**Assignment No: 8**

**Problem Statement:-**

Implement the Backward Chaining Algorithm.

**Theory:-**

**Backward Chaining** is a goal-driven inference technique. It starts with a goal and works backward, attempting to find the facts that can support the goal. This technique is used in systems where we want to verify whether a goal can be achieved based on existing knowledge.

**Methodology:-**

1. **Define Rules**:
   * Create a set of rules in the form of "If-Then" statements. For example:

if (A is true), else B is true.

1. **Start with a Goal**:
   * Begin with the goal or query that you want to prove or disprove. For example, you might want to determine whether a certain condition is true (e.g., "Is the patient diagnosed with disease X?").
2. **Backward Search**:
   * The algorithm recursively searches backward, trying to find facts that can satisfy the goal based on existing rules.
   * Sub-goals may be generated during the search, and the algorithm attempts to satisfy these sub-goals using the available facts and rules.
3. **Application**:
   * **Legal Reasoning**: Backward chaining is used to prove legal claims by verifying whether a series of conditions (facts) can support a legal conclusion.
   * **Rule-Based Systems**: Backward chaining can be used in expert systems to verify whether certain rules lead to a goal.

**Conclusion:-**

We implemented the backward chaining algorithm to work from a goal to verify whether it can be supported by existing facts, demonstrating the effectiveness of goal-driven inference.