Low Level Design (LLD)

Flight Fare Prediction

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Document Control

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0.1	10/10/2022	Diana Laveena DSouza	Introduction & Architecture Defined

Reviews:

Version	Date	Reviewer	Comments
0.1	10/10/2022		Document Content, Version Control and Unit Test Cases to be added

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Contents

1 Introduction

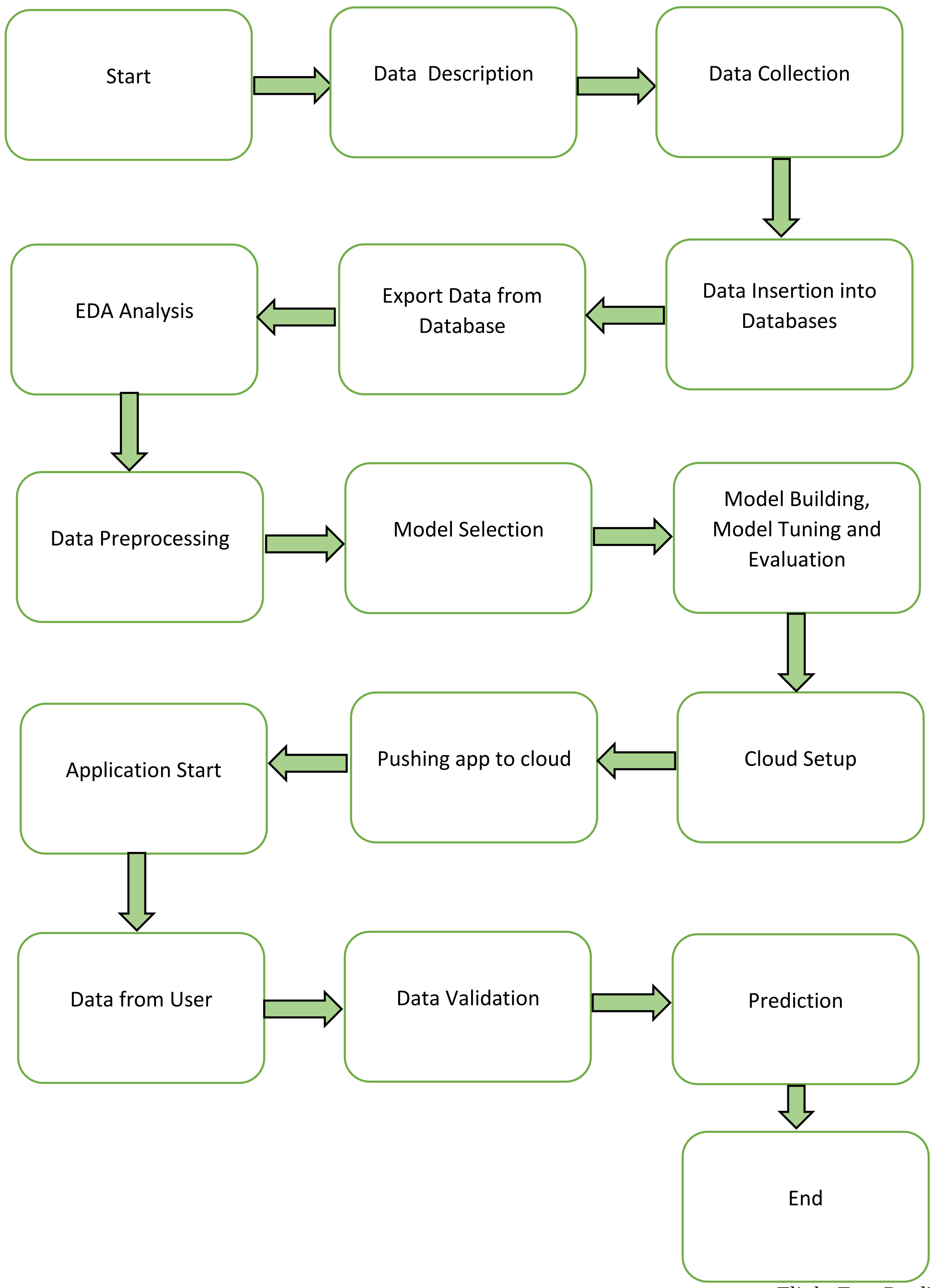
1.1 Why is Low-Level Design Document?

The goal of LLD or a low-level design document (LLDD) is to give the internal logical design of the actual program code for Flight Fare Prediction. LLD describes the class diagrams with the methods and relations between classes and program specs. It describes the modules so the programmer can directly code the program from the document.

1.2 Scope

Low-level design (LLD) is a component-level design process that follows a step-by-step refinement process. This 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.

2 Architecture



3 Architecture Description

3.1 Data Description

Context: Collection of information about Airflight and their Fare helps greatly in Regression tasks

Content: List of records contains Airline, Date_of_Journey, Source, Destination, Route, Dep_Time, Arrival_Time, Duration, Total_Stops, Additional_Info with Price; Dataset is split into train & validation for building the machine learning model.

3.2 Data Collection

Data Collected from the Kaggle dataset.

3.3 Data Insertion into Databases

- Database creation and connection – Create a Cassandra database with a namespace key.
- Table creation in the database.
- Insertion of files in the table.

3.4 Export Data from Database

Data Export from Database – The data in a stored database is exported as a CSV file to be used for Data Pre-processing and Model Training.

3.5 EDA Analysis

EDA Analysis includes Descriptive Statistics, Univariate, Bivariate Analysis, Hypothesis Testing, Checking missing values, outliers, and inconsistency in the columns, duplicate records.

3.6 Data Preprocessing

Data Preprocessing includes removing unwanted features, duplicate records if present, handling outliers, missing values, inconsistency in columns, feature creation, feature scaling (only for distance-based models), the transformation of the target (only for linear models), removing multicollinearity if present (for linear model), Splitting preprocessed data into train and validation sets.

3.7 Model Building and Evaluation

We will find the best model to predict Flight Fare. We will calculate the RMSE and R2 scores for models and select the model with the best score. Then tune the model to improve the model accuracy.

3.8 Data from User

Here we will collect the user's travel information.

3.9 Data Validation

Here Data Validation will be done, given by the user.

3.10 Prediction

The model will predict the Flight Fare.

3.11 Deployment

We will be deploying the model to GCP.

This is a workflow diagram for the Flight Fare Prediction.

4 Unit Test Cases

Test Case Description	Pre-Requisite	Expected Result
Verify whether the Application URL is accessible to the user	1. Application URL should be defined	The application URL should be accessible to the user.
Verify whether the Application loads entirely for the user when the URL is accessed	1. Application URL is accessible 2. Application is deployed	The Application should load entirely for the user when the URL is accessed.
Verify whether the user can input the text in all input fields	1. Application is accessible	The user should be able to input the text in all input fields.
Verify whether the user gets Submit button to submit the inputs.		The user should get Submit button to submit the inputs.
Verify whether the user is presented with results on clicking submit.		The user should be presented with results on clicking submit