Fundamentals of Artificial Intelligence and Knowledge Representation – Module 2 – Academic Year 2022-2023

Prof. Federico Chesani – 21st of December, 2022

Available time: 1h.

1) The candidate is invited to define a Prolog predicate **inOddPositions(L1, L2)** that is true when L2 is the list containing the elements of the list L1 that are positioned in an odd position.
For example:
```
?- inOddPositions( [2,4,6,8,10,12], X).
yes,    X = [2, 6, 10]

?- inOddPositions( [ ], X).
yes,    X = []

?- inOddPositions( [42], X).
yes,    X = [42]

?- inOddPositions( [1,2,3], [1,3]).
yes

?- inOddPositions( [1,2,3], [1]).
no
```

2) The candidate is invited to describe the predicates/terminology used in the definition of the Event Calculus Framework.

3) Within the terminological approach towards the representation of concepts/categories and individuals/instances, the candidate is invited to illustrate the notions of
   - **Disjointness** over a set S of categories (S = {c_1, c_2, ..., c_n}, where c_1...c_n are categories)
   - **Exhaustive** Decomposition of a category c into a set S of categories
   - **Partition** of a category c into a set of categories S

   The candidate is invited to illustrate these notions through a simple example

Solution

1)   The candidate is invited to …
```
inOddPositions( [], []).
inOddPositions( [X], [X]).
inOddPositions([ X, _ | Tail], [X | PartialResult]) :-
     inOddPositions( Tail, PartialResult).
```

2)   *The candidate is invited …*

See the slides

3)   *The candidate is invited …*

See the slides