Optional homework – implementation operations + conversions

- share in the final grade: 10%
- deadline for homework submission: the second week of December 2021

The application must implement algorithms for:

- arithmetic operations for positive integers: addition, subtraction, multiplication and division by one digit, in a base $p \in \{2,3,...,9,10,16\}$
- conversions of natural numbers between two bases $p,q \in \{2,3,...,9,10,16\}$ using the substitution method or successive divisions and rapid conversions between two bases $p,q \in \{2, 4, 8, 16\}$.

and must have a menu such that all operations and conversion methods to be verified separately.

The executable form, the code of the application and the documentation will be written on a CD (one CD for each group, in which every student will have a personal folder). The documentation will follow the same structure as the Programming Fundament's documentations, and it must contain at least: the problem statement for the implemented application, the used algorithms in pseudo-code, implementation considerations and test data.

The grade is computed as follows:

10%: by default

70% : the application (the authors name will be found in code and will be visible at run time too)

1p - algorithm for the method of successive divisions

1p - algorithm for the substitution method

1p – algorithm for conversion using 10 as an intermediate base

2p - rapid conversions (executable form) between two bases $p,q \in \{2, 4, 8, 16\}$.

1p addition of two numbers in a base

1p subtraction of two numbers in a base

1p multiplication of a number by a digit in a base

1p division of a number by a digit in a base

1p code quality (indentation, use of comments, suggestive variables names)

20%: documentation

1p problem statement

1p sub-algorithm's diagram

1p used data type specification

3p specification and pseudo-code for the important algorithms used (input, output, preconditions, post-conditions -1p; pseudo-code 2p)

3p at least a set of test data for the complete application, more data sets where is needed

1p documentation clearness (structured, well written, ...)

NOTE: If the electronic homework is at least 80% similar (http://www.tools4noobs.com/online_tools/string_similarity/**) to another one from this year or a previous year of study, the electronic homework will not be corrected (neither the documentation), and the corresponding points are lost.**