Multiplicació
Algorísmica i Complexitat
February 2019

Problem 1: Given two positive integers, calculate the product without using the product operation, that is, with sums, bit scrolls, ...
Recommendation: Work with the new method learned in class.

1. Give the program (iterative), in pseudocode, that solves the problem:

2. Translate the previous code to assembler[1]:

[1] In the annex you have the set of instructions that you can consider.

3. For each of the following pairs, find the number of cycles that your program will take and how long it will take for an Intel 8086 processor (clock frequency 4.77 MHz) and in a Raspberry Pi 3 (ARM Cortex-A53, 1536 MHz). Split the sum.

   (a) $(11, 13) \rightarrow$

   (b) $(8, 15) \rightarrow$

   (c) $(15, 8) \rightarrow$

4. For any pair of numbers, find a formula that gives the number of cycles that your program will take.
   Hint: Consider the best case and the worst case.

5. Implement the algorithm and compare the theoretical costs with the empirical costs.