

Assignment 4

- Title: Multiplication of two 2-digit numbers

- Problem statement:

Write x86/64-bit ALP to perform multiplication of two 8-bit hexadecimal numbers. Use successive addition & add & shift method.

- Objective:

To understand:-

- 1) Add & shift method
- 2) Successive Addition

- Outcome:

I will be able to do multiplication in ALP

- Software/Hardware Packages:

- 1) Processor :- Core 2 duo / i3 / i5 / i7
- 2) OS :- Linux 64 bit OS
- 3) Editor :- gedit / vi
- 4) Assembler :- NASM
- 5) Debugger :- GDB / TD

- Theory:

- 1) Successive Addition

- Consider we have to do $[AL \times BL]$
 - In this one number is set as counter, then the first number is added to itself until the counter becomes zero.

- ⇒ Add & Shift method:

- Consider we have to do $[AL \times BL]$
 - Here we check LSB of second number & add the first number to itself if $LSB = 1$ & shift the second number to right & first to left.

- Algorithm:

- 1) Start
 - 2) Get multiplier & multiplicand
 - 3) Assign appropriate registers
 - 4) Perform respective algorithm
 - 5) Display result
 - 6) END

• Test Cases:

	Input	Expected o/p	Actual o/p	Result
1)	22h, 33h	06C6h	Yes	Pass
2)	30h, 0Fh	02D0h	02D0h	Pass

• Conclusion:

We implemented multiplication using 2 different algorithms in ALP successfully.