

# Programming languages (TC-2006)

## In-class activity 08

In this activity, you will practice what you know of the Prolog language. Please consider that the purpose of this activity is to allow you to practice and identify strengths and weaknesses. Then, implement these programs as requested and avoid using any built-in predicates that already do what you are requested to implement.

### 1 square (15%)

Write a program in Prolog that returns a list with the squares of the elements in a list passed as argument (the program ignores sublists).

### 2 sumFirst (15%)

Write a program that sums the first  $n$  numbers (starting from 1). For example, the sum of the first 100 numbers is 5050 ( $1 + 2 + 3 + \dots + 100$ ).

### 3 xLength (20%)

Write a program in Prolog that calculates the length all the elements in a list (you are not allowed to use the `length` built-in predicate).

### 4 nLength (25%)

Write a program in Prolog that calculates the length of a list by considering all the elements (including the elements in the sublists).

### 5 dotProduct (25%)

Write a program in Prolog that calculates the dot product of two vectors (represented as lists). Assume that, if the dot product cannot be calculated (different number of elements, for example), the programs must return `false`.

## Deliverables



Prepare a PL file that contains the functions requested (in its corresponding module) and submit it to Canvas. **Please, do not submit other formats but PL.** To prepare your PL file, use the code template distributed along with this document. The template contains some test cases for each program to help you verify that your codes work as requested.



**I promise to apply my knowledge, strive for its development, and not use unauthorized or illegal means to complete this activity, following the Tecnológico de Monterrey Student Code of Honor.**