

## Logics for Artificial Intelligence 2023-24

### Homework 6/10 – Logic programming (II)

**To be delivered before 10:00 a.m. on April 1<sup>st</sup>, 2024**

We are interested in having a logic program that, given a sentence (i.e. a list of words) in Spanish, returns its translation to English. The knowledge of the program is given by facts of the following form:

wordtrans(casa,house,noun).

wordtrans(grande,big,adjective).

wordtrans(roja,red,adjective).

wordtrans(marron,brown,adjective).

wordtrans(una,a,article).

wordtrans(la,the,article).

stop(vaca).

stop(foca).







The predicate **wordtrans** has a word in Spanish, its translation into English and the kind of word. The predicate **stop** only has a word in Spanish.

The translating program has to work in the following way:

- The translation is made from left to right, keeping the order of the words (an exception is made below). If we find a **stop** word, the translation stops immediately at that point.
- If the program does not know the translation of a Spanish word, it will put a question mark in the translation.
- If the program finds a noun followed by a sequence of (1 or more) adjectives, in the translation it should appear the translation of the adjectives followed by the translation of the noun (e.g. casa grande roja => big red house).

Thus, your task is to write a 2-predicate **senttrans(SL,EL)** that, given an input list in Spanish SL, returns in EL its translation into English. **The interpreter must return exactly 1 result and finish.** You can **not** use any predefined function on lists (member, concat, reverse, etc.).

Examples of expected results, with the facts given in the previous page:

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|  <i>senttrans</i> ([una,casa,roja,grande],P). |
| <b>P</b> = [a, red, big, house]  |
|  <i>senttrans</i> ([una,casa,roja],P).        |
| <b>P</b> = [a, red, house]   |
|  <i>senttrans</i> ([una,vaca,roja],P).        |
| <b>P</b> = [a]   |
|  <i>senttrans</i> ([],P).                     |
| <b>P</b> = []  |
|  <i>senttrans</i> ([una,casa,amarilla],P).   |
| <b>P</b> = [a, house, (?)]   |
|  <i>senttrans</i> ([esta,pelota,azul],P).   |
| <b>P</b> = [(?), (?), (?)]   |