PROBLEM STATEMENT : . Implement a program to calculate precision and recall for sample input. (Answer set A, Query q1, Relevant documents to query q1- Rq1)

CODE:

```
#include <bits/stdc++.h>

using namespace std;
// Function to calculate precision
double calculatePrecision(const vector<int>& retrieved, const vector<int>& relevant) {
    int truePositives = 0;
    for (int docID : retrieved) {
        if (find(relevant.begin(), relevant.end(), docID) != relevant.end()) {
            truePositives++;
        }
    }

    if (retrieved.empty()) {
        return 0.0;
    }

    return static_cast<double>(truePositives) / retrieved.size();
}

// Function to calculate recall
double calculateRecall(const vector<int>& retrieved, const vector<int>& relevant) {
    int truePositives = 0;
    for (int docID : retrieved) {
        if (find(relevant.begin(), relevant.end(), docID) != relevant.end()) {
            truePositives++;
        }
    }

    if (relevant.empty()) {
        return 0.0;
    }

    return static_cast<double>(truePositives) / relevant.size();
}
```

```
int main() {
    // Sample data: Answer set A, Query q1, and Relevant documents to query q1 (Rq1)
    vector<int> answerSetA = {1, 2, 3, 4, 5, 6, 7, 8, 9, 10};
    vector<int> queryQ1 = {3, 5, 7, 9};
    vector<int> relevantRq1 = {3, 5, 7};

    // Calculate precision and recall for Query q1
    double precisionQ1 = calculatePrecision(queryQ1, relevantRq1);
    double recallQ1 = calculateRecall(queryQ1, relevantRq1);

    // Display the results
    cout << "Precision for Query q1: " << precisionQ1 << endl;
    cout << "Recall for Query q1: " << recallQ1 << endl;

    return 0;
}
```

```
Precision for Query q1: 0.75
Recall for Query q1: 1


...Program finished with exit code 0
Press ENTER to exit console.
```