Functional Requirements Document (FRD)

Project Title: Airbnb NYC Case Study
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Date: 18-05-2025

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1. Purpose

This FRD defines the functional requirements for analyzing Airbnb NYC listings. The objective is to build insightful dashboards and data visualizations that help business users, analysts, and stakeholders understand room trends, host activity, pricing patterns, and listing distribution.

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2. Project Overview

This case study leverages a real-world Airbnb dataset to:

- Clean and preprocess data using Python

- Perform Exploratory Data Analysis (EDA)

- Develop visualizations in Python

- Create interactive dashboards in Power BI

- Generate documentation (BRD, SRS, FRD, DRD)

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3. Functional Requirements

3.1 Data Preparation

ID	Requirement	Priority
FR1	Load CSV data into Python	High
FR2	Clean data: remove nulls, fix data types	High
FR3	Export cleaned data to .csv for Power BI use	High

3.2 Python-Based Visualizations

ID	Visualization	Description
FR4	Bar Plot	Avg Price by Room Type
FR5	Count Plot	Listings by Neighbourhood Group
FR6	Scatter Plot	Availability vs Reviews
FR7	Bar Plot	Avg Price by Neighbourhood Group
FR8	Pie Chart	Room Type Distribution
FR9	Heatmap	Feature Correlation
FR10	Confusion Matrix	(Optional, for classification-based analysis)

3.3 Power BI Dashboards

Dashboard 1: *"Airbnb Market Overview NYC"*

ID	Feature	Description
FR11	Bar Chart	Average Price by Room Type

ID	Feature	Description
FR12	Pie Chart	Room Type Share
FR13	TreeMap	Revenue Potential by Neighbourhood
FR14	Map	Geospatial Distribution by Price/Review
FR15	KPI Cards	Total Listings, Avg Price, Availability

Dashboard 2: *"Airbnb Room Trends NYC"*

ID	Feature	Description
FR16	Line Chart	Review Activity Over Time
FR17	Bar Chart	Superhost vs Regular Host
FR18	Scatter Chart	Host Listing Count vs Reviews
FR19	KPI Cards	Active Hosts, Occupancy Rate, Review Score

4. Filters & Slicers

ID	Filter	Applies To
FR20	Room Type	All visuals
FR21	Neighbourhood Group	All visuals
FR22	Availability	Review-based and Price visuals
FR23	Yearly View	(Optional if time-based review trends available)

5. Inputs

- cleaned_airbnb.csv (cleaned dataset)

- Pre-cleaning in Python

- Original Airbnb dataset (from source)

6. Outputs

- 2 Power BI Dashboards (.pbix)

- 6 Python visualizations (images for portfolio/report)

- Final PDF/Word documents (SRS, DRD, BRD, FRD)

- GitHub project with README and visuals

7. Acceptance Criteria

Criterion	Description
Functionality	All visuals and filters work correctly
Clarity	Charts have labels, legends, and proper titles
Relevance	Visuals align with strategic business questions
Accuracy	Data properly cleaned and insights are correct
Usability	Power BI dashboards are user-friendly and responsive

8. Assumptions

- The dataset is static (no live update needed)

- Visuals will be based on 1 year's Airbnb NYC data

- Analysis focuses on high-level business insights