

2000 Paper 6 Question 7

Prolog for Artificial Intelligence

One of the regulations of the International Rugby Board (IRB) states that for a player to be eligible to play for a given country, the player's father or mother or grandfather or grandmother must have been born in that country. Assume that there is a complete genealogical database consisting of Prolog clauses of the form `person(P, B, F, M)`, where `P` is a person's name, `B` is the country of `P`'s birth, `F` is their father's name and `M` is their mother's name. For example, the clause

`person(bruce, australia, rhodri, bronwyn).`

might appear in such a database. Further assume that names in the database are constructed so as to refer uniquely to individuals. Write Prolog clauses defining the predicate `eligible` such that goals of the form `eligible(P,C)` succeed if and only if person `P` is eligible to play for country `C` according to the above regulation.

[10 marks]

Given a list of players on a given country's team, define a predicate `checkteam` that will check each member of the team for eligibility according to the `eligible` predicate, and furthermore check that each player appears on the list only once. The `checkteam` goal will fail if any player is ineligible or if any player is listed more than once.

[10 marks]