Low Level Design (LLD)

Amazon Sales : Price & Rating Analysis

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Document Control

Date	Version	Description	Author
05/10/2024	1.0	Introduction, Problem Statement, Dataset Information, Architecture Description	Putul Akhil

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1. Introduction

1.1 What is Low Level Design Document?

The goal of the Low-level design document (LLDD) is to give the internal logic design of the actual program code for the Heart Disease Diagnostic Analysis dashboard. LLDD describes the class diagrams with the methods and relations between classes and programs specs. It describes the modules so that the programmer can directly code the program from the document.

1.2 What is Scope?

Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. The process can be used for designing data structures, required software architecture, source code and ultimately, performance algorithms. Overall, the data organization may be defined during requirement analysis and then refined during data design work.

1.3 Project Introduction

Effective sales management is critical in today's highly competitive e-commerce landscape, where businesses must balance pricing strategies, customer satisfaction, and profitability. The rise of online shopping platforms like Amazon has amplified the importance of understanding consumer behavior, particularly in relation to product pricing and customer ratings. Key factors influencing sales include product categories, price ranges, discounts, and customer feedback.

Just as lifestyle changes and access to healthcare can impact health outcomes, shifts in consumer preferences, product pricing, and marketplace competition greatly affect sales performance. Businesses need data-driven insights to make informed decisions about pricing and product positioning.

This project, "Amazon Sales: Price & Rating Analysis", aims to explore how pricing strategies and customer ratings across various product categories influence sales. By analyzing trends in price ranges and ratings, this study provides actionable insights to help sellers improve their strategies, enhance customer satisfaction, and ultimately drive profitability. With these insights, businesses can stay competitive in the fast-evolving e-commerce market, ensuring better performance and growth.

2. Problem Statement

The objective of this project is to analyze Amazon sales data by examining product pricing, customer ratings, and category trends to optimize sales strategies. This analysis aims to identify how price ranges, discounts, and ratings influence sales across categories, helping businesses improve pricing decisions, boost customer satisfaction, and increase profits.

3. Dataset Information

product_id: Unique identifier for each product.

product_name: Name or description of the product.

discounted_price: The price of the product after discount has been applied.

actual_price: The original price of the product before any discounts.

discount_percentage: The percentage discount applied to the product.

rating: The average customer rating for the product (usually out of 5).

rating_count: The total number of ratings or reviews the product has received.

about_product: Detailed information or description about the product.

**user_id:** Unique identifier for the user providing the review or rating.

user_name: Name of the user who provided the review or rating.

review_id: Unique identifier for each review.

review_title: Title or brief summary of the review.

categories: This column defines the broad category to which a product belongs. Each product falls under a single main category, which helps in identifying the general type of product sold. (main category are: Electronics, Home & Kitchen, Office Products, Toys & Games, Computers & Accessories, Car & Motorbike and Other)

4. Architecture
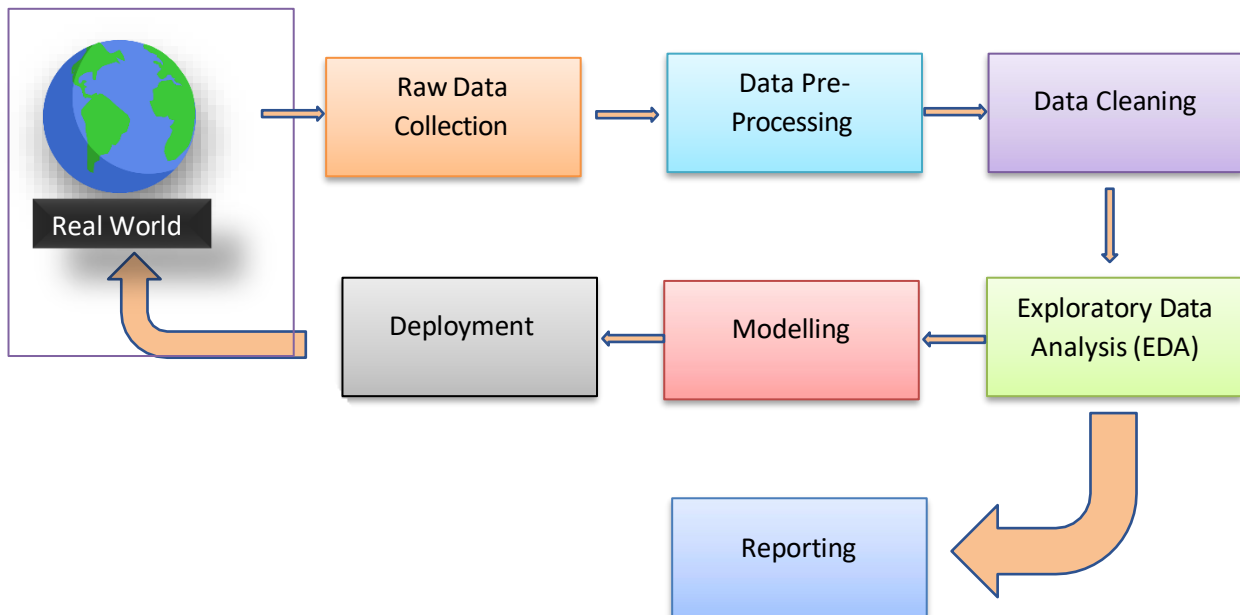
4.1 Architecture Description

1. **Raw Data Collection**
   The Dataset was taken from iNeuron's Provided Project Description Document.
   https://drive.google.com/file/d/1_YOxN7Ssybco41ioFlXruwO8ykYCoTbE/view?usp=sharing

2. **Data Pre-Processing**
   Before building any model, it is crucial to perform data pre-processing to feed the correct data to the model to learn and predict. Model performance depends on the quality of data feeded to the model to train.
   This Process includes-
   a) Handling Null/Missing Values
   b) Handling Skewed Data

3. **Data Cleaning**
   Data cleaning is the process of fixing or removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset.
   a) Remove duplicate or irrelevant observations
   b) Filter unwanted outliers
   c) Renaming required attributes

4. **Exploratory Data Analysis (EDA)**

   Exploratory Data Analysis refers to the critical process of performing initial investigations on data to discover patterns, spot anomalies, test hypothesis and to check assumptions with the help of summary statistics and graphical representations.

5. **Reporting**

   Reporting is a most important and underrated skill of a data analytics field. Because being a Data Analyst you should be good in easy and self- explanatory report because your model will be used by many stakeholders who are not from technical background.
   a) High Level Design Document (HLD)
   b) Low Level Design Document (LLD)
   c) Architecture
   d) Wireframe
   e) Detailed Project Report
   f) Power Point Presentation

6. **Modelling**

   Data Modelling is the process of analyzing the data objects and their relationship to the other objects. It is used to analyze the data requirements that are required for the business processes. The data models are created for the data to be stored in a database. The Data Model's main focus is on what data is needed and how we have to organize data rather than what operations we have to perform.

7. **Deployment**

   We created a Power BI Dashboard