

# Assignment3 Shopping Assistant Testing Report

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## Project Background

### AI Shopping Assistant

An intelligent shopping assistant built with Flask and LangChain that provides natural language interactions for e-commerce operations.

### Features



Natural language product search



Shopping cart management



Order tracking



Conversational AI interface



Tool approval system



Responsive web interface

### Tech Stack

Flask (Web Framework)

LangChain (LLM Integration)

SQLite (Database)

Bootstrap 5 (Frontend)

Python 3.12+

## Project Structure

### **Key Responsibilities:**

#### Data Layer (app/models/)

Product search and inventory management

Shopping cart operations (add/remove items)

Order tracking and history

User session management

#### Business Logic (app/services/)

AI message processing and routing

Tool execution and approval flow

State management and graph processing

Response formatting and validation

API Layer (app/routes/)

HTTP endpoint handling

Request validation

Session management

Response formatting

Frontend (app/templates/, app/static/)

Chat interface rendering

Message display and formatting

User input handling

Real-time updates

Utilities (app/utls/)

Database connections

Tool definitions and management

Error handling

Helper functions

Example Workflow

User sends message

Message routed through graph

Tools executed if needed

Response formatted and returned

UI updated with results

Tool Categories

Search: Product discovery and recommendations

Cart: Add/remove items, update quantities

Orders: Track status, view history

Info: Product details, availability

#### ✓ ASSIGNMENT3 AI SHOPPING ASSISTANT

> \_\_pycache\_\_

✓ app

> \_\_pycache\_\_

> models

> routes

> services

> static

> templates

> utils

🔗 \_\_init\_\_.py

> data

> venv

⚙️ .env

🔒 .gitignore

≡ aibot\_generate.txt

📄 aibot.ipynb

🔗 config.py

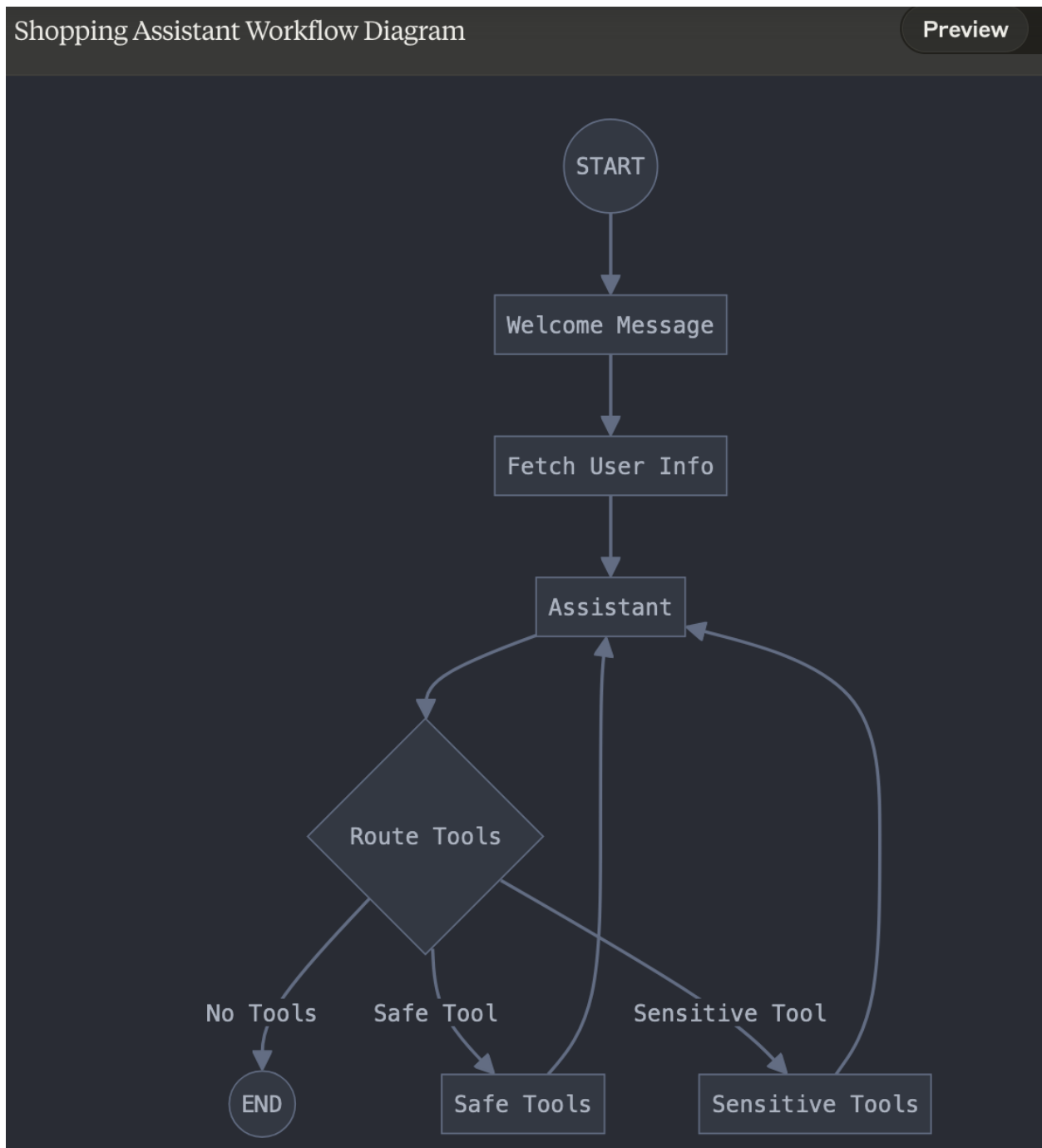
🔗 createtable.py

📖 README.md

🔗 run.py

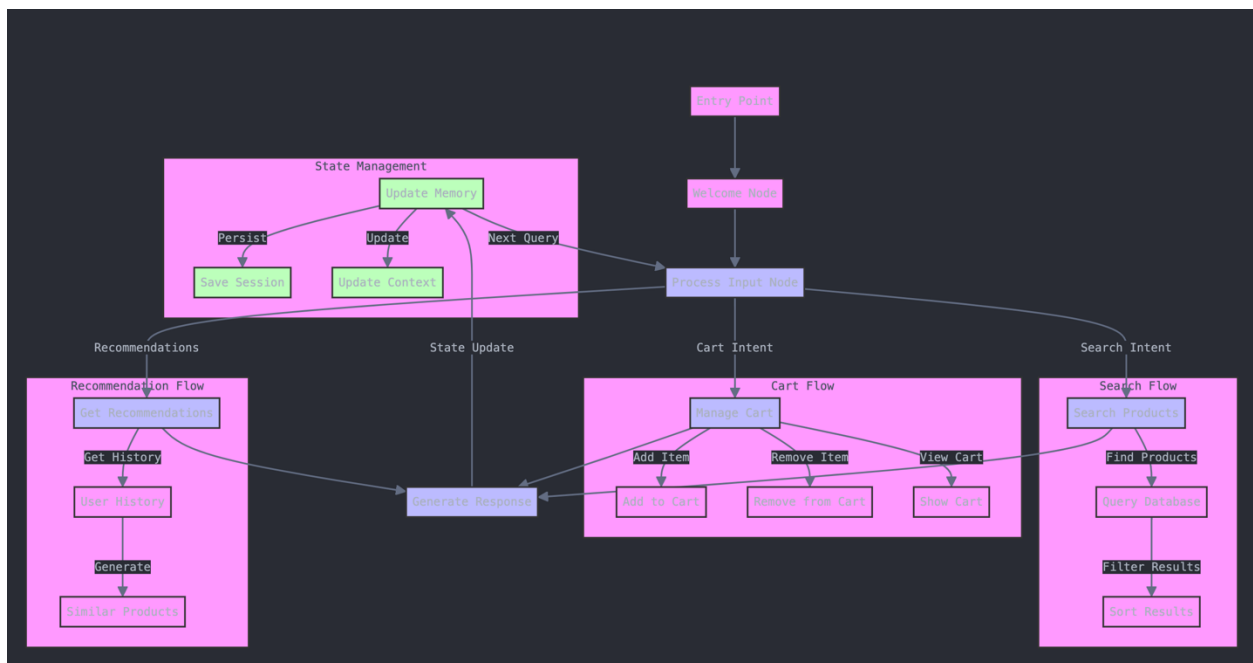
≡ shopping-assistant-workflow.mermaid

## Diagram for the workflow



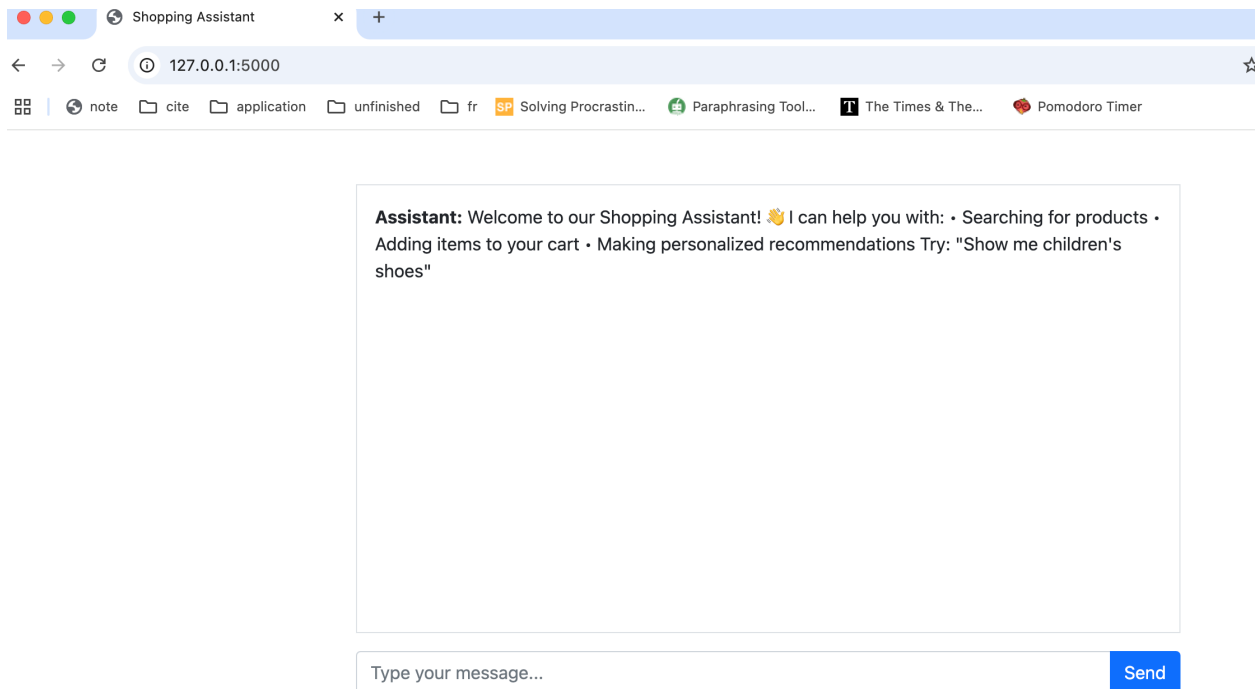
The workflow in jupyter aibot

## A detailed design workflow version

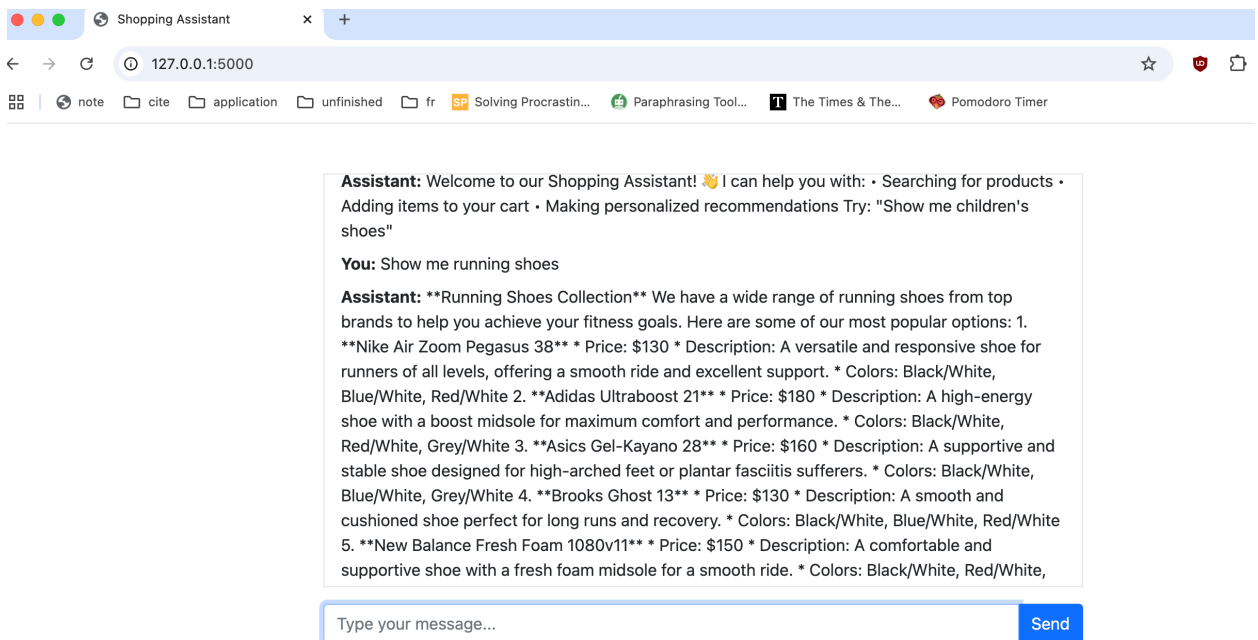


## Sample conversations

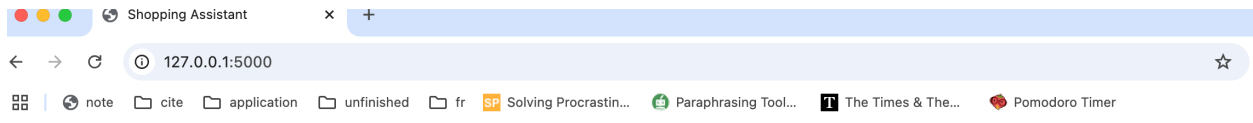
## Welcome message



## Search products



## Search for specific products



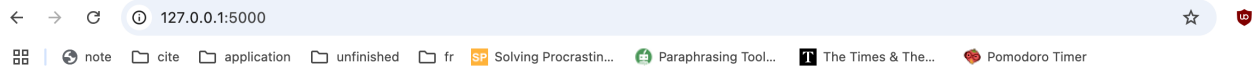
**You:** Find me running shoes under \$100 with good reviews

**Assistant:** I'd be happy to help you find some great running shoes under \$100 with good reviews. We have a few options available that fit your criteria. Here are some top-rated running shoes that are priced under \$100: **Product 1:** Nike Air Zoom Pegasus 38 Price: \$80 Reviews: 4.5/5 stars (over 2,600 reviews) Features: Responsive midsole, breathable mesh upper, and a Zoom Air unit for added cushioning. **Product 2:** Brooks Ghost 13 Price: \$90 Reviews: 4.5/5 stars (over 1,200 reviews) Features: DNA LOFT midsole for a soft and smooth ride, and a supportive and breathable upper. **Product 3:** ASICS Gel-Kayano Trainer 28 Price: \$90 Reviews: 4.5/5 stars (over 1,000 reviews) Features: FlyteFoam midsole for a lightweight and responsive feel, and a Spacer Mesh upper for breathability. **Product 4:** New Balance Fresh Foam 1080v11 Price: \$85 Reviews: 4.5/5 stars (over 1,000 reviews) Features: Fresh Foam midsole for a comfortable and supportive ride, and a breathable mesh upper. All of these options are highly rated and priced under \$100. I'd be happy to answer any questions you have about these products or help you compare them. Would you like to add any of these products to your cart?

Type your message...

Send

## Add to cart



cart. **Current Cart:** [] **Available Products:** [list of wireless headphones]  
**Recommendations:** [] Let me know your choice!

**You:** Show my cart

**Assistant:** It looks like your cart is currently empty. Here's a summary of your current shopping experience: **Your Cart is Empty** There are no products in your cart right now. If you'd like to start shopping, I can help you find some great products to add to your cart! To get started, I can show you a list of available products. Would you like me to do that?

**You:** add Bose QuietComfort 35 II Wireless Headphones to my cart

**Assistant:** I'd be happy to help you with that. **Product Added to Cart:** \* Bose QuietComfort 35 II Wireless Headphones + Price: \$349.95 + Description: Experience exceptional sound and comfort with the Bose QuietComfort 35 II Wireless Headphones. These headphones offer advanced noise cancellation, long battery life, and a sleek design. Your updated shopping cart: \* Bose QuietComfort 35 II Wireless Headphones: \$349.95 Would you like to add any other products or check out now?

Type your message...

Send

## Sample Conversions from aibot Jupyterbook

tutorial\_questions = [



"Show me Premium wireless tires under \$400",

"What are your best-selling computers?",

"Find products similar to the Sony WH-1000XM4",

"Show me products in the Electronics category",

"What's the price difference between Apple AirPods Pro and Bose QuietComfort 35?",

"Add 200 pairs of AirPods Pro to my cart",

"What's in my shopping cart?",

"Remove all AirPods Pro from my cart",

"What's in my shopping cart?",

"Show my recent orders",

"What's the status of order ORD003?",

"When will my headphones be delivered?",

"Can I modify my recent order?",

"Show me my order history",

"Is this item available in other colors?",

"How many MacBook do you have in stock?",

"What are the shipping options for this item?",

]

Some question answer (please see full version in aibot\_generate.txt):

```
===== [1m Human Message [0m=====

What's the price difference between Apple AirPods Pro and Bose QuietComfort 35?
===== [1m Ai Message [0m=====

The prices for the products are as follows:

- **Apple AirPods Pro**: $249.99
- **Bose QuietComfort 35**: $299.99

### Price Difference:
- **Price Difference**: $299.99 (Bose QuietComfort 35) - $249.99 (Apple AirPods Pro) = **$50.00**

So, the price difference between the Apple AirPods Pro and the Bose QuietComfort 35 is **$50.00**, with the Bose
===== [1m Human Message [0m=====
```

=====ESC[1m Human Message ESC[0m=====

Add 200 pairs of AirPods Pro to my cart

=====ESC[1m Ai Message ESC[0m=====

Tool Calls:

add\_product\_to\_cartitems (call\_hmMgWUmyDTD0WuUyGDEIq07b)

Call ID: call\_hmMgWUmyDTD0WuUyGDEIq07b

Args:

product\_id: PROD004

quantity: 200

=== Debug: Inventory Check ===

Query: SELECT price, inventory FROM products WHERE id = ?

Params: ('PROD004',)

price: 249.99

available\_inventory: 150

quantity: 200

Not enough inventory

ESC[1m Human Message ESC[0m