In [10]:
```
# Define the relevant documents (Rq1) and the answer set (Answer Set A)
Rq1 = ["d3", "d5", "d9", "d25", "d39", "d44", "d56", "d71", "d89", "d123"]
Answer_Set_A = ["d123", "d84", "d56", "d6", "d8", "d9", "d511", "d129", "d187", "d25", "d38", "d48", "

# Initialize variables for precision and recall
precision_list = []
recall_list = []

# Iterate through the ranked documents
for i in range(1, len(Answer_Set_A) + 1):
    retrieved_docs = Answer_Set_A[:i]  # Get the first i retrieved documents
    intersection = len(set(Rq1).intersection(retrieved_docs))

    precision = intersection / len(retrieved_docs) * 100 if len(retrieved_docs) > 0 else 0.0
    recall = intersection / len(Rq1) * 100 if len(Rq1) > 0 else 0.0

    precision_list.append(precision)
    recall_list.append(recall)

# Display the results
print("Documents |Ra| |A| Precision=|Ra|/|A| Recall=|Ra|/|R|")
for i in range(len(Answer_Set_A)):
    print(f"{', '.join(Answer_Set_A[:i+1])} {i+1} {i+1} {precision_list[i]:.2f}% {recall_list[i]:.2f}%
import numpy as np
# Define the relevant documents (Rq1) and the retrieved documents for Query q1 (Answer set A)
Rq1 = [1, 2, 3, 4, 5] # Relevant documents
A = [1, 4, 6, 8, 9] # Retrieved documents# Calculate F-measure and E-measure
def calculate_f_and_e_measures(relevant, retrieved):    # Calculate True Positives
    true_positives = len(set(relevant).intersection(retrieved))        # Calculate Precision
    precision = true_positives / len(retrieved) if len(retrieved) > 0 else 0        # Calculate Recall
    recall = true_positives / len(relevant) if len(relevant) > 0 else 0        # Calculate F-measure
    f_measure = (2 * precision * recall) / (precision + recall) if (precision + recall) > 0 else 0
    e_measure = (1 + 0.5) * (precision * recall) / (0.5 * precision +    recall) if (0.5 * precision +
    return f_measure, e_measure
f_measure, e_measure = calculate_f_and_e_measures(Rq1, A)# Print the results
print("F-measure:", f_measure)
print("E-measure:", e_measure)
```

```
Documents |Ra| |A| Precision=|Ra|/|A| Recall=|Ra|/|R|
d123 1 1 100.00% 10.00%
d123, d84 2 2 50.00% 10.00%
d123, d84, d56 3 3 66.67% 20.00%
d123, d84, d56, d6 4 4 50.00% 20.00%
d123, d84, d56, d6, d8 5 5 40.00% 20.00%
d123, d84, d56, d6, d8, d9 6 6 50.00% 30.00%
d123, d84, d56, d6, d8, d9, d511 7 7 42.86% 30.00%
d123, d84, d56, d6, d8, d9, d511, d129 8 8 37.50% 30.00%
d123, d84, d56, d6, d8, d9, d511, d129, d187 9 9 33.33% 30.00%
d123, d84, d56, d6, d8, d9, d511, d129, d187, d25 10 10 40.00% 40.00%
d123, d84, d56, d6, d8, d9, d511, d129, d187, d25, d38 11 11 36.36% 40.00%
d123, d84, d56, d6, d8, d9, d511, d129, d187, d25, d38, d48 12 12 33.33% 40.00%
d123, d84, d56, d6, d8, d9, d511, d129, d187, d25, d38, d48, d250 13 13 30.77% 40.00%
d123, d84, d56, d6, d8, d9, d511, d129, d187, d25, d38, d48, d250, d113 14 14 28.57% 40.00%
d123, d84, d56, d6, d8, d9, d511, d129, d187, d25, d38, d48, d250, d113, d3 15 15 33.33% 50.00%
F-measure: 0.4000000000000001
E-measure: 0.4
```

In [ ]:

In [3]:

In [ ]:

In [ ]: