

SUBJECT: MICROPROCESSOR LAB (MPL)

NAME:

CLASS:

ROLL NO.:

SEMESTER: SEM-II

YEAR: 2023-24

DATE OF PERFORMANCE:

DATE OF SUBMISSION:

EXAMINED: Prof. G. B. Aochar

Assignment No-08

Title:-Multiplication

Assignment Name: - Write X86/64 ALP to perform multiplication of two 8-bit hexadecimal numbers. Use successive addition and add and shift method. Accept input from the user.

Objective-

- To understand the different algorithm for multiplication.
- To understand how to write procedure.

Outcome-

- Students will be able to write code for doing multiplication.

Prerequisite -

System call of Unix for Assembly language Program.

Hardware Requirement-

Desktop PC

Software Requirement-

Ubuntu 14.04,

Assembler: NASM version 2.10.07

Linker: ld

Introduction:-

Guidelines for the algorithm:

- 1) Display the menu.
Enter "1" – "ADD AND SHIFT METHOD."
Enter "2" – "SUCCESSIVE ADDITION METHOD".
Enter "3" – EXIT
- 2) Take choice from user then go to the respective subroutines.

ADD AND SHIFT METHOD

- 1) Initialize code and bss sections.
- 2) Accept multiplier and multiplicand variables in data segment.
- 3) Initialize product variable to zero.

- 4) Set count as number of bits in operand, which is 8.
- 5) Shift product to left by 1 bit and insert zero as LSB.
- 6) Transfer MSB of multiplier to carry flag by rotating it to left.
- 7) Check if carry flag is set or not. If yes add multiplicand to product.
- 8) Decrement count by 1.
- 9) Check count=0 else repeat step 5 through step 9 till count=0.
- 10) Display the final product.

SUCCESSIVE ADDITION METHOD

- 1) Define product=0.
- 2) Set count=multiplicand.
- 3) Add product=product + multiplier.
- 4) Decrement count.
- 5) Repeat step 3 and 4 till count=0
- 6) Display product variable value as final product.

Conclusion: - Hence we implemented an ALP to do multiplication.

Questions:-

1. Explain ADD and SHIFT algorithm with example?
2. Explain what is Interrupt?