# 

# **Report Assignment 3**

Artificial Intelligence



Daniel Varela Sánchez

Guillermo Martín-Coello Juárez

**Exercise 1**

| Code |
| --- |
| slice([X|\_],1,1,[X]).  slice([X|Xs],1,K,[X|Ys]) :- K > 1,  K1 is K - 1, slice(Xs,1,K1,Ys).  slice([\_|Xs],I,K,Ys) :- I > 1,  I1 is I - 1, K1 is K - 1, slice(Xs,I1,K1,Ys). |

**Declarative Reading**

1. The head of the list X is the only element of the result list when the first element expected is the first (1) and the last element expected is also the first (1).
2. If K > 1 and the slice of Xs from I to K-1 is Ys then the slice of [X|Xs] from 1 to K is [X|Ys].
3. If I > 1 and the slice of Xs from I - 1 to K-1 is Ys then the slice of [X|Xs] from 1 to K is Ys.

**Procedural Reading**

| Query |
| --- |
| slice([1, 2, 3 ,4],2,3,L2) |

1. Does the first clause apply? No, because 2 is not 1.
2. Does the second clause apply? No, because 2 is not 1.
3. Does the second clause apply? Yes, because I is greater than 1 and if we consider the bindings [2,3,4] = Xs, 2 - 1 = I1, 3 - 1 = K1, L2 = Ys.
4. We now consider clause([2,3,4],1,2,L2) Considering the same questions for the goal.
5. Does the first clause apply? No, because 2 is not 1.
6. Does the second clause apply? Yes because K is greater than 1 and if we consider the bindings [3,4] = Xs, 1 = I1, 2 - 1 = K1, L2 = [2|Ys].
7. We now consider clause([3,4],1,1,L2) Considering the same questions for the goal.
8. Does the first clause apply? Yes, obtaining that Ys is X where X = 3.
9. That said if we consider L2 = [2|Ys] We find L2 is [2,3].

**Exercise 9.5**

**How does the value of K affect the classification?**

Unfortunately, due to time constraints we were unable to finish this exercise, however the concept of it would be to divide the data sets in two parts, one for testing and one for practice, then it would just be necessary to call the function k\_vecinos\_proximos and analyze the result of the predicted pattern to see if it is correct. In relation to how the K value affects the classification, the greater the K, the lower the correct guesses, that is because when the K is greater the function needs to guess for a larger pattern hence there is a bigger probability of it commiting a mistake at any point.