

WWT Unravel 2025

Problem Statement

Recommendation Algorithm for a Quick Service Restaurant

Introduction to the Client

"Wings R Us" is a *US-based quick service restaurant (QSR) chain* specializing in *chicken wings*, with a growing variety of sides and beverages. With increased competition and changing customer preferences, Wings R Us is looking to *personalize their digital customer experience through their mobile application*.

The business has identified that personalized cart recommendations—such as suggesting a drink, side, or complementary wing flavour — can significantly enhance user satisfaction, increase basket size, and improve customer retention.

Overview of the Customer-Facing App

Currently the Wings R Us app allows users to:

- Browse the menu
- Place orders (pickup/delivery)
- Earn and redeem loyalty points
- Receive personalized offers
- Track past orders

Let's dive into the problem statement!



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The Business Problem

The leadership team at Wings R Us is looking to *enhance their digital checkout experience* and *increase average order value* by introducing *smart, last-minute item recommendations*. They've asked for your help to explore if this system is worth investing in, and how it could be designed for impact.

Here are some notes from the latest conversation with the client:

- We have plenty of data but need clarity on which customer signals or behaviors should drive recommendations.
- Our customer base is diverse—from first-time users to loyal fans. How can your solution personalize suggestions accordingly?
- Recommendations should feel fresh and not repetitive. Can you suggest creative, scalable ways to generate variety without manual effort?
- How should we define and measure success for the recommendation system? What metrics and outcomes matter most?
- The solution must work seamlessly across our app, website, and kiosks. How will you ensure consistency across platforms?
- We need a low-risk, quick way to test the solution before a full rollout. Can you propose a fast, value-proving pilot?



Workbooks Overview

order_data: 1.4M rows x 9 columns

[Dataset Link](#)

#	Columns	Description
1	CUSTOMER_ID	Unique identifier for customer
2	STORE_NUMBER	Unique identifier for store
3	ORDER_CREATED_DATE	Date of order
4	ORDER_ID	Unique order identifier
5	ORDERS	Details of the order
6	ORDER_CHANNEL_NAME	Channel through which the order was placed
7	ORDER_SUBCHANNEL_NAME	Specific subchannel (like a, third-party delivery partner)
8	ORDER_OCCASION_NAME	ToGo or Delivery

customer_data: 550k rows x 2 columns

[Dataset Link](#)

#	Columns	Description
1	CUSTOMER_ID	Unique identifier for customer
2	CUSTOMER_TYPE	Customer classification: registered, guest, special membership

store_data: 38 rows x 5 columns

[Dataset Link](#)

#	Columns	Description
1	STORE_NUMBER	Unique identifier for customer
2	CITY	City in which the store is located
3	STATE	State in which the store is located
4	POSTAL_CODE	Postal code of the store

test_data_question: 1k rows x 10 columns

[Dataset Link](#)

#	Columns	Description
1	CUSTOMER_ID	Unique identifier for customer
2	CUSTOMER_TYPE	Customer classification: registered, guest, special membership
3	STORE_NUMBER	Unique identifier for store
4	ORDER_ID	Unique order identifier
5	ORDERS	Details of the order
6	ORDER_CHANNEL_NAME	Channel through which the order was placed
7	ORDER_SUBCHANNEL_NAME	Specific subchannel (like a, third-party delivery partner)
8	ORDER_OCCASION_NAME	ToGo or Delivery
9	item1	Selected Item 1
10	item2	Selected Item 2
11	item3	Selected Item 3

Link to Google Drive folder with all data sets:

<https://tinyurl.com/26rm98wj>



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Deliverables

ZIP folder named “<TeamName>_WWT_Comp2025” with the following three files:

1. <TeamName>_Recommendation Output Sheet **[Excel sheet]**
 - You'll be provided an Excel sheet with real customer cart configurations (with one item removed)
 - Recommend top 3 items per customer for their given cart configuration
 - You'll be scored +1 per recommendation if one of your 3 recommendations matches the actual missing item
2. <TeamName>_Codebase **[zip file]**
 - Well-documented code (preferably Python 3.11) for data loading, transformation, model training, validation and prediction shared on GitHub (include link in Readme / Presentation)
 - Participants are required to write the code in a Jupyter notebook in Python. Please share:
 - The Notebook with the code pipeline. Running the notebook independently should generate the results shared.
 - A requirements.txt file for any packages to install
 - Additionally include readme / instructions if required
3. <TeamName>_Presentation **[PPT file]**
 - 8-10 minutes, maximum 10 slides, 10pt minimum font size
 - Consultative storytelling directed towards business and technical leadership of Wings R Us
 - Anticipate and address key customer concerns within the narrative of your presentation
 - Include a summary of your Exploratory Data Analysis (EDA), High-Level Logic Diagram and Recommendations

Sample Submission Format: test_data_question

Template File

CUSTOMER_ID	ORDER_ID	item1	item2	item2	item4	RECOMMENDATION 1	RECOMMENDATION 2	RECOMMENDATION 3
15608101	10127569325466842555	6pc Boneless Mild	Large Cheese Fries	20 Oz Soda	Missing			
26963771232	11215737504190878030	Hot Honey Rub (Boneless)	Mango Habanero (Boneless)	Garlic Parmesan (Tenders)	Missing			
...			

Output File

CUSTOMER_ID	ORDER_ID	item1	item2	item2	item4	RECOMMENDATION 1	RECOMMENDATION 2	RECOMMENDATION 3
15608101	10127569325466842555	6pc Boneless Mild	Large Cheese Fries	20 Oz Soda	Missing	Sweet BBQ Blaze	Chicken Sandwhich	Large Seasoned Fries
26963771232	11215737504190878030	Hot Honey Rub (Boneless)	Mango Habanero (Boneless)	Garlic Parmesan (Tenders)	Missing	Large Seasoned Fries	20 oz Soft Drink	3 pc Crispy Tender Combo
...			



You are expected to fill in entries for your top 3 recommendations for missing order items based on the existing cart configuration of the actual customer order data. If any 1 of your recommendations matches with the actual item, you score points for that entry.

The ‘test_data_question’ sheet will be evaluated on Recall@3. Recall@3 measures how often the correct answer appears in the top 3 predictions. $\text{Recall@3} = \frac{\text{Number of times correct prediction is in top 3}}{\text{Total number of queries}}$

NOTE: Evaluation of the output sheet is one of the metrics that will be used to assess overall case performance.



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