

# Shree Swaminarayan College of Computer Science

## StayEasy

### First Progress Report

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## 1. Introduction:

Welcome to the inaugural report of our hotel management system project, focusing on the crucial analysis phase. In this phase, we delve into the intricate details of understanding the current state of hotel operations, identifying key challenges, and formulating strategic insights to pave the way for the development of an innovative and efficient management system. This report serves as a comprehensive overview of our analysis process, highlighting the methodologies employed, the findings uncovered, and the critical insights gained to inform the subsequent phases of the project. Through meticulous analysis, we aim to lay a solid foundation for the successful implementation of our hotel management system, ultimately enhancing operational efficiency, guest satisfaction, and overall business performance.

### 1.1 Current Challenges in Hotel Management:

#### 1.1.1 Manual processes and outdated systems:

Many hotels still rely on manual processes for tasks such as reservation management, guest check-ins, and inventory tracking. These manual processes are time-consuming, prone to errors, and can lead to inefficiencies in operations.

#### 1.1.2 Disjointed workflows leading to inefficiencies:

In addition to manual processes, many hotels use fragmented or siloed systems for different aspects of their operations, such as separate systems for reservations, billing, and housekeeping. This fragmentation can result in disjointed workflows, communication gaps between departments, and duplicated efforts.

#### 1.1.3 Lack of real-time insights into operations:

Traditional management systems often lack real-time reporting and analytics capabilities, making it difficult for hoteliers to gain timely insights into key performance metrics such as occupancy rates, revenue per available room (RevPAR), and guest satisfaction scores. Without access to real-time data, hotel managers may struggle to make informed decisions and adapt quickly to changing market conditions.

#### 1.1.4 Rising Guest Expectations:

Demand for seamless booking experiences: Today's travellers expect the convenience of booking accommodations online, with intuitive booking interfaces, transparent pricing, and instant confirmation of reservations. They also expect the ability to customize their bookings based on their preferences and needs.

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#### **1.1.5 Expectation of personalized services:**

Guests increasingly expect personalized experiences tailored to their preferences, such as room preferences, dining options, and leisure activities. They value hotels that can anticipate their needs and provide personalized recommendations and services.

### **1.2 Objectives of the Report:**

#### **1.2.1 Conducting a thorough analysis of current hotel management practices:**

The primary objective of the report is to conduct a comprehensive analysis of current hotel management practices, including reservations, guest services, operations, and marketing.

#### **1.2.2 Identifying areas for improvement in management and booking systems:**

The report aims to identify key areas for improvement in hotel management and booking systems, based on an analysis of current challenges, market trends, and guest expectations.

#### **1.2.3 Laying the groundwork for the development of a modern and integrated management system:**

Finally, the report seeks to lay the groundwork for the development of a modern and integrated hotel management and booking system that addresses the needs of hoteliers and guests alike. By identifying opportunities for innovation and improvement, the report aims to guide the development of a system that enhances operational efficiency, improves guest experiences, and drives business success.

#### **1.2.4 Implications for Strategic Decision-Making**

By synthesizing findings from the market trends analysis and competitor strategies assessment, the report will provide valuable insights to inform strategic decision-making for the hotel management and booking system.

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## 2. Analysis of existing system:

### [Airbnb™ Software and Technical analysis]

#### 2.1 Software Analysis:

##### 2.1.1 Platform Functionality:

Airbnb provides a user-friendly platform that allows hosts to list their properties and guests to search and book accommodations. It offers features such as advanced search filters, interactive maps, and real-time availability calendars, enhancing the user experience.

##### 2.1.2 Communication Tools:

Airbnb facilitates communication between hosts and guests through its messaging system, allowing them to discuss booking details, ask questions, and coordinate check-in arrangements. This seamless communication enhances trust and ensures a smooth booking process.

##### 2.1.3 Payment Processing:

Airbnb handles payment processing securely, allowing guests to pay for their bookings using various payment methods, including credit/debit cards, PayPal, and Apple Pay. Hosts receive payments through the platform, with Airbnb deducting a service fee from each transaction.

##### 2.1.4 Review System:

Airbnb's review system allows guests to leave reviews and ratings for their stays, providing valuable feedback for future guests and hosts. This transparent review system helps build trust and credibility within the Airbnb community.

##### 2.1.5 Mobile App:

Airbnb offers a mobile app for both hosts and guests, allowing them to manage their listings, bookings, and communication on the go. The app provides a seamless user experience, with features optimized for mobile devices.

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## 2.2 Technical Analysis:

### 2.2.1 Backend Infrastructure:

Airbnb's backend infrastructure is built on a combination of technologies, including Ruby on Rails for web development, PostgreSQL for database management, and Redis for caching. This scalable architecture ensures reliability and performance, even during peak usage periods.

### 2.2.2 Data Management:

Airbnb collects and analyses vast amounts of data to personalize the user experience, optimize search results, and detect fraudulent activity. They utilize data management tools such as Apache Hadoop, Apache Hive, and Apache Kafka to process and analyses data in real-time.

### 2.2.3 Machine Learning:

Airbnb leverages machine learning algorithms to improve search ranking, recommend personalized listings, and detect anomalies in user behaviour. They utilize tools such as TensorFlow and scikit-learn to develop and deploy machine learning models at scale.

### 2.2.4 Cloud Infrastructure:

Airbnb relies on cloud infrastructure providers such as Amazon Web Services (AWS) and Google Cloud Platform (GCP) to host their platform and services. This allows Airbnb to scale resources dynamically based on demand and ensures high availability and reliability.

### 2.2.5 Security Measures:

Airbnb employs various security measures to protect user data and prevent unauthorized access. This includes encryption of sensitive data, regular security audits, and compliance with industry standards such as PCI DSS for payment processing.

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### 3. Feasibility study:

#### 3.1 Technical Feasibility:

##### 3.1.1 System Requirements:

The technical infrastructure requires robust server hardware capable of hosting databases and web applications, along with network capabilities to ensure reliable connectivity. Software components include a web server (e.g., Apache), database management system (e.g., MySQL), and programming languages/frameworks (e.g., PHP, HTML, CSS, JavaScript).

##### 3.1.2 Technology Availability:

All necessary technologies for system development, including PHP for server-side scripting, MySQL for database management, and HTML, CSS, JavaScript, Bootstrap, and XML for front-end development, are widely available and commonly used in the industry, ensuring accessibility and support for implementation.

##### 3.1.3 Scalability:

The system's scalability is crucial, necessitating flexible architecture capable of handling increased user traffic, expanding property listings, and integrating new features seamlessly, ensuring sustained performance and adaptability to evolving demands.

##### 3.1.4 Integration:

Integrating the system with existing hotel management tools and third-party services like payment gateways and channel managers is feasible, provided there are well-documented APIs and compatibility with industry standards, ensuring seamless interoperability and enhanced functionality for users.

#### 3.2 Economic Feasibility:

##### 3.2.1 Cost-Benefit Analysis:

Conducting a cost-benefit analysis will assess the financial viability of the project, weighing development, implementation, maintenance, and operational costs against potential revenue increases, cost savings, and competitive advantages.

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#### **3.2.2 Return on Investment (ROI):**

Estimating the projected ROI will factor in potential revenue increases, cost savings, and competitive advantages derived from the system implementation to determine its financial impact.

### **3.3 Operational Feasibility:**

#### **3.3.1 User Requirements:**

Identifying the requirements of hotel administrators, staff, and guests is crucial to ensure the system meets their needs and enhances their user experience, facilitating effective operations and guest satisfaction.

#### **3.3.2 Training and Support:**

Assessing the feasibility of providing training and ongoing support to users is essential to ensure successful implementation and continued operation of the system, fostering user confidence and maximizing system utilization.

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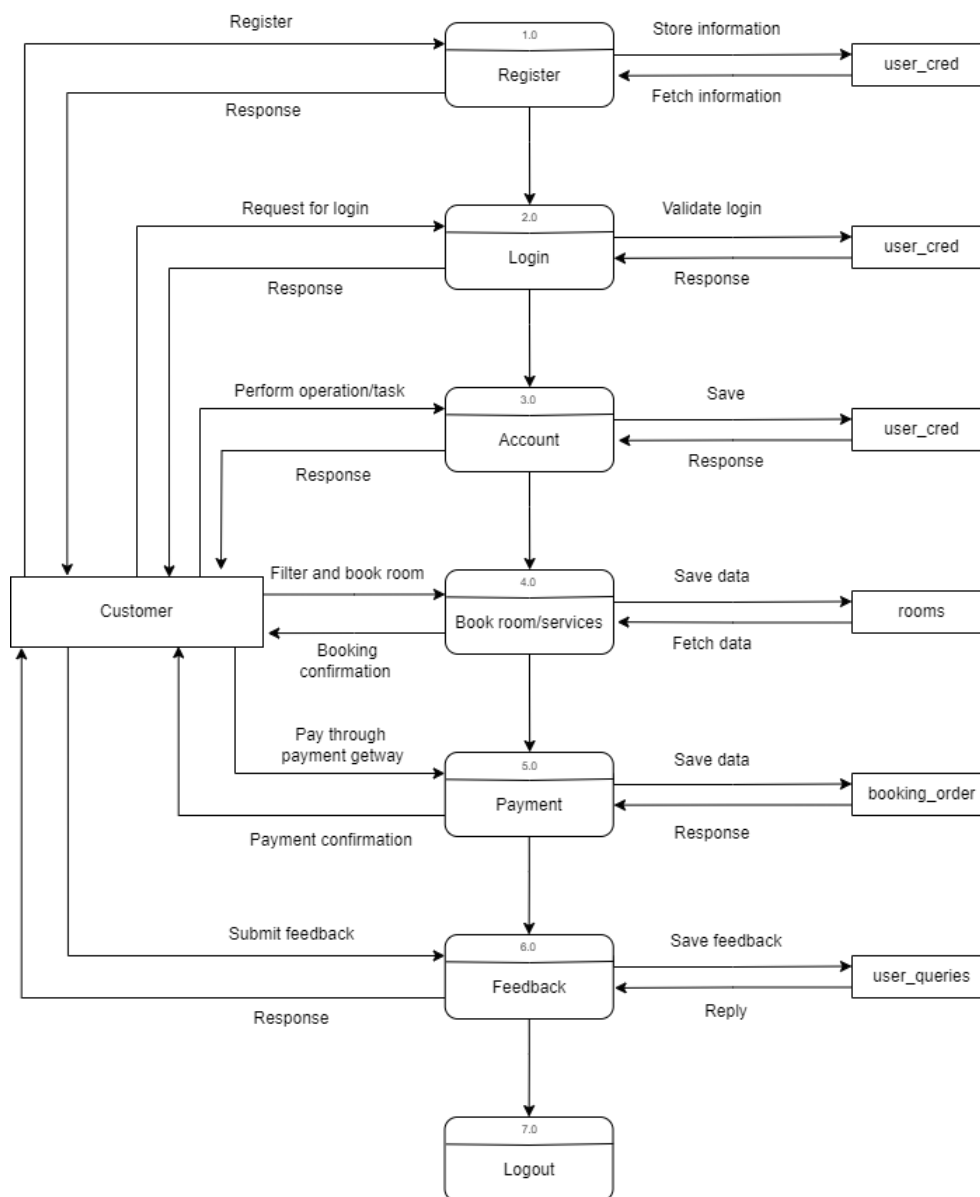
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#### 4. Data flow diagram (DFD):

Gane-sarson notation is used for given diagrams

##### 4.1 User level 1 dataflow diagram:



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At StayEasy the user plays a pivotal role in navigating various functionalities to enhance their experience. Beginning with the registration process, users create accounts to access personalized features. Upon logging in, users gain access to a range of functionalities, including browsing and sorting available rooms based on preferences such as price and amenities. With the ability to book rooms seamlessly, users can select desired dates and accommodations, facilitating a smooth reservation process. Furthermore, users can explore additional services offered by the hotel, such as room upgrades or spa treatments, and book them conveniently through the platform. Throughout their journey, users can modify bookings, view reservation details, and receive confirmation notifications, ensuring transparency and peace of mind. With an intuitive interface, users can effortlessly manage their bookings, access support resources, and provide feedback, fostering a collaborative relationship between guests and hotel management.

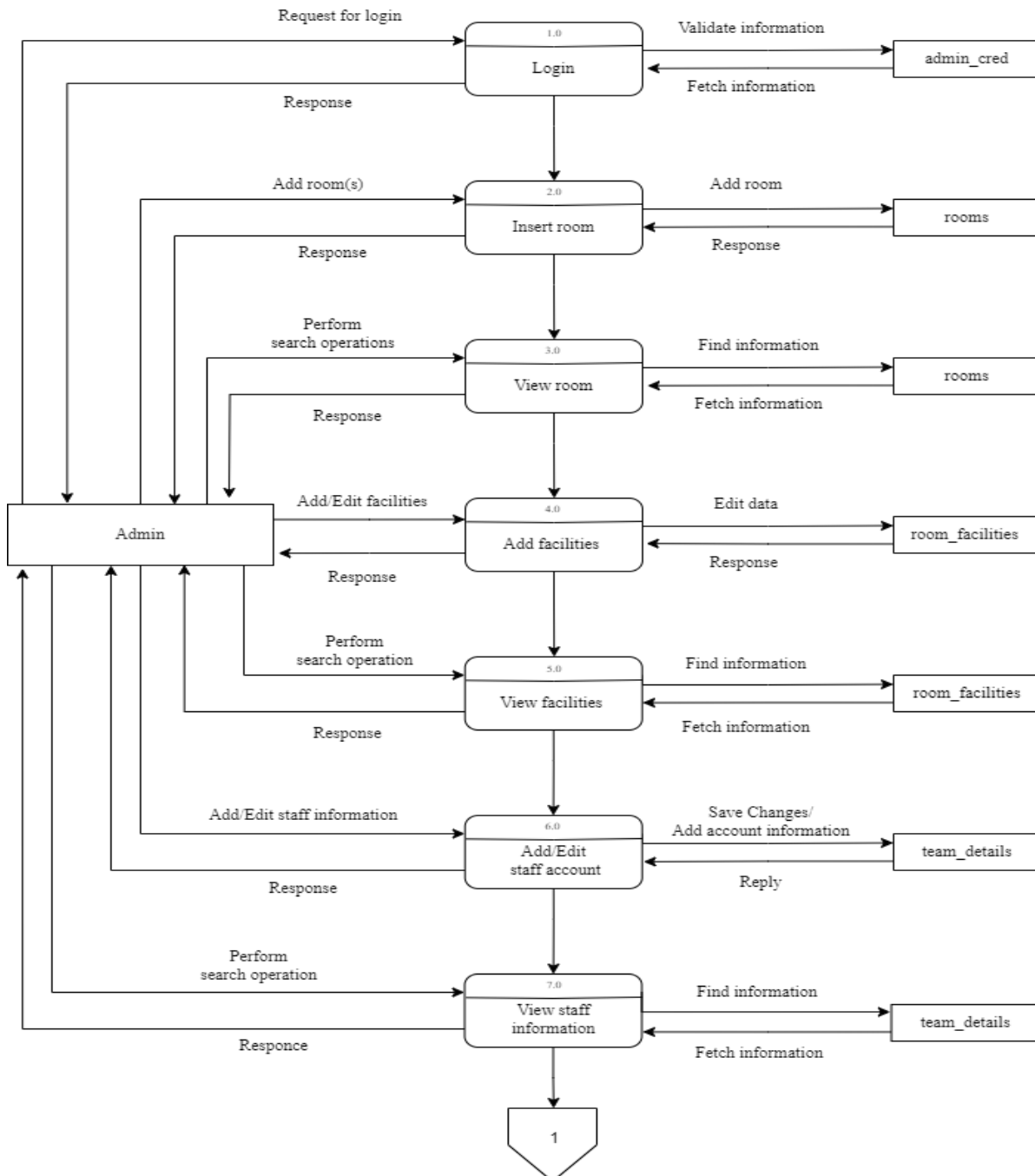


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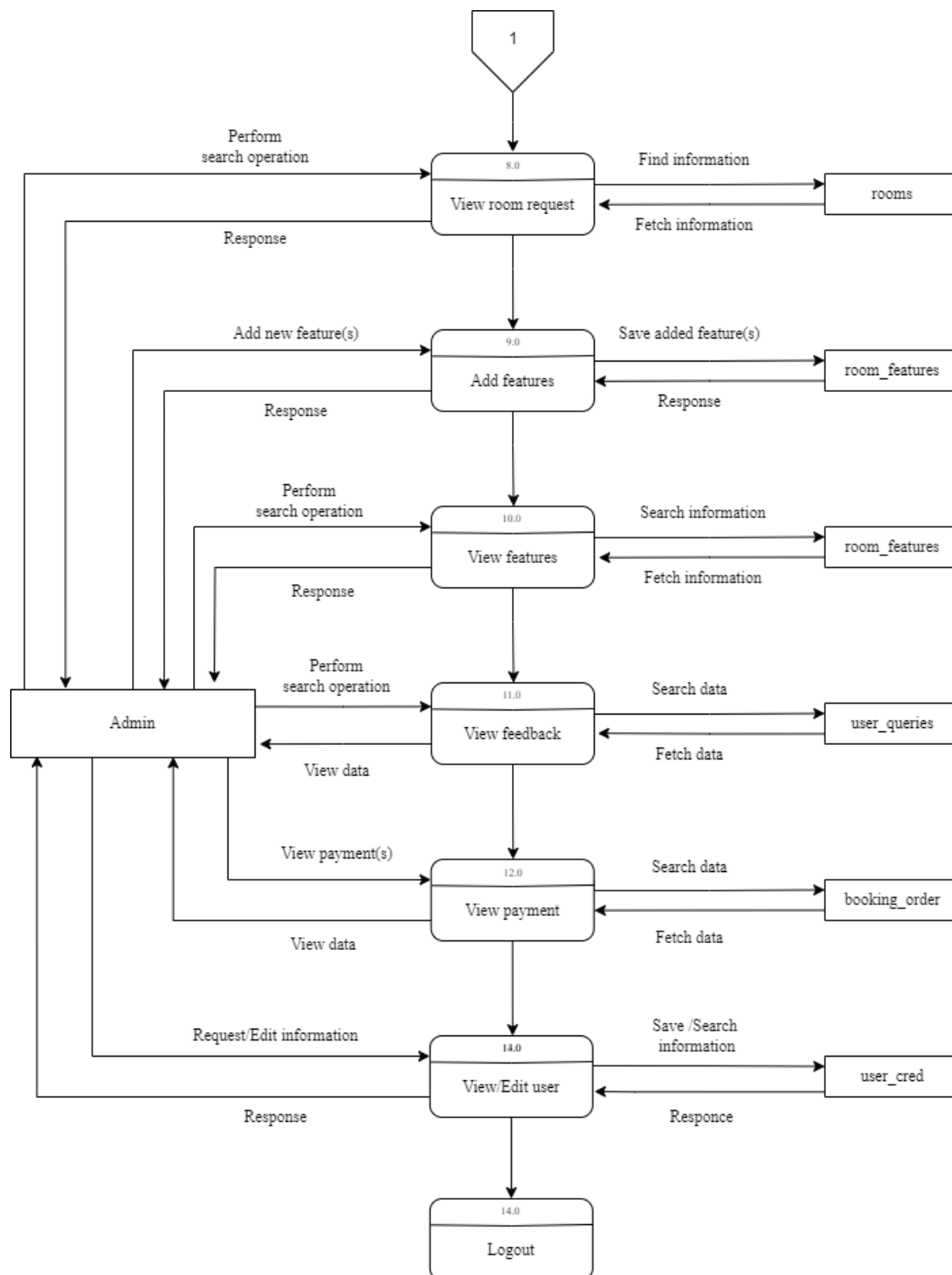
#### 4.2 Admin level 1 dataflow diagram:



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As the administrator of StayEasy, the role is multifaceted, encompassing various responsibilities to ensure efficient operation and exceptional guest experiences. Admins have the authority to add, edit, and manage all aspects of the system, starting with the creation and management of staff accounts, granting access and permissions as needed. With the power to oversee user accounts, admins can monitor activity, address inquiries, and ensure compliance with policies. Additionally, admins have control over features offered within the system, including room types, facilities, and amenities, tailoring offerings to meet guest preferences and market demands. They also manage room inventory, pricing, and availability, optimizing revenue and occupancy rates. Furthermore, admins oversee the addition and management of photos and descriptions, ensuring accurate representation of accommodations. With authority over payment processing, admins implement secure transaction protocols, monitor financial transactions, and address any discrepancies. Overall, admins play a critical role in maintaining system integrity, facilitating seamless operations, and delivering exceptional service to guests.

[\*The data used of pre-existing system was taken from the public data of the company]