

# Chapter 1

## INTRODUCTION

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### 1.1 BACKGROUND

Data analysis is the process of inspecting, cleansing, transforming, and modeling data with the goal of discovering useful information, informing conclusions, and supporting decision-making. Data analysis has multiple facets and approaches, encompassing diverse techniques under a variety of names, and is used in different business, science, and social science domains. In today's business world, data analysis plays a role in making decisions more scientific and helping businesses operate more effectively. Data analytics is based on statistics. It has been surmised statistics were used as far back as Ancient Egypt for building pyramids. Governments worldwide have used statistics based on censuses, for a variety of planning activities, including taxation.

The emphasis on statistical and analytical skills in many computer science programs makes them a good fit for aspiring data analysts. This degree is also widely available.

### 1.2. MOTIVATION

Given the considerable amount of data collected by industries nowadays, they need to adopt the right analytics strategies for better decision-making.

In this conceptual blog, we will start by building your understanding of the data analysis process before providing an in-depth explanation of all the steps involved.

### 1.3 PROBLEM DEFINITION

Through this tutorial, we will develop a project. Each subsequent chapter in this tutorial deals with a part of the larger project in the mini-project section. This is thought to be an applied tutorial section that will provide exposure to a real-world problem. In this case, we would start with the problem definition of the project. is probably one of the most complex and heavily neglected stages in the big data analytics pipeline. In order to define the problem a data product would solve, experience is mandatory. Most data scientist aspirants have little or no experience in this stage.

Most big data problems can be categorized in the following ways –

Supervised classification

Supervised regression

Unsupervised learning

Learning to rank

## 1.4 SOLUTION

- **User-Friendly Reporting:** The app facilitates seamless reporting for users who have lost items, allowing them to input product details, such as name and Data location, through an intuitive interface. This user-friendly feature ensures efficient data entry, enabling quick dissemination of information.
- In our approach we used educational data mining to analyze learning behavior. We present the process of categorization of students questions and through a clustering of students. This works open perspectives in assisting and their Q&A section. In each of these four tasks we extracted knowledge that describes student behavior. Data mining concept in higher education is an innovative emerging research area. The educational data mining (EDM) is related with developing the methods of exploring the unique types of data that come from educational settings.

- **1.5OBJECTIVES AND SCOPE**

One of the first steps to define data analytics project scope and objectives is to use the SMART criteria: Specific, Measurable, Achievable, Relevant, and Time-bound.

SMART objectives help you clarify what you want to achieve, how you will measure your progress, whether your goals are realistic, how they relate to your business needs, and when you expect to complete them. SMART objectives also help you communicate your expectations to your stakeholders, team members, and clients, and avoid scope creep or ambiguity.

The journey started with data cleaning, ensuring accuracy and consistency. Then, I dived deep into analysis, uncovering trends, patterns, and opportunities. Finally, crafted a robust data model that has the potential to drive strategic decision-making.

1 Data manipulation and analysis

2 Understand sessions and events

3 Data visualization and reporting

4 Handling time series data

5 Analyze time series data to explore user behavior

6 Predict top clicks, carts, and orders

## 1.6. SELECTION OF LIFE CYCLE MODEL FOR DEVELOPMENT

Selecting the right life cycle model for our data sales analysis project depends on factor life project size ,complexity , requirments ,and team expertise . popular options include that waterfall ,agile ,spiral ,and Iterative models

### 1. Idea Phase:

In the idea phase of the Waterfall model, the concept for the Lost and Found app was conceptualized and the need for such an application was identified. The idea was to create a centralized platform where users can report lost items and search for found items, streamlining the process of reuniting lost items with their owners.

### 2. Planning Phase:

During the planning phase, a detailed project plan was created outlining the timeline, budget, resources, and milestones for the development of the Lost and Found app. The requirements were gathered from potential users and stakeholders to understand their needs and expectations from the app.

### 3. Analysis Phase:

In the analysis phase, the gathered requirements were analyzed and documented in detail. Use cases, user stories, and functional specifications were created to define the behavior and functionality of the Data Analysis Sales app.

### 4. Design Phase:

The design phase involved creating the architectural design, database design, and user interface design for the Lost and Found app. The system architecture was designed to ensure scalability, performance, and reliability of the application. The database design included defining the schema, tables, and relationships to efficiently store and retrieve data related to lost and found items.

### 5. Implementation Phase:

In the implementation phase, the actual development of the Lost and Found app began based on the finalized designs and specifications. The development team followed the coding standards and best practices to build the app using the selected technology stack.

### 6. Testing Phase:

The testing phase involved rigorous testing of the Lost and Found app to identify and fix any bugs, errors, or issues. Various testing techniques such as unit testing, integration testing, and user acceptance testing were conducted to ensure the functionality, performance, and usability of the app.

By following the Waterfall model, the development of the Lost and Found app was systematically planned and executed in a sequential manner, ensuring that each phase was completed before moving on to the next. This approach helped in minimizing risks and ensuring the successful delivery of a high-quality app that meets the needs and expectations of the users.

## **LITERATURE SURVEY**

It seems like you're interested in conducting a physical survey for data analysis related to sales. Conducting a physical survey involves collecting information directly from individuals through face-to-face interactions. Here's a general guide on how you might approach this process:

### **1. PHYSICAL SURVEY**

It seems like you're interested in conducting a physical survey for data analysis related to sales. Conducting a physical survey involves collecting information directly from individuals through face-to-face interactions. Here's a general guide on how you might approach this process:

#### **1 Define Objectives:**

Clearly outline the objectives of your survey. What specific information are you looking to gather regarding sales?

#### **2 Target Audience:**

Identify the target audience for your survey. This could be customers, potential customers, or individuals within specific demographics.

#### **3 Survey Questions:**

Develop a set of well-crafted questions. Ensure they are clear, unbiased, and directly related to your objectives.

#### **4 Survey Format:**

Decide on the format of your survey. Will it be a structured questionnaire, interviews, or a combination? Ensure that it can be easily understood by your target audience.

## **DISADVANTAGES**

- **Limited Accessibility for Non-Smartphone Users:** One notable disadvantage is the app's reliance on smartphones, which may exclude individuals without access to such devices. This limitation could hinder the inclusivity of the platform, particularly among segments of the population with limited technological resources.
- **Potential Privacy Concerns:** The app's emphasis on community collaboration and secure communication channels may raise privacy concerns for some users. Individuals might be hesitant to share personal details or engage in direct communication with strangers, impacting the effectiveness of the app in certain scenarios.
- **Dependence on User Participation:** The success of the app relies heavily on active user participation in reporting and finding lost items. A lack of widespread adoption or engagement could diminish the app's overall effectiveness, as it requires a critical mass of users to maximize its potential and effectiveness.
- **Risk of Misuse or False Reporting:** An inherent challenge lies in the potential for misuse, where users may submit false reports or claims. This could result in unnecessary notifications and coordination efforts, impacting the credibility of the app and requiring additional measures to validate and authenticate user submissions.

## 2. WEB-BASED SURVEY

Web surveys or internet surveys are defined as a data collection method where surveys or questionnaires are sent over the internet to a sample of respondents and they can respond to this survey over the world wide web. Respondents can be sent web surveys via various mediums such as email, embedded over the website, social media, etc. In web surveys, respondents answer the [online questionnaire](#) with the help of a web browser, and the survey responses are stored in web-based databases.

An example of an [online web survey](#) is a retail giant wanting to conduct a market research study about the purchasing habits of its customers. In this case, the customers can receive an [email survey](#) from the retail organization asking them to complete the survey. Other survey distribution methods can include SMS surveys, website embedding, social media, etc.

Organizations implement web surveys with the help of efficient [web survey software](#) in order to gain insights and feedback about upcoming products or services, changes in marketing strategies, enhancement in current features, etc. With the progress made by the internet, more and more organizations depend on the data received and analyzed from web surveys to make integral changes

in their functioning.

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**PROJECT PLANING AND MANAGEMENT**

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**3.1. PROPOSED SYSTEM**

- In the propose system, Dashboard concept and data mining techniques are used to analysis the student performance.
- Dashboard is a visual representation of data. The theoretical data takes more time to get the information from the data but via graphical representation, the user can get the information in just a glance. It takes less time to get the knowledge from the data.
- The graphical representation includes graph. Data Mining is the concept of getting the needed information from the large datasets. In that data mining techniques, they used the Naïve bayes algorithm and generations these techniques are help to analysis the data and then display the visual representation.

**ADVANTAGES**

- Efficiently connects users who have lost items with those who have found them, streamlining the retrieval process.
- Fosters a sense of community responsibility by encouraging active user engagement in assisting each other with lost belongings.
- Enhances user experience with real-time notifications, secure communication, and a user-friendly interface for reporting and finding items.

**3.2. RISK ANALYSIS**

Risk analysis is an essential step in the development process to identify potential risks that could impact the successful completion of the project and to devise strategies to mitigate these risks.

Here's a detailed risk analysis for the data analysis sales app:

**1. Technical Risks:**

**Technology Stack Compatibility:** There might be compatibility issues between different technologies used in the app, leading to integration challenges.

**Mitigation:** Conduct thorough research and testing to ensure that the selected technologies are compatible and work well together.



**Database Performance:** The database may face performance issues due to a large volume of data or inefficient queries.

**Mitigation:** Optimize database queries, implement indexing, and use caching mechanisms to improve database performance.

## **2. Operational Risks:**

**Server Downtime:** The app may experience downtime due to server issues, affecting the availability of the service to users.

**Mitigation:** Implement robust server architecture with failover mechanisms and monitoring tools to quickly identify and resolve server issues.

**Data Security:** There might be risks of data breaches or unauthorized access to sensitive user information.

**Mitigation:** Implement strong encryption, secure authentication mechanisms, and regular security audits to protect user data and ensure compliance with data protection regulations.

## **3. Financial Risks:**

**Budget Overruns:** The project may exceed the allocated budget due to unforeseen expenses or changes in scope.

**Mitigation:** Monitor project expenses closely, identify cost-saving opportunities, and maintain a contingency fund to cover unexpected costs.

**Return on Investment (ROI):** The app may not generate the expected revenue or achieve the desired ROI due to low user adoption or competitive market landscape.

**Mitigation:** Conduct market research, identify target users, and implement effective marketing strategies to promote the app and increase user adoption.

## **4. Schedule Risks:**

**Project Delays:** The project may face delays due to unforeseen challenges, changes in requirements, or resource constraints.

**Mitigation:** Develop a realistic project timeline, allocate resources effectively, and regularly monitor progress to identify and address potential delays proactively.

**Scope Creep:** Changes in requirements or additional features may be requested during the development process, leading to scope creep and delays.

**Mitigation:** Define the scope of the project clearly, manage stakeholder expectations, and follow a change management process to evaluate and approve any changes to the scope.

## **5. Legal and Compliance Risks:**

**Regulatory Compliance:** The app may need to comply with specific regulations or legal requirements related to data protection, privacy, and consumer rights.

**Mitigation:** Stay informed about relevant regulations and legal requirements, consult with legal experts, and implement necessary measures to ensure compliance with applicable laws.

By conducting a comprehensive risk analysis and implementing effective risk mitigation strategies, the development team can minimize potential risks and increase the likelihood of successfully completing the Lost and Found app within the planned timeline and budget while delivering a high-quality and secure application that meets the needs and expectations of the users.

### 3.3 FEASIBILITY STUDY

The main objective of feasibility study is to test the Technical, operational and economical for adding new modules and debugging old running system. All system is feasible for adding new modules and debugging old running system.

There are aspects in the feasibility study portion of the preliminary investigation:

- Economic feasibility
- Technical feasibility
- Operational feasibility

#### 3.3.1 ECONOMICAL FEASIBILITY

The economic feasibility of a Salon Management System overall depends on several factors, including the development cost, maintenance cost, and potential benefits to the rganization.

The COCOMO (Constructive Cost Model) is a model used to estimate the effort, cost, and timerequired to develop a software application. Using the COCOMO model, the economic feasibilityof a public service web-based complaints application can be estimated based on the

	Ab	Bb	Cb	Db
Organic	2.4	1.05	2.5	0.38
Semidetached	3.0	1.12	2.5	0.35
Embedded	3.6	1.20	2.5	0.32

size and complexity of the application. The COCOMO model estimates the cost based on three differentmodels: Basic, Intermediate, and Detailed.

Here is an example estimation of the development cost for a public service web-basedomplaints application using the Intermediate COCOMO mode

Calculation

KLOC=3.0

$$\begin{aligned}\text{Effort per Month (E)} &= ab * (\text{KLOC})^{bb} \\ &= 3.6 * (3.0)^{1.20} \\ E &= 13.45(\text{approx}) \text{ person- Month}\end{aligned}$$

$$\begin{aligned}\text{Development Time(D)} &= cb * (E)^{db} \\ &= 2.5 * (13.45)^{0.32} \\ &= 5.74 \text{ month}\end{aligned}$$

$$\begin{aligned}\text{No. of Team Members} &= E/D \\ &= 13.45/5.74 \\ &= 2.89 \\ &= \sim 3 \text{ person's approx}\end{aligned}$$

For personal cost we did the following calculations:

Generally the computer engineer has Rs.15000 salary per month, therefore 1 month = Rs.15000

Per day he works only 8 hours

Therefore  $30 * 8 = 240$  hours

He works 240 hours per month

Therefore,

$15000/240 = \text{Rs } 62.5$  for 1 hour

We are two project partners. We work for 5 hr a week i.e. 5 weeks a month

It's important to note that this is just an estimation, and the actual development cost can vary based on many factors, including the specific requirements, the development methodology used, and the experience level of the development .

### 3.3.2 TECHNICAL FEASIBILITY

This study is carried out to check the technical feasibility, that is, the technical requirements of the system. To develop this system, we first worked with web applications and then it would be technically feasible. The requirements here are very modest because the system here supports very basic window version which is 8 and above. So, this system is technically feasible because it needs only window with a basic version.

#### **HARDWARE COSTS**

Laptop(Asus Tuf F15)	60,000/-
Wireless Lapcare Mouse1	2,500/-
TB HDD	2,780/-
8GB RAM(DDR 2)	1850/-
tel core i5 (2.8ghz)processor	16,000/-

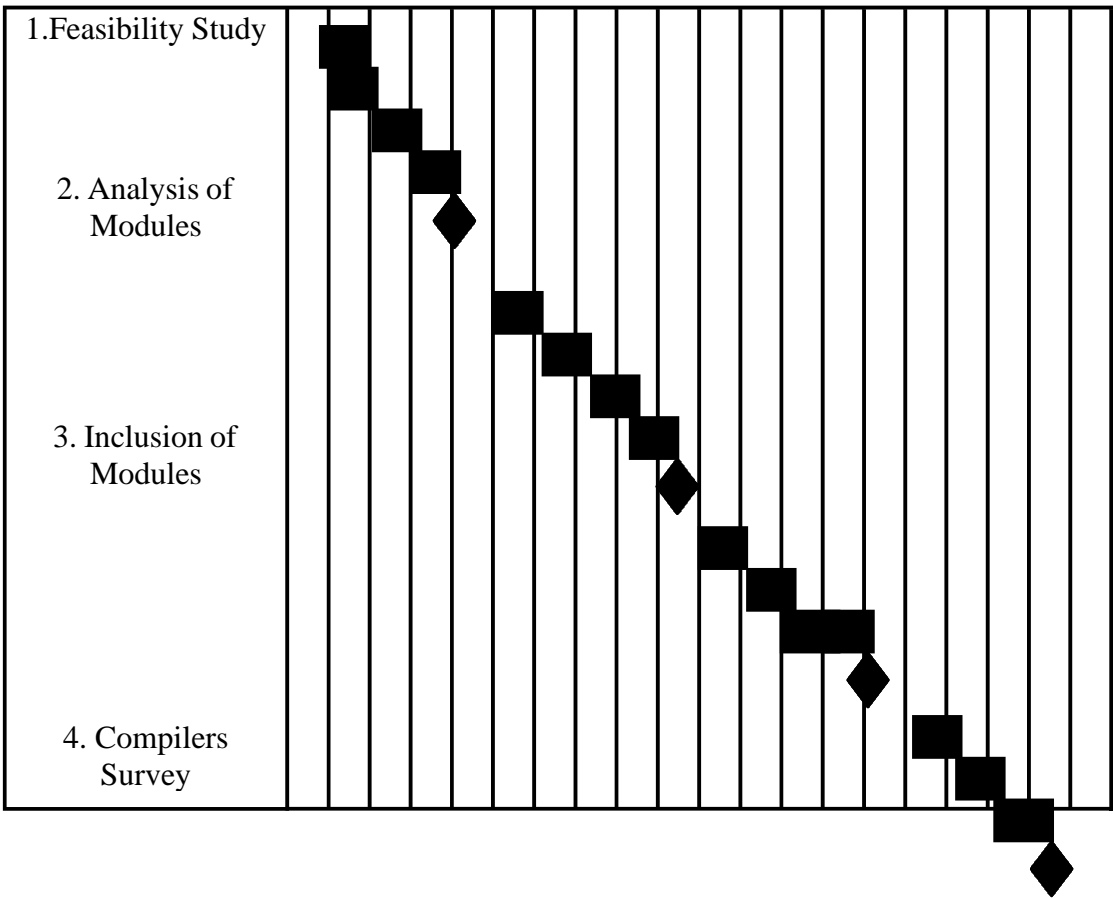
#### **SOFTWARE COSTS**

Java, XML, Firebase	FREE
Android Studio	FREE

3.3.3 OPERATIONAL FEASIBILITY

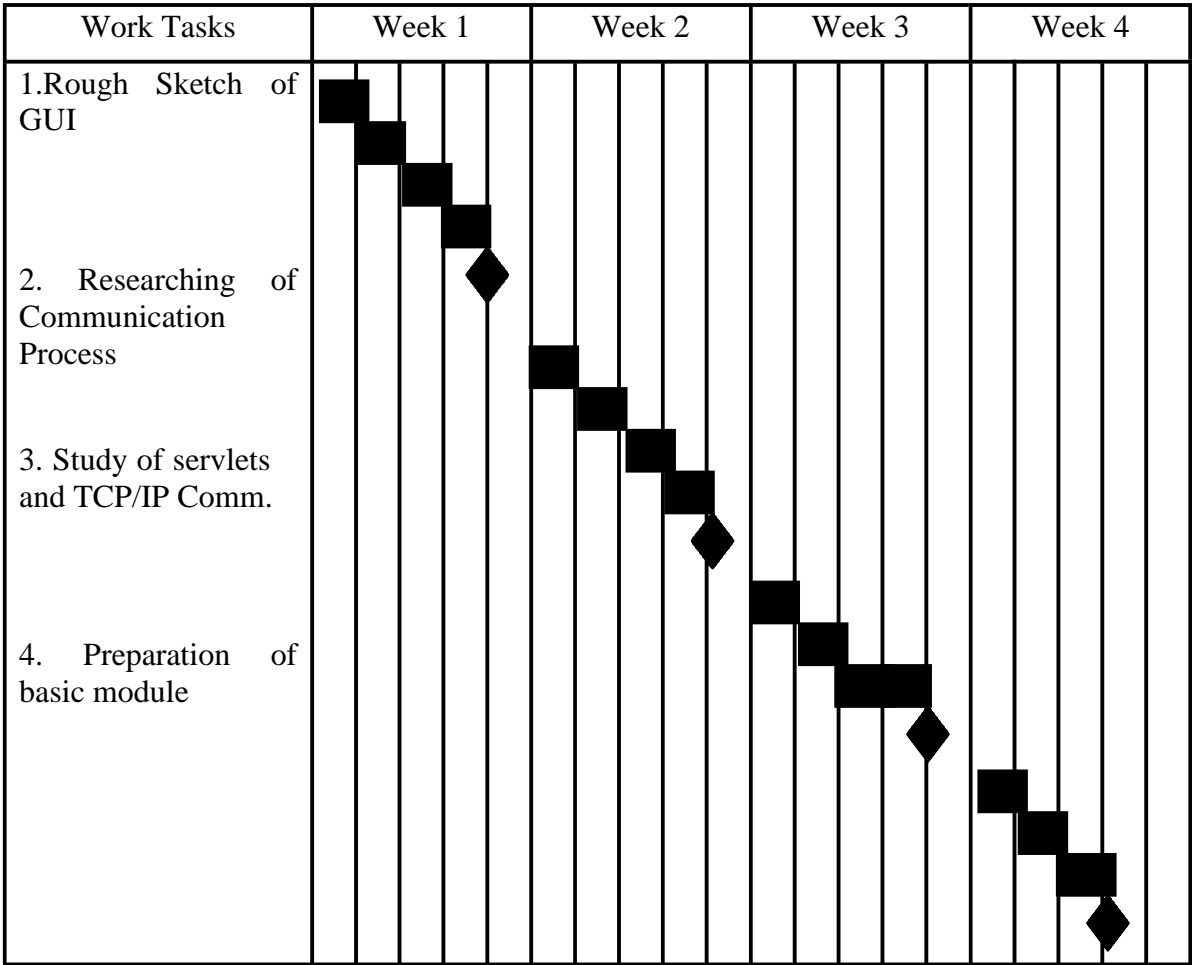
This component would assess the operational requirements for running the website, including identifying necessary resources such as staff, logistics, and inventory management systems. This would also include analyzing potential risks and challenges that may arise in the process of operating the website.

i] September Month

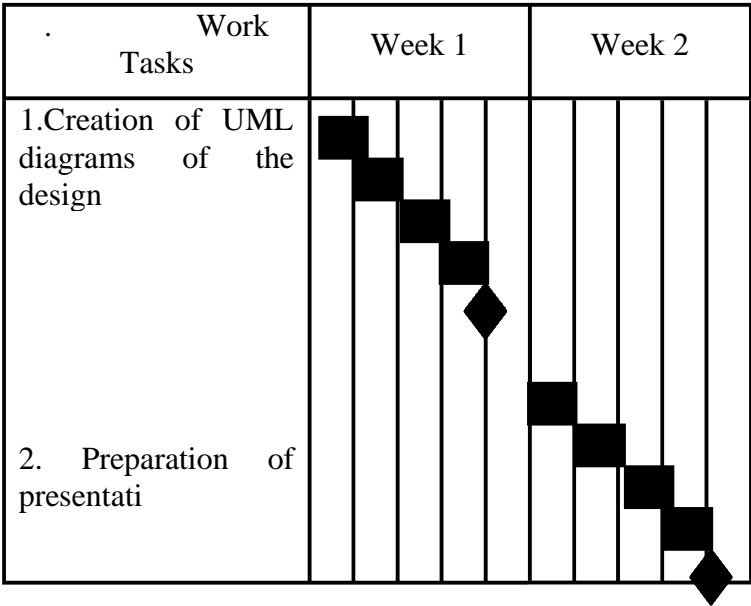


i. I i

ii. October Month



i. November Month



## Chapter 4

### SYSTEM REQUIREMENT SPECIFICATION

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#### 4.1. HARDWARE REQUIREMENT

Computer or Laptop.

RAM : 1 GB(Furthwr that as per requirement)

Display : 1024\*768,true type Color-32 Bit

Mouse : Any Normal Mouse

Keyboard : Any window supported Keyboard

Mobile Handset Device

A connection to the internet

Computer or Laptop device

#### 4.2. SOFTWARE REQUIREMENT

- Operating System: Windows 10.
- Database: Firebase.
- Supported Internet browser: Chrome - Latest version.
- Platform:
- Editor: Android Studio.
- Front-end: XML
- Backend: Java

#### 4.3. FUNCTIONAL REQUIREMENTS

##### 1. User Registration and Authentication:

##### 1.1 User Registration:

Users should be able to register by providing their email address, creating a password, and entering personal information such as name, contact number, and address.

Implement email verification to confirm user registration.

##### 1.2 User Login:

Registered users should be able to log in to their accounts using their email address and password.

##### 1.3 Password Recovery:



Provide a password recovery mechanism to allow users to reset their passwords by sending a password reset link to their registered email address.

## **2. Item Reporting:**

### **2.1 Report Lost Item:**

Registered users should be able to report a lost item by providing details such as item description, location where it was lost, date/time of loss, and uploading photos of the lost item.

Generate a unique identification number (ID) for each reported lost item.

### **2.2 Edit/Delete Reported Item:**

Allow users to edit or delete their reported items from their profile.

### **2.3 Item Status Updates:**

Allow users to update the status of their reported items (e.g., item found, item returned) to keep the information accurate and up-to-date.

## **3. Item Searching:**

### **3.1 Search Found Item:**

Allow users to search for found items by entering keywords, location, category, or unique identification number (ID).

Display search results with detailed information and contact details of the finder.

### **3.2 View Item Details:**

Allow users to view detailed information and photos of reported and found items.

## **4. Notifications:**

### **4.1 Match Notifications:**

Send email notifications to users when a matching found item is reported, based on the description or unique identification number (ID) of their reported lost item.

### **4.2 Status Update Notifications:**

Send reminders to users to update the status of their reported items to keep the information accurate and facilitate the reuniting process.

## **5. User Profiles:**

### **5.1 Manage Profile:**

Allow users to create, edit, and manage their profiles with personal information, reported items, and found items.

Provide options to change password and update profile settings.

### **5.2 View Reported and Found Items:**

Display a list of reported and found items associated with the user's profile for easy management and tracking.

## **6. Administration Tools:**

### **6.1 Manage Reported Items:**

Provide administrators with tools to review, approve, edit, or delete reported items before they are published on the platform to ensure the quality and accuracy of the information.

## **4.3.1. External Interface Requirements:**

### **1. User Interface:**

- All the contents in the project are implemented using Graphical User Interface (GUI).
- Every conceptual part of the projects is reflected using the frontend.

### **2. Software Interfaces :**

- Using XML we have created frontend tool design and Java for coding.
- Firebase database is used for back end to store the Data Analysis Sales and Found items details.

## **4.4. NON-FUNCTIONAL REQUIREMENTS:**

### **1. Performance Requirements:**

#### **1.1 Response Time:**

- The Lost and Found app should provide quick response times for searching and displaying items to ensure a smooth and responsive user experience.

#### **1.2 Scalability:**

- The system should be able to handle a large number of concurrent users and be scalable to accommodate increasing user loads and data volumes over time.

#### **1.3 Load Handling:**

- The system should be able to handle high traffic loads efficiently during peak usage hours without performance degradation or downtime.

### **2. Security Requirements:**

#### **2.1 Data Encryption:**

- Implement strong encryption algorithms to protect user data, sensitive information, and communication between the client and server.

## **2.2 Authentication and Authorization:**

- Implement secure authentication mechanisms, such as multi-factor authentication (MFA), to verify the identity of users and prevent unauthorized access to user accounts and system resources.
- Implement role-based access control (RBAC) to manage user permissions and restrict access to administrative features and sensitive data.

## **2.3 Data Protection:**

- Implement measures to protect against data breaches, unauthorized access, and data loss, such as regular backups, secure data storage, and disaster recovery plans.

## **3. Usability Requirements:**

### **3.1 User Interface:**

- The user interface should be intuitive, user-friendly, and accessible on different devices and screen sizes to provide a seamless and consistent user experience.

### **3.2 User Guidance:**

- Provide clear instructions, tooltips, and error messages to guide users through the process of reporting and searching for items and using other features of the app effectively.

### **3.3 Accessibility:**

- Ensure that the app is accessible to users with disabilities by following accessibility standards and guidelines, such as Web Content Accessibility Guidelines (WCAG), and implementing features like keyboard navigation, screen reader support, and text-to-speech capabilities.

## Chapter 5

### SYSTEM DESIGN

#### 5.1. SYSTEM ARCHITECTURE

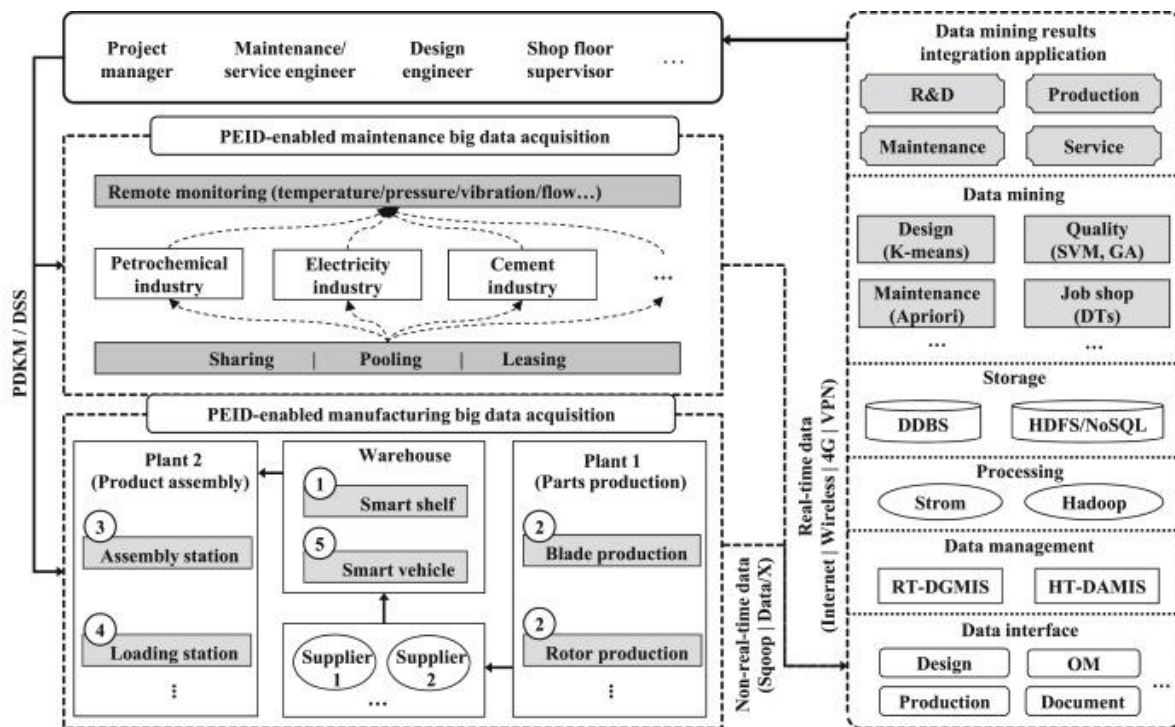


Fig 5.1: System Architecture

The provided image depicts a flowchart illustrating the process of managing lost and found items using a mobile application. It highlights the smooth and efficient manner in which lost items can be reported and found items can be reunited with their owners.

The increasing pressure from manufacturing industry on the energy consumption, especially the accompanying pollution threats, calls for a more environmental-friendly production mode. Cleaner production (CP) has been hailed for the several economic, environmental and social benefits it can provide (Silva , Kantola et al., , and is considered as one of the most important means for manufacturing enterprises to realize sustainable production .

### **5.1.1 MODULES**

#### **1. Data Collection:**

- Gathering data from various sources such as sales transactions, CRM systems, e-commerce platforms, and other relevant sources.

#### **2. Data Cleaning and Preprocessing:**

- Cleaning and handling missing data.
- Standardizing formats and units.
- Removing duplicates.
- Transforming data into a suitable format for analysis.

#### **3. Exploratory Data Analysis (EDA):**

- Descriptive statistics to summarize and explore the main characteristics of the dataset.
- Data visualization techniques (e.g., charts, graphs) to identify patterns and trends in the data.

#### **4. Sales Performance Metrics:**

- Calculating and analyzing key performance indicators (KPIs) such as sales revenue, profit margins, conversion rates, and customer acquisition costs.

#### **5. Product Analysis:**

- Analyzing the performance of individual products or product categories.
- Identifying best-selling products and slow-moving inventory.

#### **6. Market Basket Analysis:**

- Understanding which products are often purchased together.
- Recommending complementary products to boost sales.

## 5.2. DATA FLOW DIAGRAM

### DFD LEVEL 0

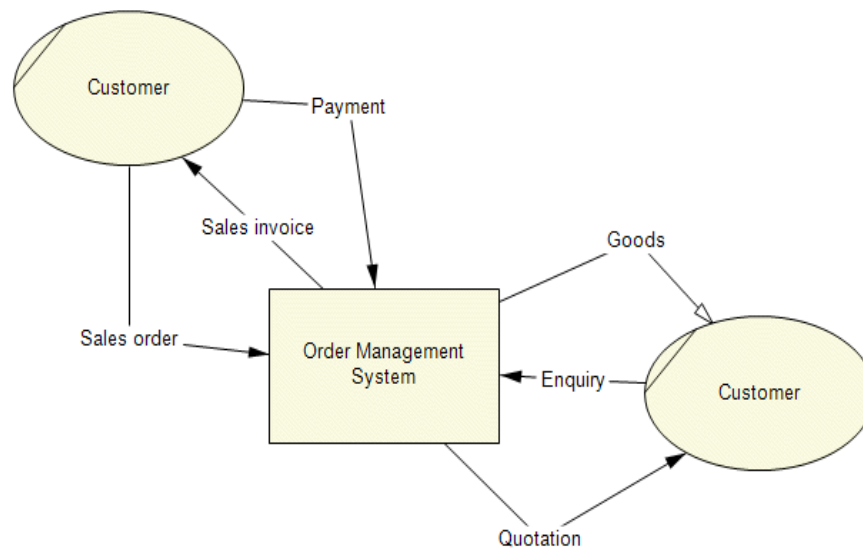


Fig: 0 Level DFD

- **DFD LEVEL 1**

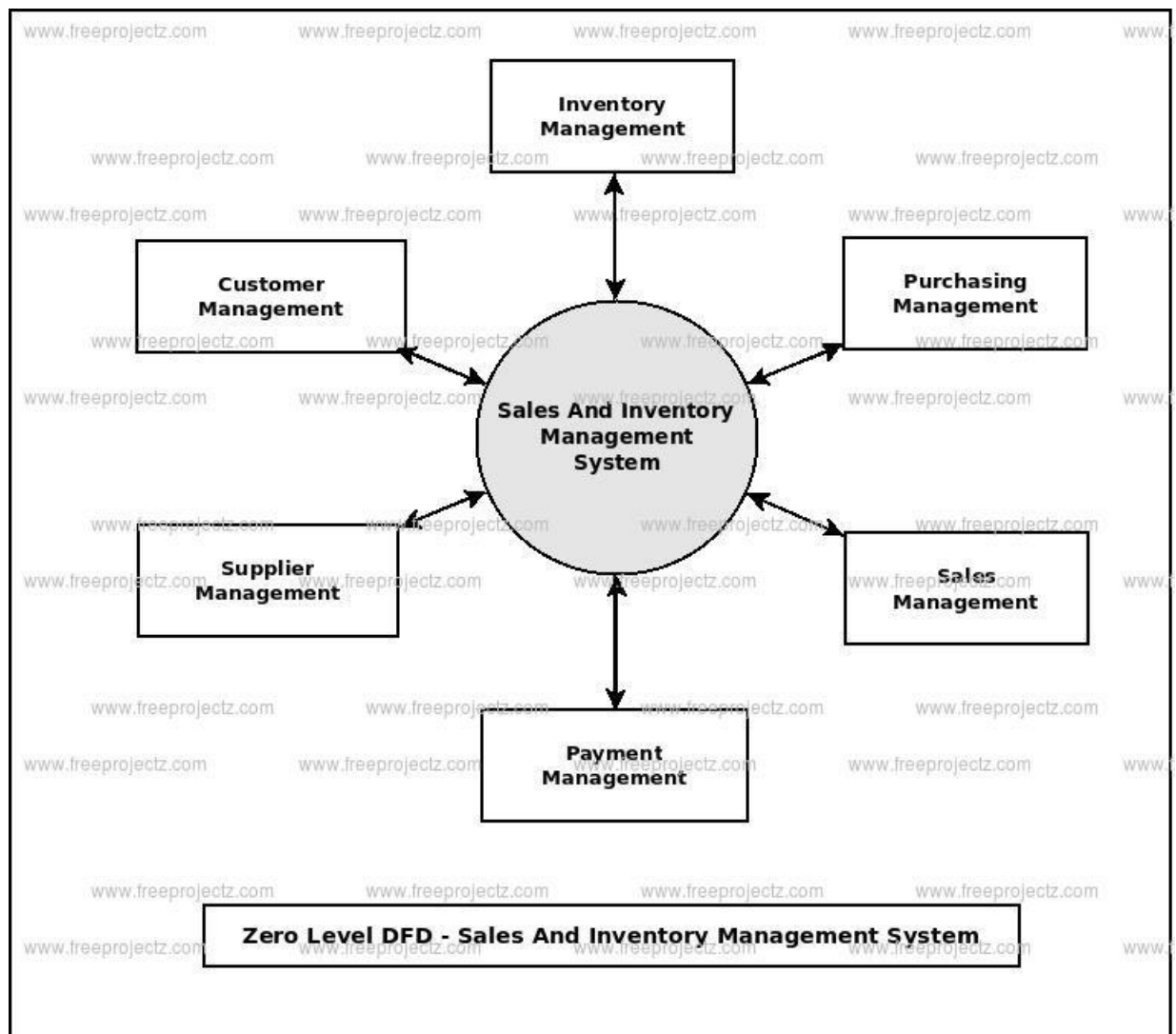


Fig: 1 Level DFD

## 5.3. UML DIAGRAMS

### 5.3.1. USE CASE DIAGRAM

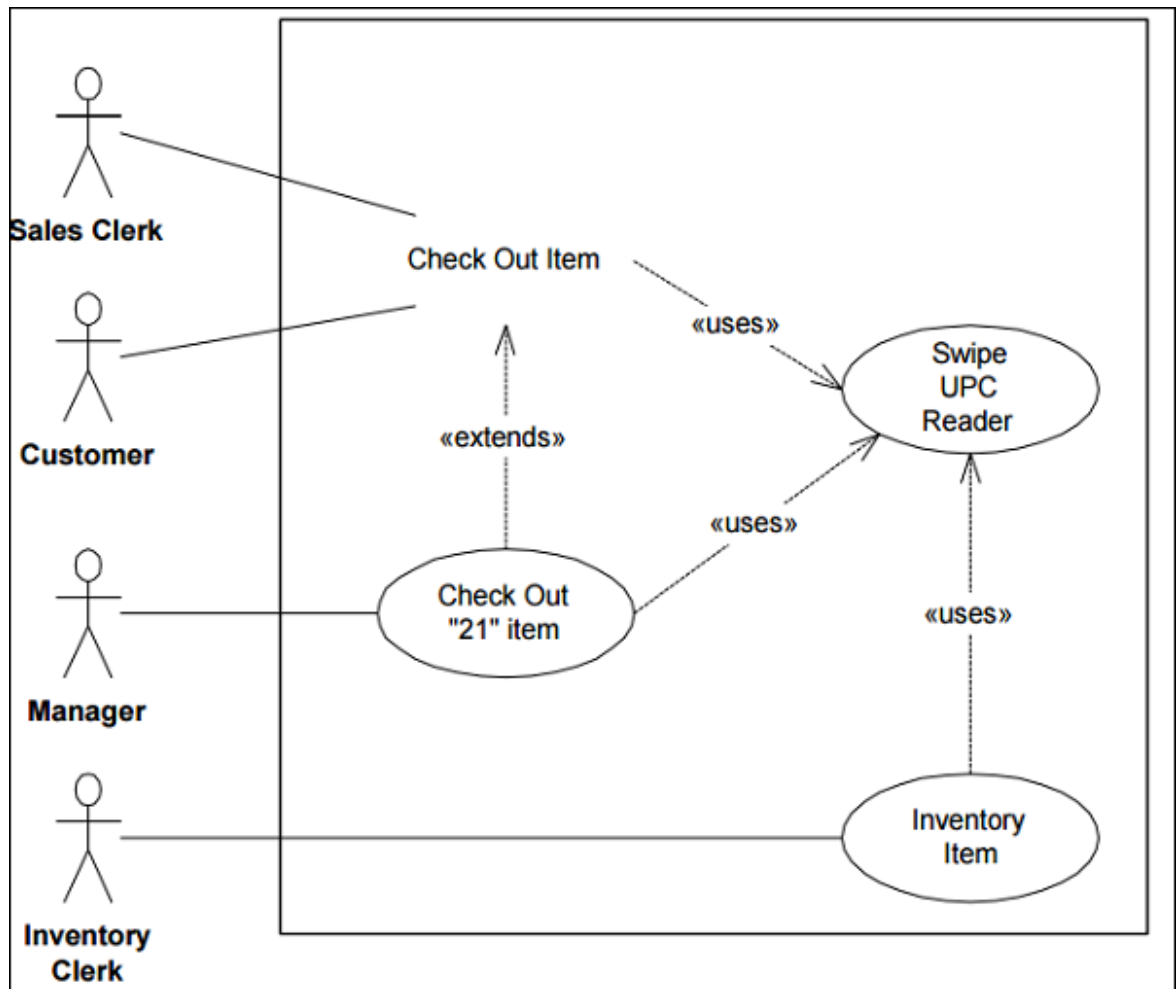
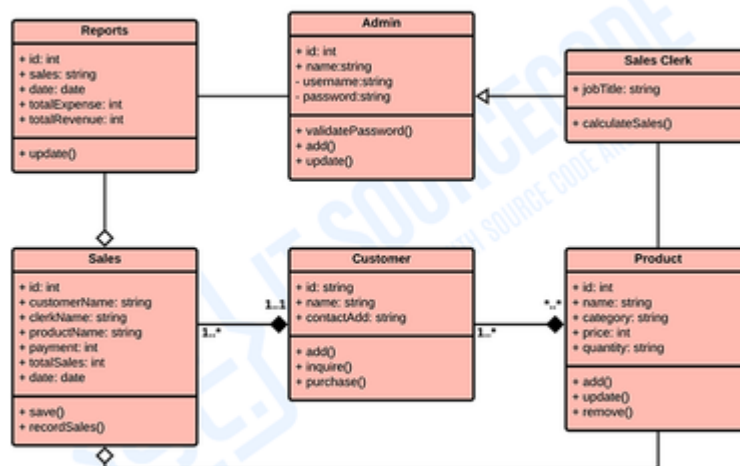


Fig 5.3.1 Use Case Diagram



### 5.3.2. CLASS DIAGRAM

#### POS (POINT OF SALE) SYSTEM



#### CLASS DIAGRAM

**Fig 5.3.2** Class Diagram

### 5.3.3. SEQUENCE DIAGRAM

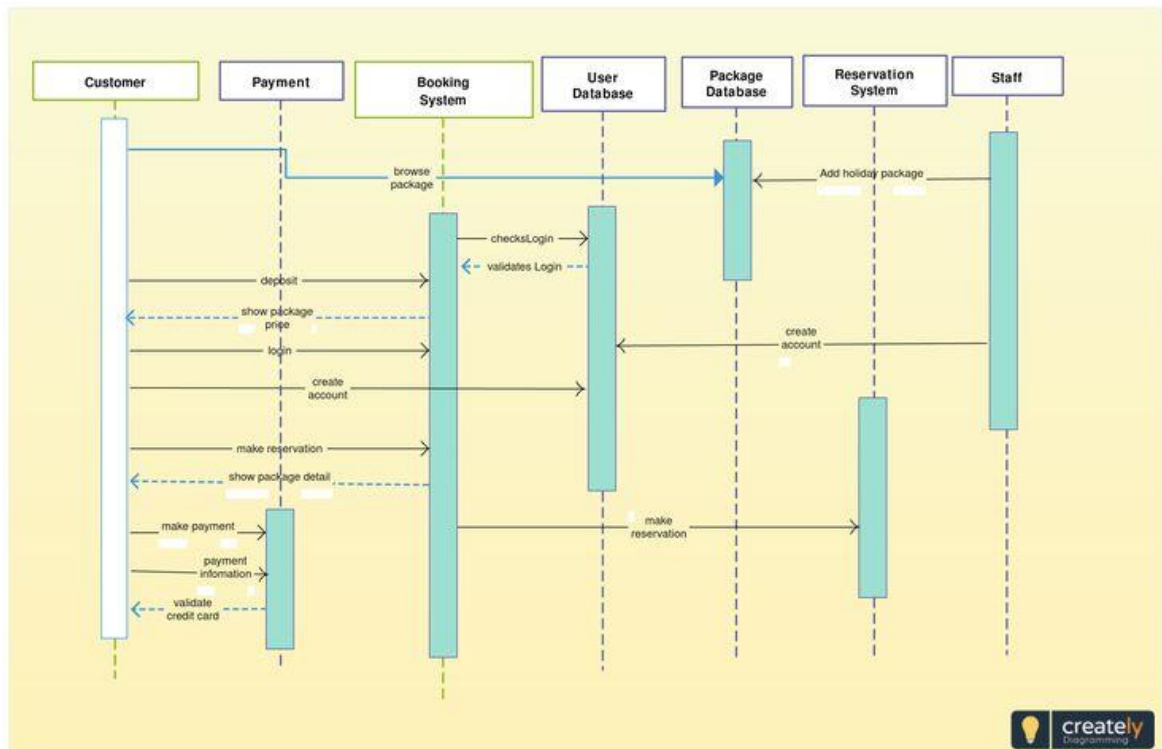
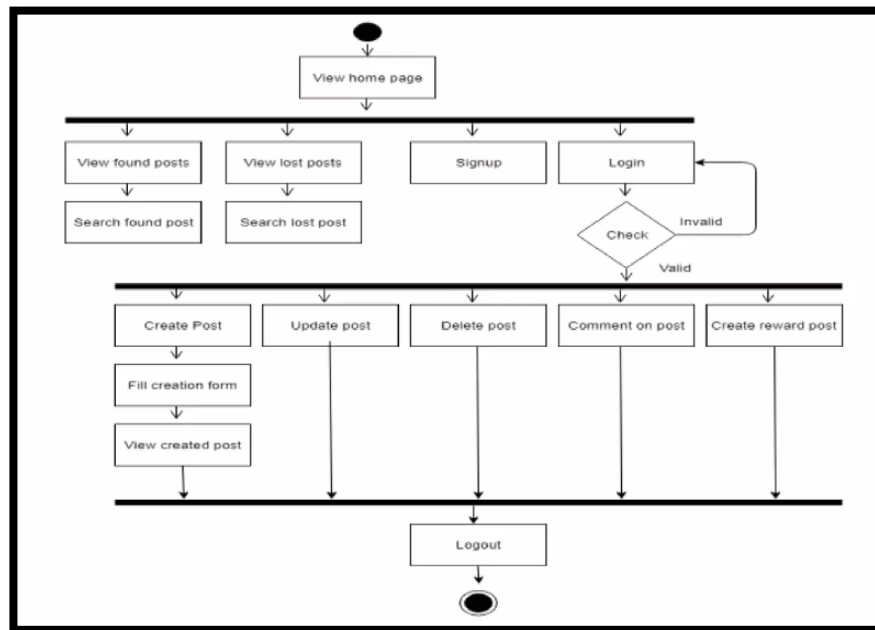


Fig 5.4.3 Sequence Diagram

### 5.3.4. ACITVITY DIAGRAM



**Fig 5.4.3** Activity Diagram

## Chapter 6

### CODING/IMPLEMENTATION

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#### 6.1. ALGORITHM / STEPS

##### Step 1: User Registration and Authentication

###### 1. Data Collection:

- Gather relevant sales data from various sources such as transactional databases, CRM systems, POS terminals, and online sales platforms.
- Ensure data quality by cleaning and preprocessing the data to remove duplicates, inconsistencies, and errors.

###### 2. Exploratory Data Analysis (EDA):

- Perform exploratory data analysis to understand the characteristics and distribution of the sales data.
- Visualize the data using charts, histograms, and summary statistics to identify patterns, trends, and outliers.

###### 3. Feature Engineering:

- Create new features or variables from the existing sales data that may be useful for analysis, such as customer segmentation, product categories, and time-based features.

###### 4. Data Transformation:

- Transform the data into a format suitable for analysis, such as aggregating sales data by time period (e.g., daily, weekly, monthly) or by customer segments.
- Normalize or standardize the data if necessary to ensure comparability between different variables.

###### 5. Statistical Analysis:

- Apply statistical techniques such as regression analysis, correlation analysis, and hypothesis testing to explore relationships between sales variables and identify factors influencing sales performance.

###### 6. Predictive Modeling:

- Build predictive models to forecast future sales trends based on historical data. This may involve techniques such as time series analysis, machine learning algorithms (e.g., linear regression, decision trees, neural networks), or forecasting methods (e.g., ARIMA, exponential smoothing).

###### 7. Segmentation Analysis:

- Segment customers or products based on sales behavior, demographics, or other relevant criteria to identify profitable market segments or product categories.
- Analyze sales performance within each segment to tailor marketing strategies and optimize resource allocation.

###### 8. Performance Evaluation:

- Evaluate the performance of the sales analysis models using appropriate metrics such as accuracy, precision, recall, or mean absolute error.
  - Validate the models using cross-validation techniques or by comparing predicted outcomes with actual sales data.
9. **Insights Generation:**
- Interpret the analysis results to extract actionable insights and recommendations for improving sales performance.
  - Communicate findings effectively to stakeholders through reports, dashboards, or presentations.
10. **Implementation and Monitoring:**
- Implement the recommended strategies or interventions based on the analysis findings.
  - Monitor sales performance over time and iterate on the analysis process as needed to adapt to changing market conditions or business objectives.

## **Step 2: Item Reporting**

- Allow logged-in users to report a lost item by providing item details, such as description, location, date/time of loss, and uploading photos.
- Generate a unique identification number (ID) for the reported lost item.
- Allow users to edit or delete their reported items from their profile.
- Validate the user's ownership of the item before allowing edits or deletions.
- Allow users to update the status of their reported items (e.g., item found, item returned) to keep the information accurate and up-to-date.

## **Step 3: Item Searching**

- Provide a search feature for users to search for found items by entering keywords, location, category, or unique identification number (ID).
- Display search results with detailed information and contact details of the finder.
- Allow users to view detailed information and photos of reported and found items by clicking on the item listing in the search results.

## **Step 4: Interaction with Found Items**

- Allow users to express interest or claim found items by sending a message to the finder through a contact form or messaging feature.
- Provide a messaging interface for users to communicate with the finder and arrange for the return of the lost item.

### **Step 5: User Profiles**

- Allow users to create, edit, and manage their profiles with personal information, reported items, and found items.
- Provide options to change password and update profile settings.
- Display a list of reported and found items associated with the user's profile for easy management and tracking.

By following this algorithm, the Lost and Found app will provide a comprehensive and user-friendly platform that allows users to report lost items, search for found items, and facilitate the process of reuniting lost items with their owners effectively and efficiently while ensuring security, reliability, and compliance with relevant regulations and standards.

## **6.2. SOFTWARE AND HARDWARE FOR DEVELOPMENT**

### **HARDWARE REQUIREMENT**

- Processor: i3, i5, or above
- 8 GB RAM
- Hard Disk or SSD space: 250, or 500 GB
- Mobile Handset Device
- A connection to the internet
- Computer or Laptop device

### **SOFTWARE REQUIREMENT**

- Operating System: Windows 10.
- Database: Firebase.
- Supported Internet browser: Chrome - Latest version.
- Platform: Android Studio.
- Editor: VS Code.
- Front-end: XML
- Backend: Java

## **6.3. MODULES IN PROJECT**

### **1. User Authentication Module**

Features: User registration, login, password recovery, and profile management.

Components: Registration form, login form, password reset functionality, user profile settings.

### **2. Item Reporting Module**

Features: Allows users to report lost or found items by providing details such as description, time, and location.

Components: Reporting form, image upload feature, location tracking, date and time picker.

### **3. Search and Matching Algorithm Module**

Features: Implements a sophisticated algorithm to identify potential matches between lost and found items based on the provided details.

Components: Search functionality, matching algorithm, result display interface.

#### **4. Communication Module**

Features: Facilitates secure communication between item owners and finders to coordinate the return of lost items.

Components: Messaging interface, secure messaging protocol, chat history.

#### **5. User Profile and Feedback Module**

Features: Manages user profiles, feedback, and ratings to build a credible and trustworthy community.

Components: User profile display, rating and review system, feedback form.

#### **6. Community Engagement Module**

Features: Promotes social responsibility and collaboration among users by fostering a community-driven approach.

Components: Community forum, sharing features, community guidelines.

#### **7. Security Module**

Features: Ensures the security and integrity of user data and communication within the app.

Components: Encryption algorithms, secure data storage, authentication mechanisms.

#### **8. User Interface (UI) and User Experience (UX) Module**

Features: Designs an intuitive, user-friendly, and visually appealing interface to enhance user engagement and satisfaction.

Components: UI design elements, navigation menu, interactive UI components.



## 6.4. IMPLEMENTATION

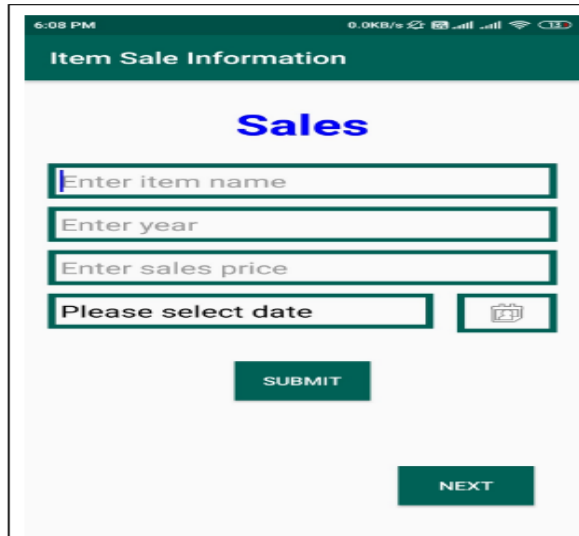


Fig 1: First activity image

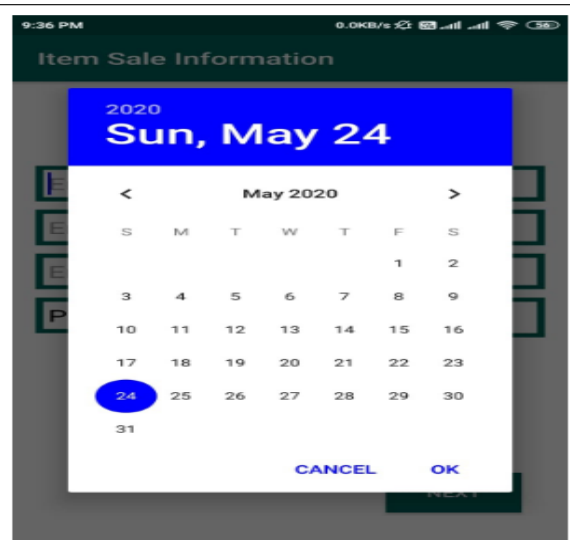


Fig 2: User click on a select date button ,its prompt a datepicker dialog

9:36 PM 0.5KB/s

### Item Sale Information

## Sales



   
  
  
  

Fig 3: When we select date and click ok button then date set to the textview as above

9:37 PM 2.2KB/s

### Item Sale Information

## Sales

Please enter item name.

Fig 4: Here user try to submit without item name and other fields so its prompt message display above

## Chapter7

### TESTING

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## 7.1.BLACK BOX/WHITE BOX TESTING

### 7.1.1. Black Box Testing:

Black box testing techniques – also known as dynamic analysis – are a crucial component of a comprehensive application security testing protocol. Blackbox testing techniques probe applications in production and have no view of source code and no information about the internal structure of the software.

Black box testing involves testing a system with no prior knowledge of its internal workings. A tester provides an input, and observes the output generated by the system under test. This makes it possible to identify how the system responds to expected and unexpected user actions, its response time, usability issues and reliability issues.

Black box testing is a powerful testing technique because it exercises a system end-to-end. Just like end-users “don’t care” how a system is coded or architected, and expect to receive an appropriate response to their requests, a tester can simulate user activity and see if the system delivers on its promises. Along the way, a black box test evaluates all relevant subsystems, including UI/UX, web server or application server, database, dependencies, and integrated systems.

An example of a [security technology that performs black box testing is Dynamic Application Security Testing](#) (DAST), which tests products in staging or production and provides feedback on compliance and security issues.

### 7.1.2. White Box Testing:

It is a vital software testing technique. Developers use this to verify the input-output flow and enhance usability, security, and design. Code is visible to testers in white box testing. Therefore, another name of this testing method is Clear box testing. You can also call it Glass box testing, Code-base testing, Transparent box testing, or Open-box testing. Developers use two parts of box testing approaches for testing applications. The counterpart of white-box testing is black-box testing. **Black box testing** involves an end-user-type perspective. But, white box testing looks after the inner functions of a software. So, it is all about internal testing.

## 7.2. TEST CASES IDENTIFICATION AND EXECUTION

Testing Aspect	Automation QA 🤖	Manual QA 🙋
Test Coverage / Regression	Easy to implement much broader test coverage.	Difficult to ensure sufficient component coverage in tests.
Test Execution	All done automatically via test framework such as Selenium, Cypress, Playwright, etc.	Done by the QA testers manually.
Test Efficiency	Time and effort saving. Quick and reliable automated feedback.	Time-consuming & much less efficient.
Types of Tasks	From Testing Scripts, API, and logic, to real user scenarios.	Only Manual types of tasks and real-user scenarios.

## Chapter 8

### RESULT AND DISCUSSION

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#### 8.1. RESULT AND DISCUSSION

The development and testing of the Lost and Found App project have been completed successfully, resulting in a robust and user-friendly platform for reporting lost items, searching for found items, and facilitating the process of reuniting lost items with their owners. The application meets the specified requirements and offers essential features for efficient and effective item management and user interaction.

##### 8.1.1. Results

- **Functionality:** The Lost and Found App provides comprehensive functionality for users to report lost items, search for found items based on keywords, location, category, or unique identification number, and interact with item finders through a messaging interface. Users can easily report lost items, update item statuses, and express interest or claim found items, ensuring a seamless and efficient item management experience.
- **User Interface:** The user interface of the Lost and Found App is intuitive, visually appealing, and user-friendly, enhancing usability and accessibility for users. It offers a clean layout, clear navigation, and interactive elements that make it easy for users to navigate, search for items, and interact with the platform, facilitating a smooth user experience.
- **Security:** The Lost and Found App implements robust security measures to protect users' personal information and item details. It employs encryption, secure authentication mechanisms, and regular security audits to ensure data confidentiality and integrity, safeguarding user data and maintaining trust and credibility.
- **Performance:** The Lost and Found App delivers real-time response and processing for item reporting, searching, and interaction functionalities. It maintains high availability with minimal downtime, providing users with a reliable and responsive experience and facilitating successful reunions between lost items and their owners.

##### 8.1.2. Discussion

- **User Feedback:** Gathering feedback from users will be crucial for identifying areas of improvement and addressing any usability or functionality issues. Conducting user surveys, feedback sessions, and usability tests can provide valuable insights into user preferences, pain points, and suggestions for enhancing the platform's features and user experience.
- **Continuous Improvement:** The project team should prioritize continuous improvement and iterate on the Lost and Found App based on user feedback, changing market trends, and technological advancements. This includes adding new features, enhancing existing functionalities, and optimizing performance for better user experience and platform growth.
- **Maintenance and Support:** Regular maintenance and support will be essential for ensuring the long-term success and sustainability of the Lost and Found App. This includes monitoring for bugs and errors, applying security patches, and providing timely customer support to address user inquiries and concerns, maintaining platform reliability and user satisfaction.

In conclusion, the Lost and Found App project has achieved its objectives of providing users with a reliable, user-friendly, and feature-rich platform for reporting lost items, searching for found items, and facilitating successful reunions between lost items and their owners.

## Chapter 9

### CONCLUSION AND FUTURE WORK

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#### 9.1. CONCLUSION

Based on the research that has been done, can be concluded as follows:

1. There are 3 rules of the highest final association formed that meets the value of support and confidence value is:

- a. If buying Milo Active 18 GRM, then it will buy ABC coffee milk 31 g with support 0.36% and confidence 75%.
- b. If buying Dancow 1 + Honey 200 GRM, then it will buy Ice Cream Corneto with support 0.36% and confidence 60%.
- c. If buying SIIP Roasted 6.5 grm, then it will buy Davos Strong 10 grm with support 0.36% and confidence 75%.

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2. With the rules formed above, then it is advisable to determine the layout of goods, i.e. Milo Active 18 grm adjacent to the ABC coffee milk 31 G, Dancow 1 + Honey 200 grm adjacent to Ice Cream Corneto, and Siip Roasted 6.5 grm adjacent to Davos Strong 10 grm.

3. From the results of the study, Pandak Baturraden can use the association rules that formed to establish a sales strategy that is to determine the layout of the goods closely because it has a relation to one another.

#### 9.2. FUTURE SCOPE

Starting a project is the first step to exploring all the opportunities associated with data analysis. At an interview for a data analyst job, the quality of the data analyst project will determine your suitability.

In modern times, enterprises seek data analysis familiar with a particular industry's challenges and therefore find any projects associated with that industry on their portfolios. It is essential that your projects reflect how you have strengthened your [Data Scientist](#) skills.

As you take on data analytics projects, you will acquire a deeper understanding of core concepts, you will acquire practical knowledge, and you will gain hands-on experience in data analysis.

Each assignment in data science starts with evaluating data, so data analytics is a skill every

data scientist must learn. This is a major reason why a practical, hands-on experience of data analytics projects is essential

This big data can be used to study passenger's behavior We can use this data for training a model using ML and building a smart AI based predictive system.

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