

Wal-timise Challenge:

Problem Statement:

A retailer having 300 items wants to increase its revenue by $x\%$ and the quantity sold by $y\%$. This can be achieved by choosing optimal prices for each of the 300 items.

As a part of this hack, we want you to build an optimizer to select optimal selling prices for items to meet any given criterion of revenue and quantity gain percentages while taking a minimum possible hit.

1. Criterion 1: $x = 10\%$, $y = 25\%$
2. Criterion 2: $x = 5\%$, $y = 15\%$
3. Criterion 3: $x = 7\%$, $y = 20\%$

Terminology

- Base Price : Price of the Item without any discount/promotion.
- Selling price : Optimal price selected for the item.
- Revenue: Selling Price * Quantity Sold at Selling price.
Total Revenue: Sum of Revenue over all items
- Hit: (Base Price – Selling Price) * Quantity Sold at Selling price.
Total Hit: Sum of hit over all items
- Base Revenue: Sum of Revenue at Base Price over all items
- Revenue Gain %: $(\text{Total Revenue} - \text{Base Revenue}) / \text{Base Revenue}$
- Base Quantity: Quantity Sold at Base Price
- Total Base Quantity: Sum of Base Quantity over all items
- Total Selling Quantity: Sum of Quantity Sold at Selling Price over all items
- Quantity Gain %: $(\text{Total Selling Quantity} - \text{Total Base Quantity}) / \text{Total Base Quantity}$

Data Set Format:

| Item id | Base Price | Base Quantity | Price1 | Quantity1 | Price2 | Quantity2 | Price3 | Quantity3 |
|---------|------------|---------------|--------|-----------|--------|-----------|--------|-----------|
| Item 1 | | | | | | | | |
| Item 2 | | | | | | | | |

Data Set : dataset.csv

Sample Submission File : Sample_Submission.csv

Evaluation Criterion :

Evaluation will be based on leaderboard score obtained. An intuitive and scalable approach which has strong potential for further development will fetch brownie points.

Optimal Ratio (OR) is calculated as Submitted Hit/Baseline Hit

where,

Submitted Hit: Hit obtained by team's solution after meeting the sales and quantity gain criterion

Baseline Hit: Hit coming from a baseline solution that judge's already have.

If Submitted solution is better than Baseline, $OR < 1$ else $OR \geq 1$.

Average of OR's over all three scenarios will be taken for the leaderboard score.

The team with lowest average OR tops the Leaderboard.

Rules and Guidelines

- **Eligibility criteria:** Teams should be made up exclusively of students from any stream.
- **Team Size:** 2 - 4 Participants per team
- Winners will be declared on the basis of leaderboard score. An intuitive and scalable approach which has strong potential for further development will fetch brownie points.
- Teams can of course gain advice and support from event organizers and volunteers. Write to us at WMT_DS_hackathon@wal-mart.com for any doubts or clarifications. All doubts will be cleared in the doubt clearing sessions.
- Do join the scheduled doubt clearing sessions. Details will be shared by the organizing team.
- Teams can use libraries, frameworks, or open-source code in their projects. Use of external datasets is not allowed

- All work on a project should be done at the hackathon.

Rules for Submission :

1. Send your final submissions in a zip file to WMT_DS_hackathon@wal-mart.com. Do rename your submission as "**Team_Name.zip**". Do write names of all the team members in the body of the mail.
2. The zip file must contain the following :
 - A document explaining your solution in less than 100 words with the source code of the solution
 - Three .csv files having solution to individual scenarios. Each file should strictly follow the given submission format.
 - Make sure to rename your solution files as "**scenario1.csv**", "**scenario2.csv**" and "**scenario3.csv**" respectively.