Evaluation Metrics for Information Retrieval

Goal: Information Retrieval

- Retrieve documents with information that is relevant to user's information need

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- Retrieve documents with information that is relevant to user's information need

- Given a query:
  - Return list of relevant documents
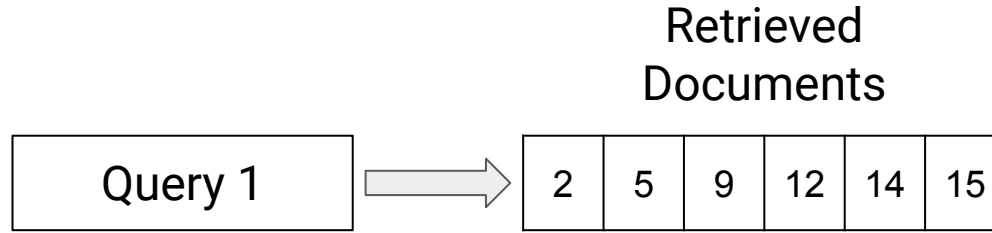
How good are the retrieved documents?

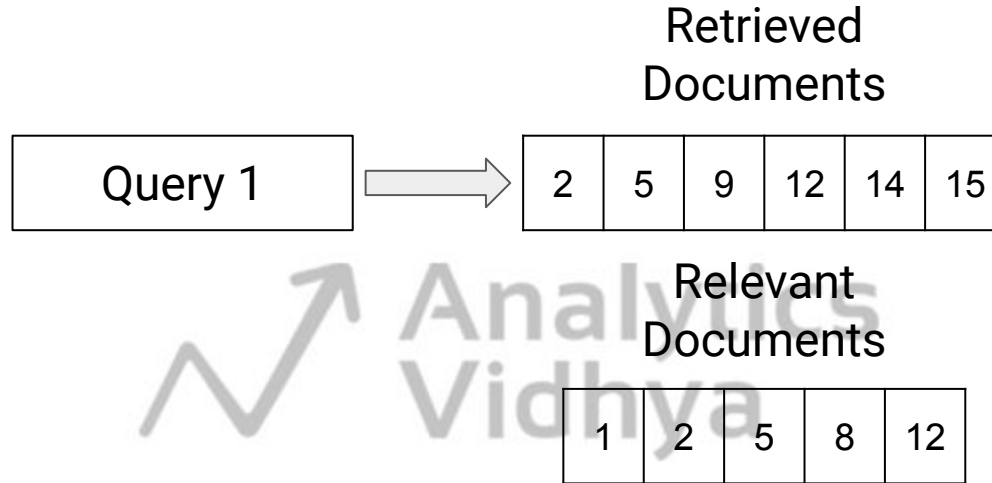# How good are the retrieved documents?

Query 1

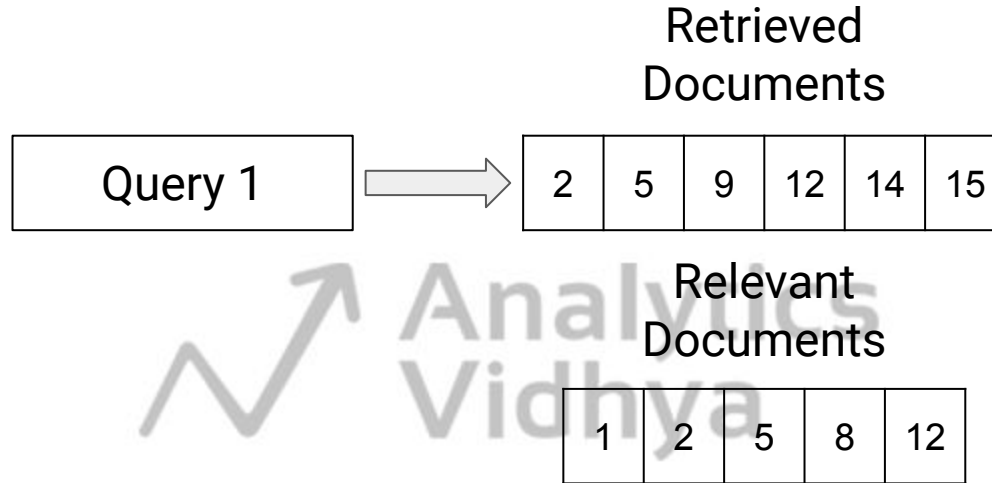# How good are the retrieved documents?

Retrieved
Documents

| Query 1 | ⟹ | 2 | 5 | 9 | 12 | 14 | 15 |

How good are the retrieved documents?

Retrieved
Documents

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Relevant
Documents

| 1 | 2 | 5 | 8 | 12 |

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- Precision

How good are the retrieved documents?

Retrieved
Documents

Query 1	⟹	2	5	9	12	14	15

Relevant
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- Precision: Fraction of retrieved documents, relevant to user's need

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Query 1	⟹	2	5	9	12	14	15

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1	2	5	8	12
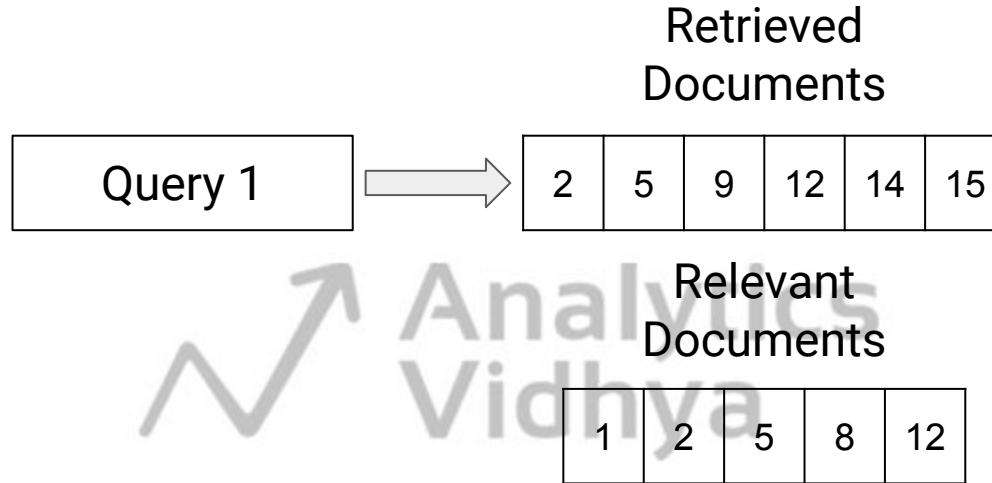
- Precision: Fraction of retrieved documents, relevant to user's need

Precision =

How good are the retrieved documents?

Retrieved Documents

Query 1 ⟹	2	5	9	12	14	15

Relevant Documents

1	2	5	8	12

- Precision: Fraction of retrieved documents, relevant to user's need

Precision = Number of relevant documents retrieved

How good are the retrieved documents?

Retrieved Documents

Query 1	→	2	5	9	12	14	15

Relevant Documents

1	2	5	8	12

- Precision: Fraction of retrieved documents, relevant to user's need

$$\text{Precision} = \frac{\text{Number of relevant documents retrieved}}{\text{Total number of retrieved documents}}$$
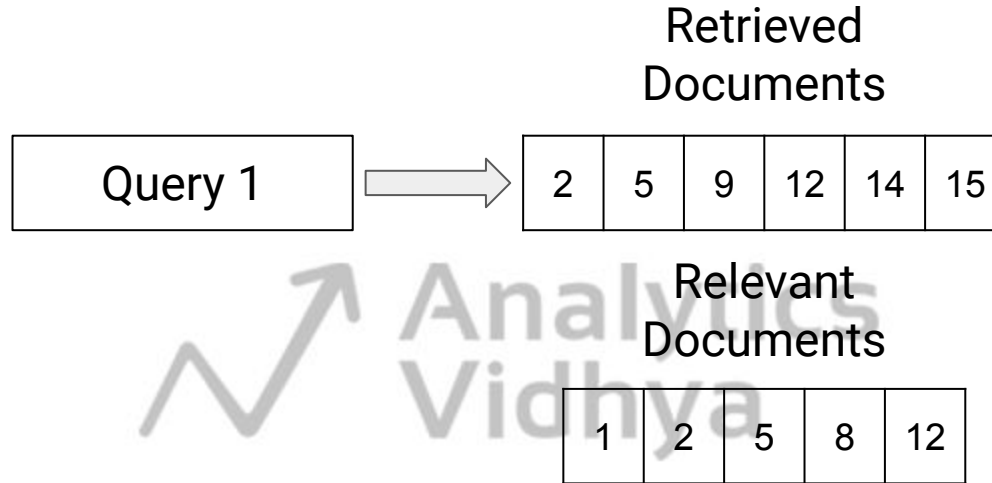
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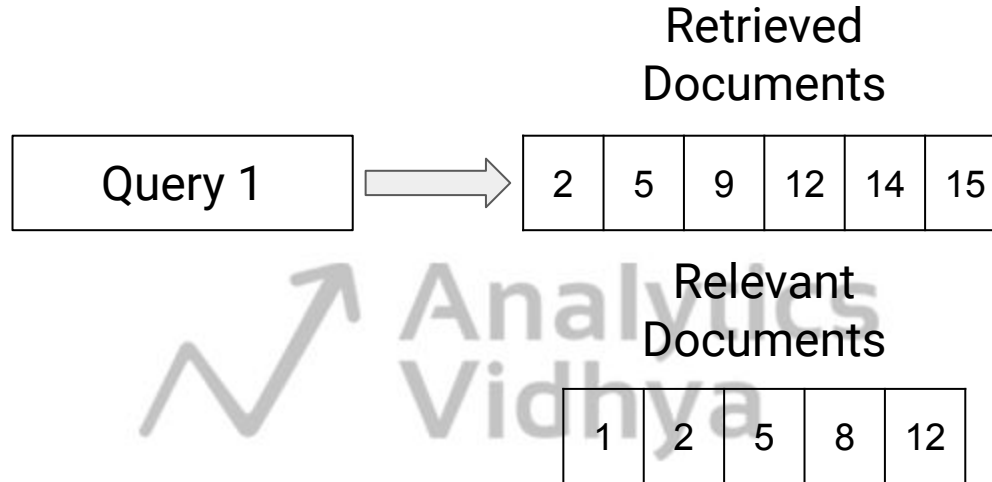
- Precision: Fraction of retrieved documents, relevant to user's need

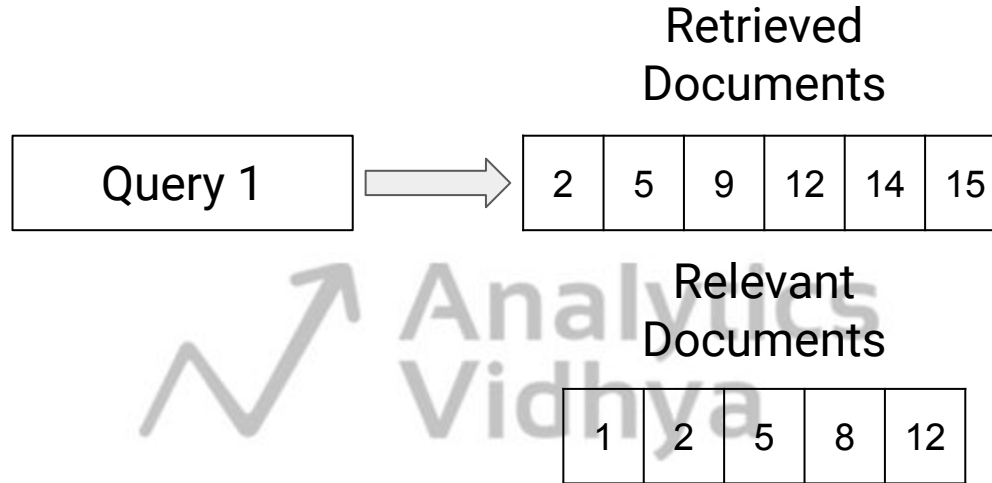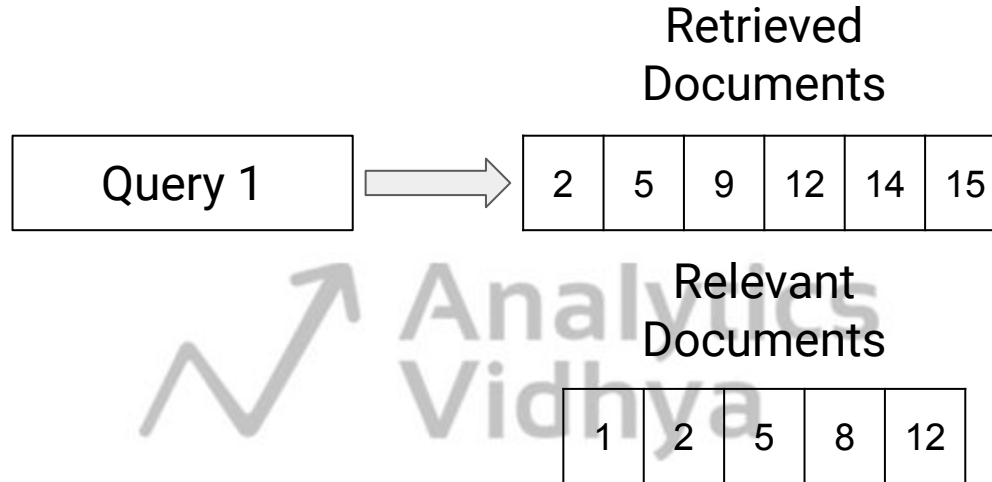$$\text{Precision} = \frac{\text{Number of relevant documents retrieved}}{\text{Total number of retrieved documents}} = \frac{3}{6}$$

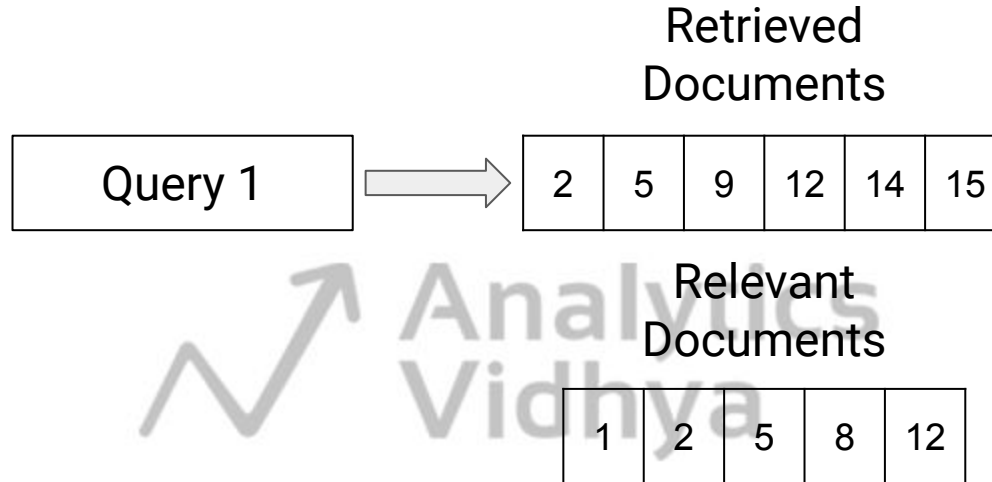# How good are the retrieved documents?

Retrieved
Documents

| Query 1 | → | 2 | 5 | 9 | 12 | 14 | 15 |

Relevant
Documents

| 1 | 2 | 5 | 8 | 12 |

- Recall

How good are the retrieved documents?

Retrieved
Documents

Query 1	⟹	2	5	9	12	14	15

Relevant
Documents

1	2	5	8	12

- Recall: Fraction of relevant documents in the collection that are retrieved

How good are the retrieved documents?

Retrieved
Documents

| Query 1 | ⟹ | 2 | 5 | 9 | 12 | 14 | 15 |

Relevant
Documents

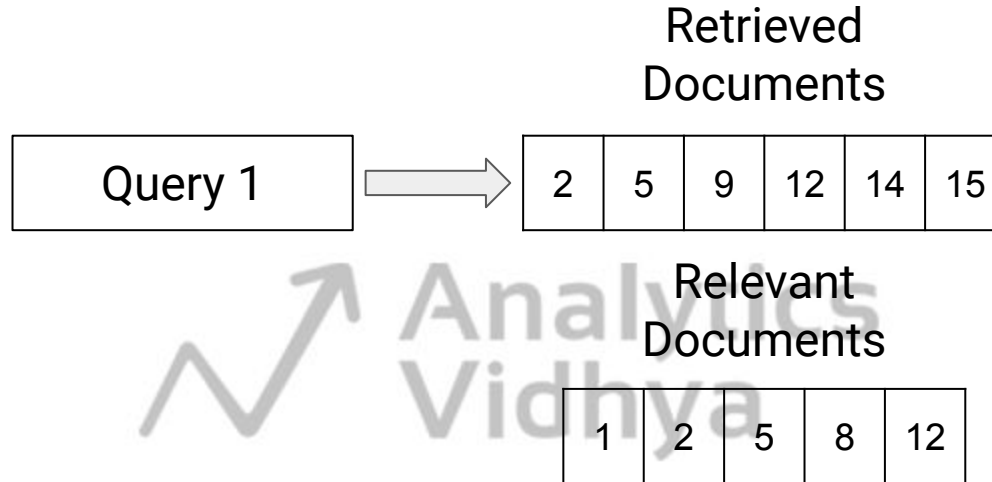| 1 | 2 | 5 | 8 | 12 |

- Recall: Fraction of relevant documents in the collection that are retrieved

Recall =

How good are the retrieved documents?

Retrieved
Documents

Query 1	$\Rightarrow$	2	5	9	12	14	15

Relevant
Documents

1	2	5	8	12

- Recall: Fraction of relevant documents in the collection that are retrieved

Recall = Number of relevant documents retrieved

How good are the retrieved documents?

Retrieved Documents

| Query 1 | ⟹ | 2 | 5 | 9 | 12 | 14 | 15 |

Relevant Documents

| 1 | 2 | 5 | 8 | 12 |

- Recall: Fraction of relevant documents in the collection that are retrieved

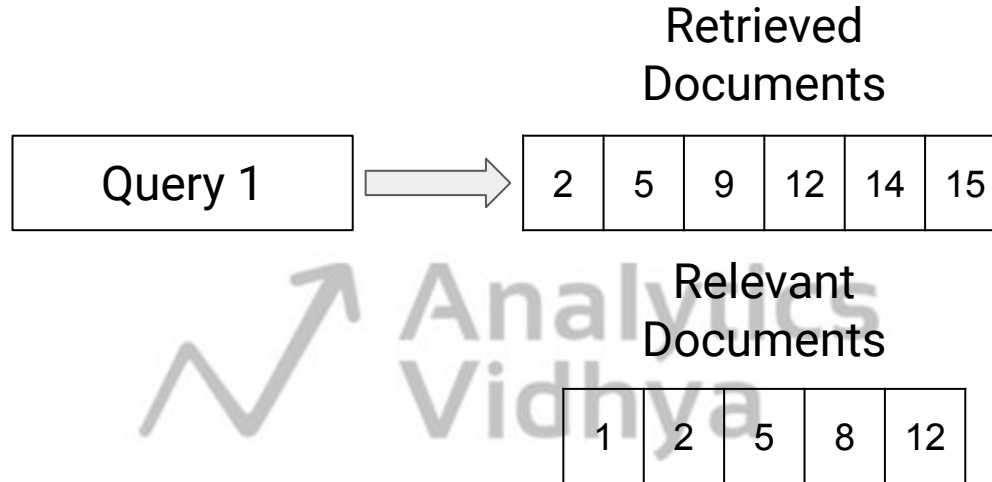$$Recall = \frac{Number\ of\ relevant\ documents\ retrieved}{Total\ number\ of\ relevant\ documents}$$

How good are the retrieved documents?

Retrieved Documents

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Relevant Documents

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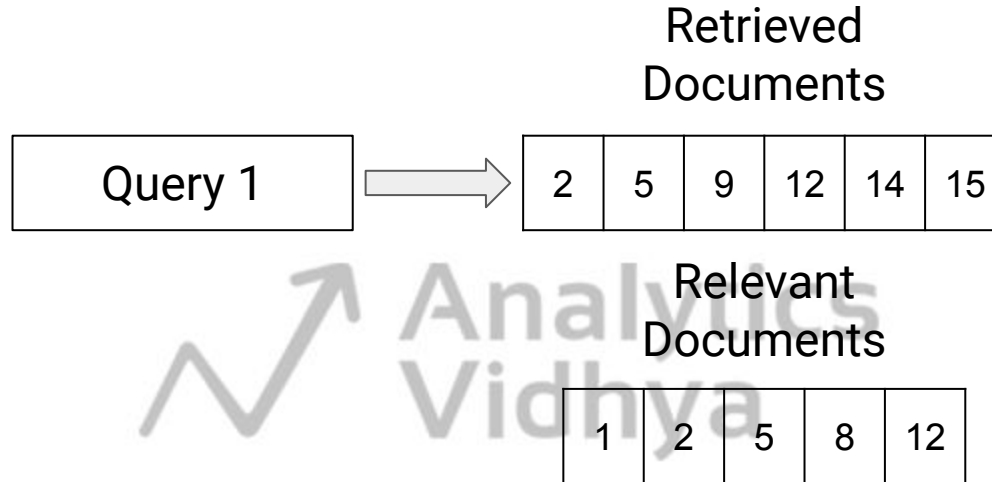
- Recall: Fraction of relevant documents in the collection that are retrieved

$$\text{Recall} = \frac{\text{Number of relevant documents retrieved}}{\text{Total number of relevant documents}} = \frac{3}{5}$$

Thank You