

## Product-KB Retrieval Endpoint

This endpoint is designed to answer natural language queries about drinkware products by searching a "knowledge base" of product descriptions.

**Core Logic: Retrieval-Augmented Generation (RAG)** This pipeline retrieves relevant documents *before* generating an answer, ensuring the LLM's response is "grounded" in facts.

1. **Vectorize Query:** An input query (e.g., "a durable mug less than RM50") is converted into a numerical representation ("vector embedding") that captures its semantic meaning.
2. **Retrieve:** This vector is used to search a **Pinecone vector database**. Pinecone returns a list of product descriptions that are most semantically similar to the user's query, even if they don't share exact keywords.
3. **Augment & Generate:** The retrieved product data ("Context") and the original query are "stuffed" into a custom prompt. This complete prompt is sent to an LLM.
4. **Summarize:** The LLM's job, as defined by the prompt, is to synthesize all the information and generate a single, helpful summary of the products it found. This includes a custom rule to summarize partial matches (e.g., finding "red mugs" when the query asked for "blue") to be more helpful.

### **API Test Outputs:**

1. In Context using "product":

- a. Query: Any drinkware less than RM50?

200 Response body

```
{  
  "query": "Any drinkware less than RM50?",  
  "summary": "Yes, there are drinkware products priced less than RM50.00. The Frozee Cold Cup in Frost Peach is priced at RM38.50. Additionally, the ZUS Ngupi® Glass Food Container is priced at RM23.00.",  
  "source_documents": [  
    {  
      "id": "frozee-cold-cup-650ml-22oz",  
      "metadata": {  
        "last_crawled": "2025-11-11T10:03:59.259481+00:00",  
        "price": "RM55.00",  
        "product_id": "frozee-cold-cup-650ml-22oz",  
        "snippet": "Title: Frozee Cold Cup | 650ml\nPrice: RM55.00\nVariants: ZUS Blue - RM55.00; Lucky Pink - RM55.00; Frost Green - RM55.00; Frost Peach - RM38.50",  
        "source": "zus_drinkware",  
        "title": "Frozee Cold Cup | 650ml",  
        "url": "https://shop.zuscoffee.com/products/frozee-cold-cup-650ml-22oz",  
        "variants": [  
          "ZUS Blue - RM55.00",  
          "Lucky Pink - RM55.00",  
          "Frost Green - RM55.00",  
          "Frost Peach - RM38.50"  
        ]  
      },  
      "page_content": "Title: Frozee Cold Cup | 650ml\nPrice: RM55.00\nVariants: ZUS Blue - RM55.00; Lucky Pink - RM55.00; Frost Green - RM55.00; Frost Peach - RM38.50",  
      "type": "Document"  
    }  
  ]  
}
```

 

2. Out of Context using "product":

- a. Query: How is the weather?

200 Response body

```
{  
  "query": "How is the weather?",  
  "summary": "I can only provide information about drinkware products. If you have any questions about our drinkware, feel free to ask!",  
  "source_documents": [  
    {  
      "id": "all-day-cup-500ml-17oz-aqua-collection",  
      "metadata": {  
        "last_crawled": "2025-11-11T10:03:50.562131+00:00",  
        "price": "RM79.00",  
        "product_id": "all-day-cup-500ml-17oz-aqua-collection",  
        "snippet": "Title: All Day Cup Aqua | 500ml\nPrice: RM79.00\nVariants: Misty Blue - RM79.00; Ocean Breeze - RM79.00; Blue Lagoon - RM79.00; Deep Sea - RM79.00",  
        "source": "zus_drinkware",  
        "title": "All Day Cup Aqua | 500ml",  
        "url": "https://shop.zuscoffee.com/products/all-day-cup-500ml-17oz-aqua-collection",  
        "variants": [  
          "Misty Blue - RM79.00",  
          "Ocean Breeze - RM79.00",  
          "Blue Lagoon - RM79.00",  
          "Deep Sea - RM79.00"  
        ]  
      },  
      "page_content": "Title: All Day Cup Aqua | 500ml\nPrice: RM79.00\nVariants: Misty Blue - RM79.00; Ocean Breeze - RM79.00; Blue Lagoon - RM79.00; Deep Sea - RM79.00",  
      "type": "Document"  
    }  
  ]  
}
```

 

### 3. In Context using AI Agent:

- Query: Any drinkware less than RM50?

Request URL  
`http://127.0.0.1:8000/invoke?content=Are%20there%20any%20drinkware%20under%20RM50%3F&session_id=test_1`

Server response

Code	Details
200 Undocumented	<p>Response body</p> <pre>&lt;step&gt;&lt;step_name&gt;query_product_catalog&lt;/step_name&gt;{"query": "drinkware under RM50"}&lt;/step&gt;&lt;step&gt;&lt;step_name&gt;final_answer&lt;/step_name&gt;{"answer": "Yes, there is a drinkware under RM50. The Frost Peach variant of the Frozee Cold Cup costs RM38.50.", "tools_used": ["functions.query_product_catalog"]}</pre> <p><a href="#">Copy</a> <a href="#">Download</a></p>

## Outlets Text2SQL Endpoint

This endpoint is designed to answer specific questions about ZUS Coffee outlets by querying a structured **SQLite database**.

**Core Logic: Tool-Based Agent (SQL Injection Prevention)** To eliminate the risk of SQL injection, the LLM is never allowed to write or execute raw SQL.

- Interpret Query:** An input query (e.g., "show me outlets in KL") is sent to a specialized LLM agent.
- Tool Selection:** The agent's only job is to read its user's query and select one "tool" from a small, safe list of pre-defined SQL functions (e.g., `find_outlets_by_location`).
- Safe Execution:** The agent decides which SQL function to call. The SQL functions use the SQLAlchemy ORM to safely build and execute a parameterized query.
- Respond:** The tool returns the database results to the agent, which the LLM agent then formats them into a final human-readable answer.

### API Test Outputs:

- In Context using "outlet":

- Query: Any outlets in Subang Jaya?

200  
Response body

```
{  
  "query": "Any outlets in Subang Jaya?",  
  "result": "I found 1 outlet in Subang Jaya: ZUS Coffee - Taipan USJ, located at No. 9 (Ground Floor), Jalan USJ 10/1E, Taipan Business Centre, Subang Jaya."}
```

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- Out of Context using "outlet":

- Query: How is the weather?

200  
Response body

```
{  
  "query": "How is the weather?",  
  "result": "I can only provide information about ZUS outlets. If you have any questions about ZUS stores or services, please let me know!"}
```

- In Context using AI Agent:

- Query: Any outlets in Subang Jaya?

200  
Undocumented  
Response body

```
<step><step_name>query_outlet_catalog</step_name>{"query": "Subang Jaya"}</step><step><step_name>final_answer</step_name>{"answer": "There is one ZUS Coffee outlet in Subang Jaya: ZUS Coffee - Taipan USJ, located at No. 9 (Ground Floor), Jalan USJ 10/1E, Taipan Business Centre, 47620, Subang Jaya, Selangor. Operating hours are not available.", "tools_used": ["functions.query_outlet_catalog"]}
```

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