Low-Level Design (LLD)

**Crime Data Analysis**

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# Introduction

## 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 Sales Analysis dashboard. LLD 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. **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.

## Project Introduction

This is a project about Sales Management. Organizations under the E- commerce industry seek to attain core competence by creating and sustaining a unique process to collect personal information about customers and their purchasing trends. The report critically evaluates how service-based organizations -Amazon use Management information systems to attain competitive advantage through efficient management and acquisition of information. The purpose of this project is to analyze Amazon Sales Data to obtain meaningful information. To do that, a Sales dataset is provided, which includes sales amount, list price, cost price, etc.

# Problem Statement

#### Crime analysis is a law enforcement duty that involves a systematic investigation of patterns and trends in crime and disorder. Pattern information can help law enforcement organizations deploy resources more effectively and aid detectives in locating and apprehending criminals. Crime analysis is also important in developing answers to crime problems and developing crime prevention methods. Dataset Information

1. **Dataset Information**

**FILE NUMBER**: - Baton Rouge Police Department report number

**OFFENSE DATE: -** Date of when the crime occurred

**OFFENSE TIME: -** Time of day (in 24 hours) when the crime occurred

**CRIME :-** Crime type general category

**COMMITTED:-** Indicates if the crime was attempted or committed

**OFFENSE:-** Louisiana Revised Statues (LRS) code of the crime incident

**OFFENSE DESCRIPTION:-** Description of the crime incident

**FULL ADDRESS:-** Formatted full street address of where the crime incident occurred

**ADDRESS NUMBER:-** Street address number where the crime occurred

**STREET DIRECTION:-** Street prefix direction of the road where the crime occurred

**STREET NAME:-** Street name of the road where the crime occurred

**STREET TYPE:-** Street suffix type of the road where the crime occurred

**CITY:-** City in which the crime incident occurred

**STATE** :- State in which the crime occurred

**ZIP CODE:-** US Postal Service ZIP Code derived from GIS data

**DISTRICT:-** Baton Rouge Police Department District number where the crime occurred

**ZONE:-** Baton Rouge Police Department Zone within a District where the crime occurred

**SUBZONE:-** Baton Rouge Police Department Subzone number within a Zone where the crime occurred

**COMPLETE DISTRICT:-** The concatenated Baton Rouge Police Department District, Zone and Subzone

**COUNCIL DISTRICT:-** Metropolitan Council District derived from GIS data

**CRIME PREVENTION DISTRICT:-** Name of the voter approved crime prevention district if the crime occurred within the boundaries - derived from GIS data

**GEOLOCATION:-** Full crime street address for geocoding

# Architecture

Exploratory Data Analysis (EDA)

Modelling

Deployment



Raw Data Collection

Data Pre- Processing

Data Cleaning

REAL WORLD

Reporting

* 1. **Architecture Description**

### Raw Data Collection

The Dataset was taken from iNeuron’s Provided Project Description Document.

<https://catalog.data.gov/dataset/baton-rouge-crime-incidents>

### 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 fed to the model to train.

This Process includes-

* + - 1. Handling Null/Missing Values
      2. Handling Skewed Data
      3. Outliers Detection and Removal

### Data Cleaning

Data cleaning is the process of fixing or removing incorrect, corrupted, incorrectly formatted, duplicate, or incomplete data within a dataset.

* + - 1. Remove duplicate or irrelevant observations
      2. Filter unwanted outliers
      3. Renaming required attributes

### Exploratory Data Analysis (EDA)

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

### Reporting

Reporting is a most important and underrated skill of a data analytics field. Because being a Data Analyst you should be good in the easy and self- explanatory report because your model will be used by many stakeholders who are not from a technical background.

* + - 1. High-Level Design Document (HLD)
      2. Low-Level Design Document (LLD)
      3. Architecture
      4. Wireframe
      5. Detailed Project Report
      6. PowerPoint Presentation

### 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 to store the data 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.

### Deployment

We created a Power BI Dashboard

