

```

1 class CaseBasedReasoning:
2     def __init__(self):
3         self.case_base = [] # List to store past cases (problem, solution) pairs
4
5     def add_case(self, problem, solution):
6         """
7         Adds a new case to the case base.
8         """
9         self.case_base.append((problem, solution))
10
11    def retrieve_similar_cases(self, new_problem):
12        """
13        Finds the most similar cases from the case base based on a simple similarity metric.
14        """
15        best_match = None
16        max_similarity = 0
17        for case in self.case_base:
18            similarity = self.calculate_similarity(new_problem, case[0]) # Calculate similarity
19            if similarity > max_similarity:
20                max_similarity = similarity
21                best_match = case
22        return best_match
23
24    def calculate_similarity(self, problem1, problem2):
25        """
26        A basic similarity calculation (can be customized based on the problem domain).
27        """
28        # Example: Comparing key attributes of problems
29        shared_attributes = sum(1 for attr in problem1 if attr in problem2)
30        return shared_attributes / len(problem1)
31
32    def predict_solution(self, new_problem):
33        """
34        Predicts a solution for a new problem by retrieving the most similar case.
35        """
36        similar_case = self.retrieve_similar_cases(new_problem)
37        if similar_case:
38            return similar_case[1] # Return the solution from the similar case
39        else:
40            return None # No similar case found
41
42 cbr = CaseBasedReasoning()
43
44 # Add some initial cases
45 cbr.add_case(["fever", "headache", "tired"], "flu")
46 cbr.add_case(["sore throat", "cough", "runny nose"], "common cold")
47
48 # Predict solution for a new case
49 new_problem = ["fever", "cough", "muscle aches"]
50 predicted_solution = cbr.predict_solution(new_problem)
51 print(predicted_solution) # Output: "flu" (assuming the similarity calculation favors "fever"
and "muscle aches")

```