Flowhog

WHAT IS RAG?

GOAL: Have AI that knows YOUR business in detail

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RAG PROCESS

⚙️ DOCUMENT INGESTION

1. Parsing
2. Chunking
3. Embeddings
4. Storage

🔍 CONTEXT RETRIEVAL

1. Question Processing (Expansion + Embeddings)
2. Search (Embeddings + Keywords)
3. Reranking

🔍 RESPONSE GENERATION

LLM generates a response considering your question and sources relevant to that question

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STEP 1 : DOCUMENT INGESTION

GOAL: Create a searchable knowledge base

1 - PARSE

Extract text from **PDFs**, **docs**, **Excel**, and **emails**

2 - CHUNK

Split text into pieces

3 - EMBED

Extract semantic meaning from each chunk

4 - STORE

Save each text piece and its meaning into a database

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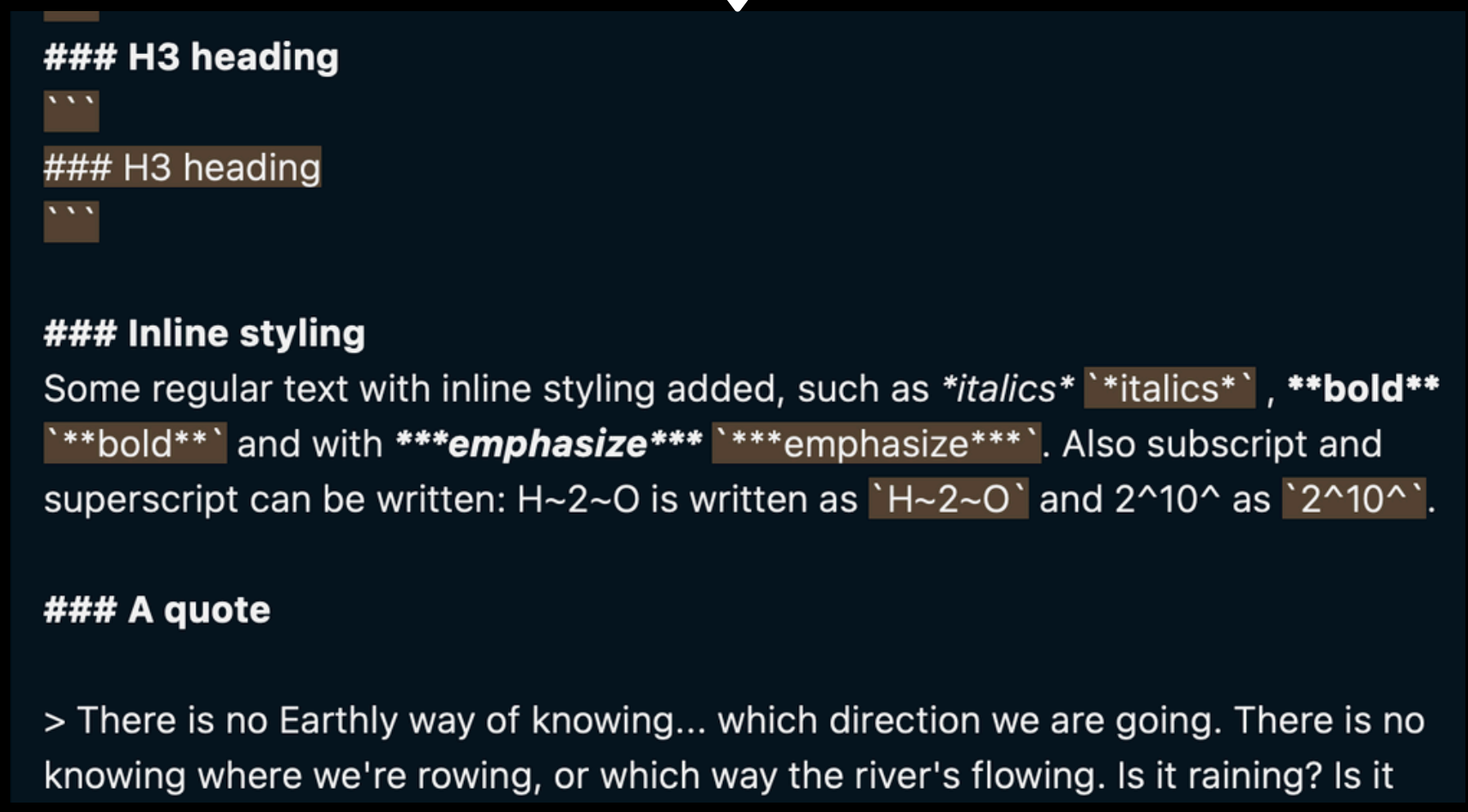
STEP 1.1: INGESTION > PARSING

GOAL: Extract text from documents

Name	Date modified	Type
Product Details.zip	24/09/2017 21:46	Compressed (zipp...
Product Enquiry.msg	24/09/2017 21:04	Outlook Item
Proposal Data.xlsx	24/09/2017 20:52	Microsoft Excel W...
Proposal Description.doc	24/09/2017 20:56	Microsoft Word 9...
Proposal Presentation.ppt	24/09/2017 20:54	Microsoft PowerP...
Scanned Docs.tif	24/09/2017 20:59	TIFF image



````
### H3 heading
```
### H3 heading
```

### Inline styling
Some regular text with inline styling added, such as *italics* `*italics*` , **bold** `**bold**` and with ***emphasize*** `***emphasize***`. Also subscript and superscript can be written: H~2~O is written as `H~2~O` and 2^10^ as `2^10^`.

### A quote

> There is no Earthly way of knowing... which direction we are going. There is no knowing where we're rowing, or which way the river's flowing. Is it raining? Is it
````

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STEP 1.2: INGESTION > CHUNKS

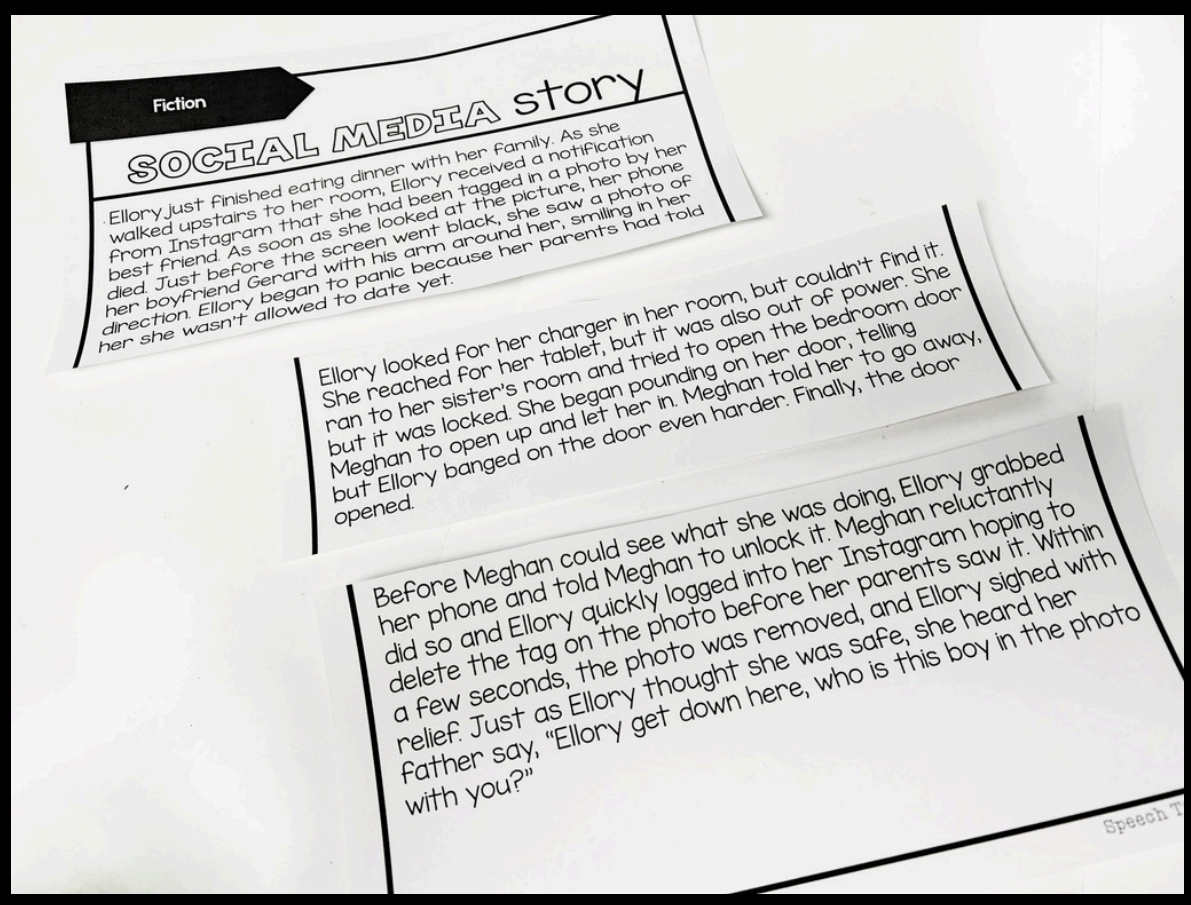
GOAL: Split text into pieces

```
### H3 heading
```
H3 heading
```

### Inline styling
Some regular text with inline styling added, such as *italics* `*italics*` , **bold** `**bold**` and with ***emphasize*** `***emphasize***`. Also subscript and superscript can be written: H~2~O is written as `H~2~O` and 2^10^ as `2^10^`.

### A quote

> There is no Earthly way of knowing... which direction we are going. There is no knowing where we're rowing, or which way the river's flowing. Is it raining? Is it

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```

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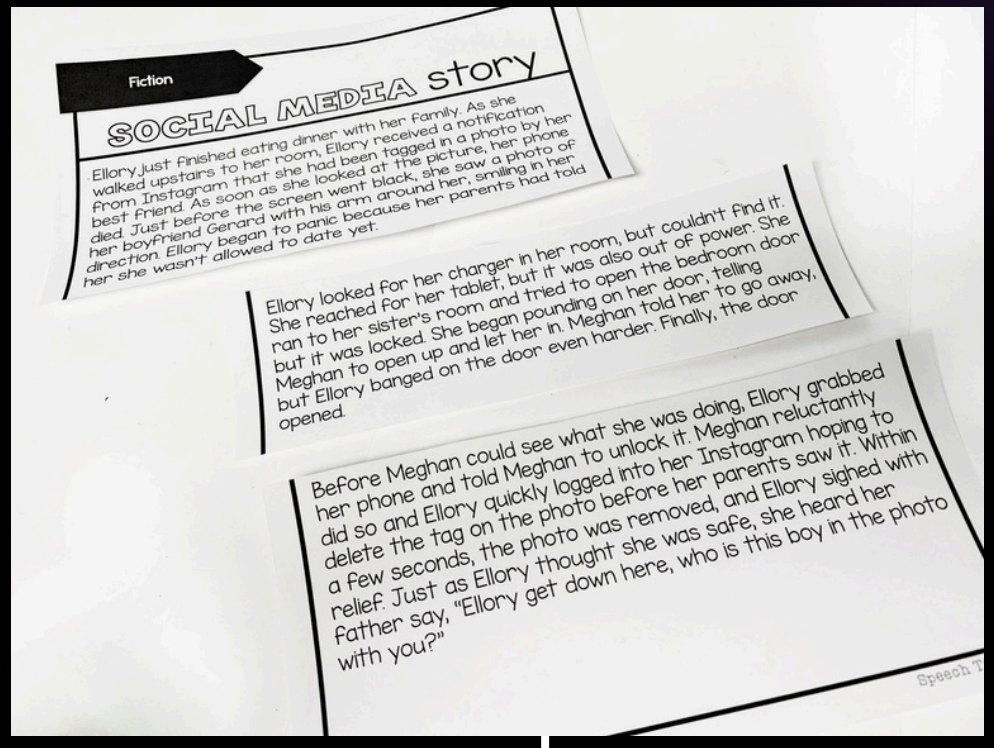
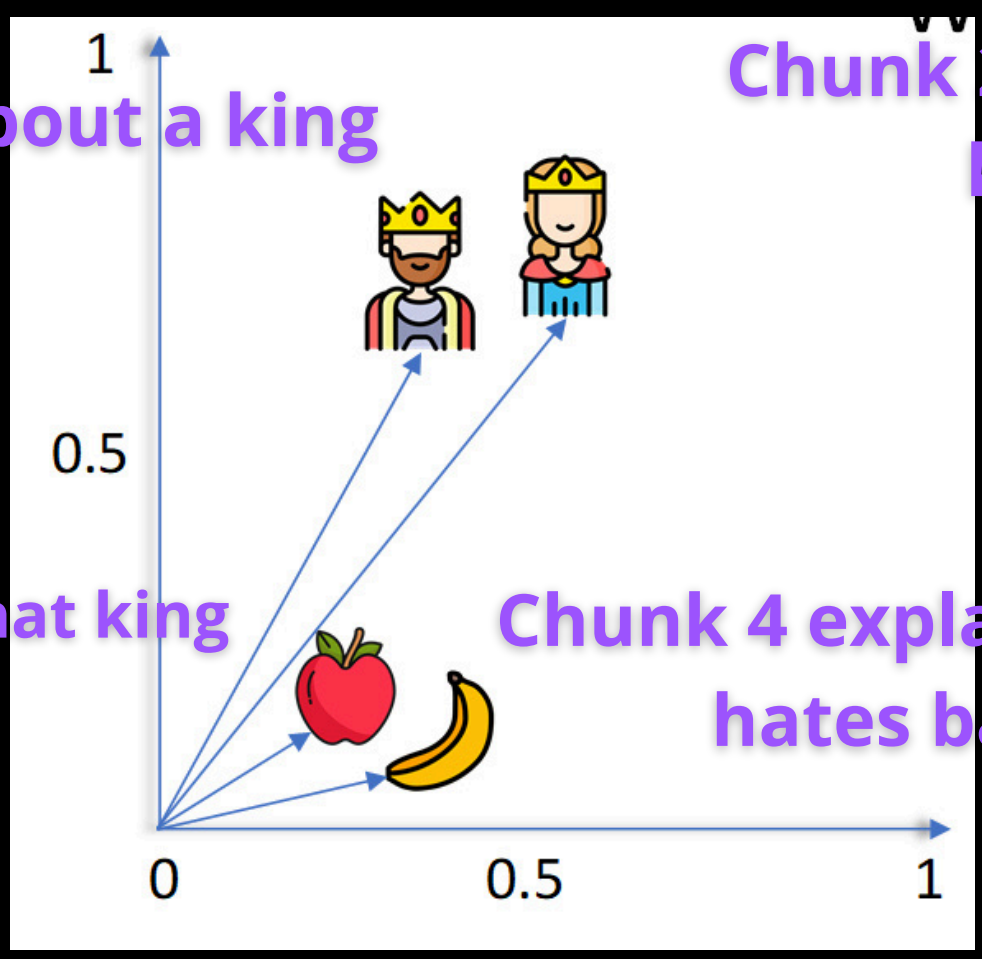
STEP 1.3: INGESTION > EMBEDDINGS

GOAL: Represent what each text chunk is talking about as a vector





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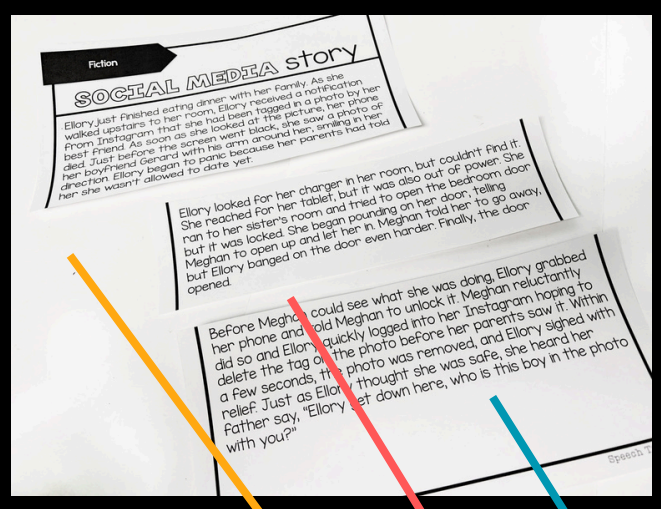
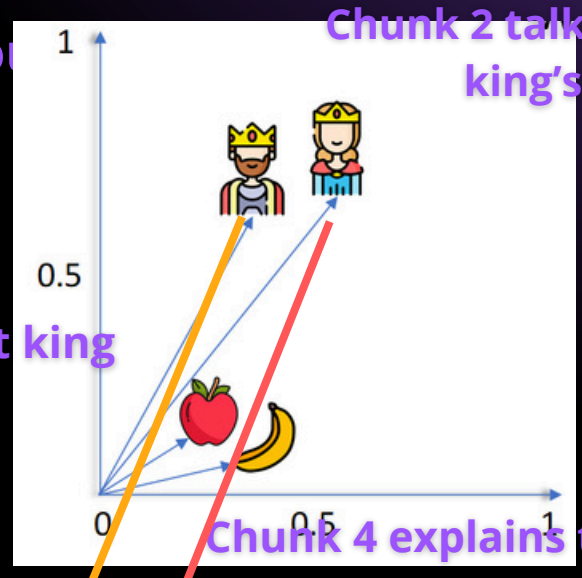
STEP 1.4: INGESTION > STORE

GOAL: Store in a DB each chunk and its embedding vector



Chunk 1 talks abou



Chunk 2 talks about the king's wife

Chunk 3 explains that king likes apples

Chunk 4 explains that king hates bananas

chunk	embedding
This section explains how to delet…	[0.027757,0.059048597,0.063414864,…
One of the operating systems shown…	[-0.05131773,0.022594599,0.09677809…
The data type of the NCHAR type co…	[0.002209758,0.04273992,0.05689596…
This section explains how to delet…	[0.027757,0.059048597,0.063414864,…
The data type of the NCHAR type co…	[0.002209758,0.04273992,0.05689596…
The interface for application deve…	[-0.04833659,-0.0066552167,0.10973…
The interface for application deve…	[-0.04833659,-0.0066552167,0.10973…
National character string literals…	[0.052299663,0.013026265,0.0477994…
National character string literals…	[0.052299663,0.013026265,0.0477994…
NCHAR type is provided as the data…	[-0.044851042,0.014970196,0.068836…
NCHAR type is provided as the data…	[-0.044865385,0.014974983,0.068858…
This is the basic configuration wh…	[-0.0129189035,0.014315235,0.10044…
This is the basic configuration wh…	[-0.0129189035,0.014315235,0.10044…

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STEP 2: CONTEXT RETRIEVAL

GOAL: Given a question, find the chunks that contain the answer to that question

1 - Question Embedding

Represent the question meaning as a vector

2 - Search in DB

Find chunks in db that are similar to the question

3 - Reranking

Pick the top 5 results

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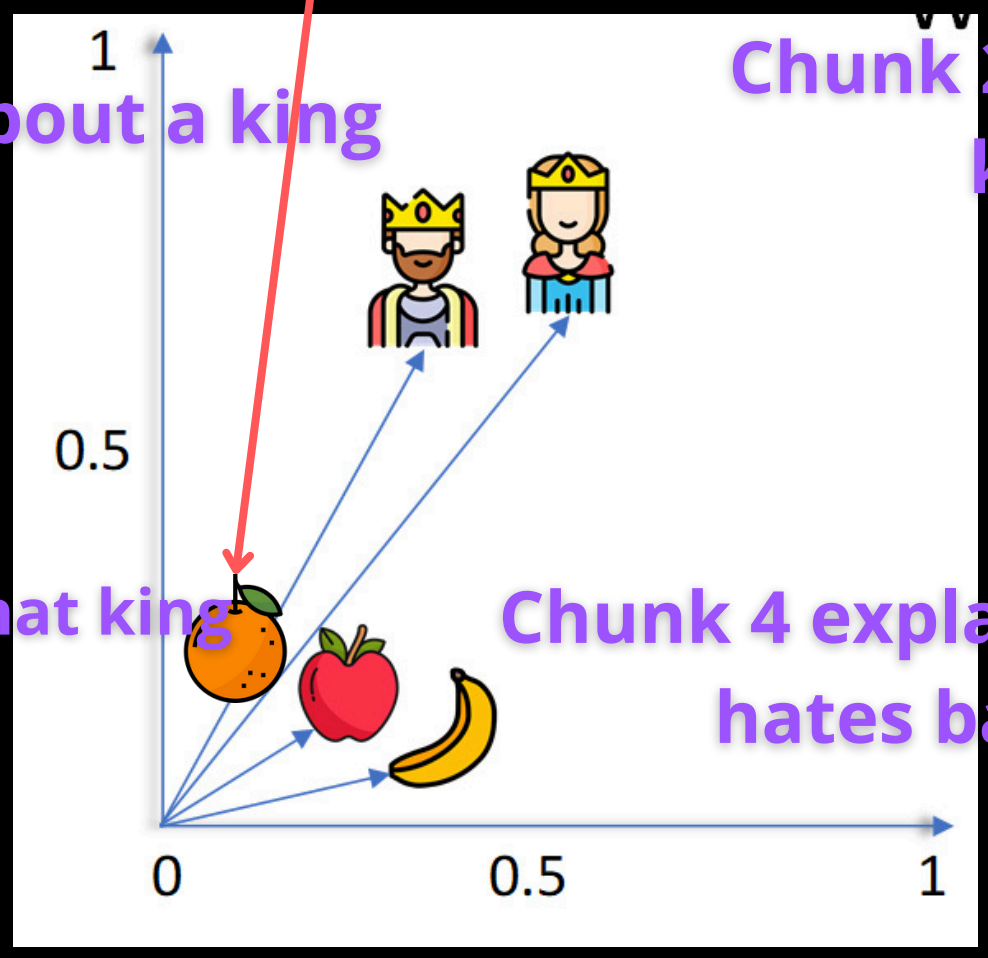
STEP 2.1: RETRIEVAL > EMBEDDINGS

GOAL: Represent user question as a vector so that you can compare it with text chunks in DB

Did he like oranges?



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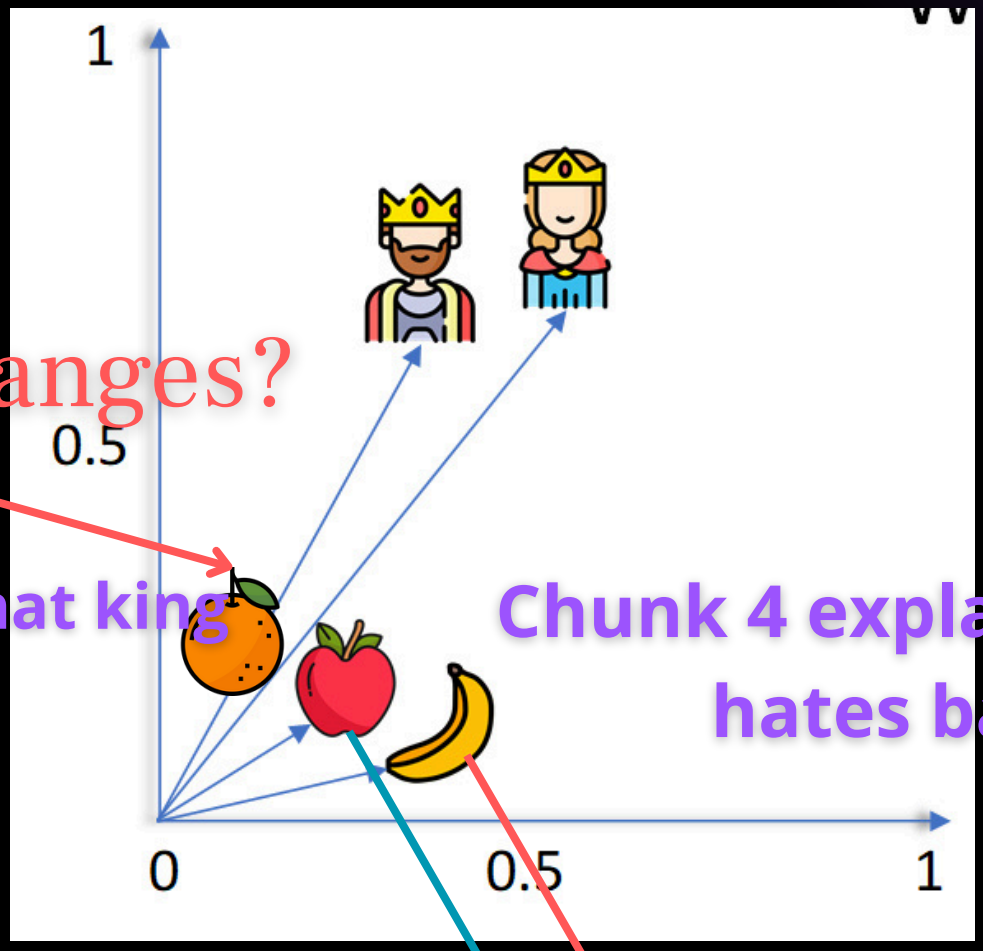
STEP 2.2: RETRIEVAL > SEARCH

GOAL: Extract chunks from DB that can potentially answer the user question

Did he like oranges?



Chunk 3 explains that king likes apples

Chunk 4 explains that king hates bananas

chunk	embedding
This section explains how to delet…	[0.027757,0.059048597,0.063414864,…
One of the operating systems shown…	[-0.0531773,0.022594599,0.09677809…
The data type of the NCHAR type co…	[0.002209758,0.04273992,0.05689596…
This section explains how to delet…	[0.027757,0.059048597,0.063414864,…
The data type of the NCHAR type co…	[0.002209758,0.04273992,0.05689596…
The interface for application deve…	[-0.04833659,-0.0066552167,0.10973…
The interface for application deve…	[-0.04833659,-0.0066552167,0.10973…
National character string literals…	[0.052299663,0.013026265,0.0477994…
National character string literals…	[0.052299663,0.013026265,0.0477994…
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This is the basic configuration wh…	[-0.0129189035,0.014315235,0.10044…

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STEP 2.3: RETRIEVAL > RERANKING

GOAL: Refine chunk candidates to increase probability that chunks selected are relevant to the question

Did he like oranges?

chunk	embedding
This section explains how to delet…	[0.027757,0.059048597,0.063414864,…
One of the operating systems shown…	[-0.0531773,0.022594599,0.09677809…
The data type of the NCHAR type co…	[0.002209758,0.04273992,0.05689596…
This section explains how to delet…	[0.027757,0.059048597,0.063414864,…
The data type of the NCHAR type co…	[0.002209758,0.04273992,0.05689596…
The interface for application deve…	[-0.04833659,-0.0066552167,0.10973…
The interface for application deve…	[-0.04833659,-0.0066552167,0.10973…
National character string literals…	[0.052299663,0.013026265,0.0477994…
National character string literals…	[0.052299663,0.013026265,0.0477994…
NCHAR type is provided as the data…	[-0.044851042,0.014970196,0.068836…
NCHAR type is provided as the data…	[-0.044865385,0.014974983,0.068858…
This is the basic configuration wh…	[-0.0129189035,0.014315235,0.10044…
This is the basic configuration wh…	[-0.0129189035,0.014315235,0.10044…

Reranker

More relevant

1. **Chunk 3**
2. **Chunk 4**

Less Relevant

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STEP 3 : GENERATION

GOAL: LLM generates response using your company sources

Prompt

Context:

[1] **Chunk 3**

[2] **Chunk 4**

Question: Did he like oranges?

Answer: There's no evidence that he liked or disliked oranges. According to sections 1 and 2, he likes apples and hates bananas.

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