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# Logic Programming Concepts

## 1. Predicates Logic

A predicate is a statement that contains variables (predicate variables), and they may be true or false depending on the values of these variables. So predicate logic refers to the logic or validity of said statements, to determine if they are true or false.

## 2. Backtracking

It is an algorithm used for finding different solutions to computational problems given some constraints, then builds candidates to the solution and abandons it (backtracks) as soon as it determines that the candidate cannot provide a valid solution.

## 3. Backward Chaining

It is an inference method described as working backward from the goal. This means that its starts with a list of goal and works backwards from the consequent to the antecedent to see if any data supports any of these consequents.

## 4. Horn Clause

It is a clause (disjunction of literals) with at most one positive literal. A Horn clause with exactly one positive literal is a definite clause; a Horn clause with no positive literals is sometimes called a goal clause, especially in logic programming. A Horn formula is a conjuctive normal form formula whose clauses are all Horn; in other words, it is a conjuction of Horn clauses. A dual-Horn clause is a clause with at most one negative literal. Horn clauses play a basic role in logic programming and are important for constructive logic.

## 5. Resolution and Unification

Resolution is a rule of inference leading to a refutation theorem-proving technique for sentences in propositional logic and first-order logic. In other words, iteratively applying the resolution rule in a suitable way allows for telling whether a propositional formula is satisfiable and for proving that a first-order formula is unsatisfiable.

Unification is an algorithmic process of solving equations between symbolic expressions.

## 6. Functor

It is a map between categories. Functors were first considered in algebraic topology, where algebraic objects (such as the fundamental group) are associated to topological spaces, and maps between these algebraic objects are associated to continuous maps between spaces. Nowadays, functors are used throughout modern mathematics to relate various categories. Thus, functors are important in all areas within mathematics to which category theory is applied.

# References

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https://en.wikipedia.org/wiki/Functor