
| 2007 | ADD H | A<-A+H |
| 2008 | MOV L, A | L<-A |
| 2009 | MVI A 00 | A<-00 |
| 200B | ADC A | A<-A+A+carry |
| 200C | MOV H, A | H<-A |
| 200D | SHLD 3050 | H->3051, L->3050 |
| 2010 | HLT | Finish |

1. **Explanation:**

* **LDA 2050** moves the contents of 2050 memory location to the accumulator.
* **MOV H, A**copies contents of Accumulator to register H to A
* **LDA 2051** moves the contents of 2051 memory location to the accumulator.
* **ADD H**adds contents of A (Accumulator) and H register (F9). The result is stored in A itself. **For all arithmetic instructions A is by default an operand and A stores the result as well**
* **MOV L, A**copies contents of A (34) to L
* **MVI A 00**moves immediate data (i.e., 00) to A
* **ADC A**adds contents of A(00), contents of register specified (i.e A) and carry (1). As ADC is also an arithmetic operation, A is by default an operand and A stores the result as well
* **MOV H, A**copies contents of A (01) to H
* **SHLD 3050**moves the contents of L register (34) in 3050 memory location and contents of H register (01) in 3051 memory location
* **HLT**stops executing the program and halts any further execution

**Result/Output/Writing Summary:-**

I have successfully completed this experiment.

**Learning outcomes (What I have learnt):**

**1.** Addition of two 8-bits numbers.

**Evaluation Grid (To be created as per the SOP and Assessment guidelines by the faculty):**

|  |  |  |  |
| --- | --- | --- | --- |
| Sr. No. | Parameters | Marks Obtained | Maximum Marks |
| 1. |  |  |  |
| 2. |  |  |  |
| 3. |  |  |  |
|  |  |  |  |