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1 #Niranjan.v.2024.aiml@rajalalshmi.edu.in
2 def negate(literal):
3     return literal[1:] if literal.startswith("~") else "~"
4     + literal
5 def resolve(ci, cj):
6     for lit in ci:
7         if negate(lit) in cj:
8             new_clause = list(set(ci + cj))
9             new_clause.remove(lit)
10            new_clause.remove(negate(lit))
11            return [new_clause]
12    return []
13 def resolution(kb, query):
14     clauses = kb + [[negate(q)] for q in query]
15     while True:
16         new = []
17         for i in range(len(clauses)):
18             for j in range(i + 1, len(clauses)):
19                 resolvents = resolve(clauses[i],
20                                     clauses[j])
21                 if [] in resolvents:
22                     return True
23                 for r in resolvents:
24                     if r not in new:
25                         new.append(r)
26                 if all(n in clauses for n in new):
27                     return False
28         clauses += new
29 kb = ["~P", "Q", "P", "~Q", "R", "~R"]
30 query = ["R"]
31 print("Knowledge Base:", kb)
32 print("Query:", query)
33 print("The query is satisfiable." if resolution(kb,
34 query) else "The query is not satisfiable.")

```

Knowledge Base: [['~P', 'Q'], ['P'], ['~Q', 'R'], ['~R']]

Query: ['R']

The query is satisfiable.

[Program finished]