M.Sc. in High-Performance Computing
5613 - C programming
Assignment 1

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Rules

To submit, make a single tar-ball with all your code and a pdf of any written part you want to include. Submit this via `msc.tchpc.tcd.ie` or via email to `mmarina@maths.tcd.ie` by the end of **Tuesday October 18th**. Marks will be given for the efficiency of your implementation. Late submissions without prior arrangement or a valid explanation will result in reduced marks.

Question

1. An Armstrong number (also know as a *narcissistic number*) is a number that is the sum of its own digits raised to the power of the number of digits. For example, 371 is an Armstrong number, since

$$3^3 + 7^3 + 1^3 = 371.$$

Write a `C` function

```
int checkThreeDigitArmstrongNumber(int n)
```

which checks whether a number of three digits ($100 \leq n \leq 999$) that is entered by the user is an Armstrong number or not, i.e. if it is a sum of the cubes of its digits. Test the function with a few values and then write a version of the function

```
int checkArmstrongNumber(int n)
```

which checks whether a positive integer `n>0` is an Armstrong number of order `n`. Namely, if abcd... is a k-digit number, your function should check if it satisfies:

$$\mathtt{a}^\mathtt{k} + \mathtt{b}^\mathtt{k} + \mathtt{c}^\mathtt{k} + \mathtt{d}^\mathtt{k} + \ldots = \mathtt{abcd}\ldots$$