SSN College of Engineering
Department of Computer Science and Engineering
III year A section - UCS1512 – Microprocessors Lab

Academic Year: 2020-2021 Batch: 2018-2022
Semester: V

Experiment No 2: 16-bit Arithmetic Operations

2 a) 16 bit addition

Input : Two 16 bit values
Output: Sum in 2 locations, carry in another location

Hint:
Eg instruction:
ADD AX,BX ; AX=AX+BX

2 b) 16 bit subtraction

Input : Two 16 bit values
Output: Difference in 2 memory locations, indication of sign in another location

Hint:
Eg instructions:
SUB AX,BX ; AX=AX-BX
NEG AX; AX=2's complement of AX

2 c) 16 bit multiplication

Input : Two 16 bit values
Output: Product in 32 bits

Main instructions that can be used:

MUL BX ; DXAX = AX x BX, AX is the default operand register for this instruction for one operand.

2 d) 16 bit division

Input : Two 16 bit values
Output: Quotient in two locations, reminder in another two locations

Main instructions that can be used:

DIV BX ; it will perform DXAX / BX , after execution , quotient will be stored in AX, reminder will be stored in DX

Hints:

No dedicated instruction available in 8086 to perform 16 bit / 16 bit;
So the above instruction can be used, but ensure that DX is loaded with 0000H before execution.