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Lab 6: Integer Arithmetic

# Objectives:

* The definition of overflow
* The logic operations in MIPs
* Some basic pseudo instructions

# Introduction:

We learned the definition of overflow and how it work in in the case of signed or unsigned number and we learned how to know if there is overflow, then we moved to the logic operations that existed in MIPS and we learned the syntax of its instructions and how it work and its limits and how to conquer its defects, finally we learned some pseudo instructions that ease the coding in MIPS.

# Tasks:

Task1 Requirement: reading integer and multiply it by specific constant

Approach: firstly initialize 2 labels one for the reading and another for the result, then read the entered signed value then divide the constant to pieces such that 42.25 = 2^5 + 2^3 + 2 + 2^-2 then add and shift then show the result

Task2 Requirement: flip the 20th and the 9th bits in the entered numbers

Approach: for this question there is two approaches which: 1- find the number with flipped bits in decimal and add it to the entered number, 2- find the hex decimal code for the flipped number and (or) it with the entered number which will result in the right value, the problem with the second is that we need to use the load up immediate (I used the second method).

# Conclusion:

Firstly, the overflow and how does it work and how we can identify it and the difference in overflow in the signed and unsigned numbers, and we learned how to use the logic operands such as or and xor in MIPS and it affects, lastly the pseudo instruction and its great efficiency in coding.