**Experiment-3.3**

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**Branch:** B.E.CSE **Section/Group:** 709-A

**Semester:** 4th **Subject Name:** MPI Lab

**Code:**20CSP253

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

Find the smaller number in an data array.

**2. Theory:**

·       This program finds the smallest number in an array.

·       Initially, the counter is initialized with the size of an array.

·       Then, two numbers are moved to registers A and B, and compared.

·           After comparison, the smallest of two must be in accumulator. If it is already in accumulator, then its fine, otherwise it is moved to accumulator.

·           Counter is decremented and checked whether it has reached zero. If it has, the loop terminates otherwise, the next number is moved to register and compared.

·           Let us assume that the memory location 3000H stores the counter. The next memory locations store the array.

·           Initially, H-L pair is loaded with the address of the counter and is moved to register C.

·        The first number is moved from memory to accumulator and counter is decremented by one.

·        H-L pair is again incremented and second number is moved to register B.

·        The two numbers are compared.

·        After comparison, if A > B, then CF = 0, and if A < B, then CF = 1.

·        Carry flag is checked for carry. If there is no carry, it means B is smaller than A and it is moved to accumulator.

·        Counter is decremented and checked whether it has become zero.

·        If it hasn’t become zero, it means there are numbers left in the array. In this case, the control jumps back to increment the H-L pair and moves the next number to register B.

·        This process continues until counter becomes zero, i.e. all the numbers in the array are compared.

·        At last, H-L pair is incremented and the smallest number is moved from accumulator to memory.

1. **Apparatus/Simulator used (For applied/experimental sciences/materials based labs):**

Jubin , Java

1. **Description/ Code:**

#BEGIN 0000

LXI H,3000

MOV C,M

INX H

MOV A,M

DCR C

INX H

MOV B,M

CMP B

JC 200EH

MOV A,B

DCR C

JNZ 2007

INX H

MOV M,A

HLT

#ORG 3000

#DB 05,15,01,65,E2H,83



