Project Phase 0

Co-Working Space Management System

The Final Group

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Introduction

Business Overview

The "Co-Working Space Management System" project operates at the intersection of modern work trends and cutting-edge technology. It focuses on meeting the growing demand for flexible workspaces. The mission is to develop an advanced digital platform that bridges the gap between people looking for co-working spaces and real estate owners willing to offer these dynamic work environments. The main goal is to simplify the entire process – from reserving spaces to managing resources to processing payments –to improve the co-working experience for users while making co-working spaces more efficient and profitable for property owners.

Main Product and Services

The main product and service of the "Co-Working Space Management System" business is an advanced digital platform that provides comprehensive solutions for managing co-working spaces. This platform serves both customers seeking co-working spaces and property owners or managers who want to effectively offer and manage these spaces.

Key offerings include:

1. **Co-Working Space Booking and Management Platform:**

   The central product of this business is an online platform that facilitates the entire lifecycle of co-working space utilization. It offers a user-friendly interface that allows individuals and teams to browse, select, and reserve available co-working spaces based on their preferences. Users can choose specific dates, times, and the number of seats they require. The platform streamlines the booking process, offering real-time availability information and instant confirmation.

2. **Resource Allocation and Management:**

   The platform also provides tools for property owners or managers to efficiently manage resources within co-working spaces. This includes assigning and tracking the availability of desks, chairs, meeting rooms, and other amenities. This feature help to reduce some problems that might be happen in the future such as overbooking or resource shortages.

3. **Secure Payment Gateway:**

   As part of the service, the platform offers a secure payment gateway that enables users to make payments for their co-working space reservations. It supports various payment methods, ensuring a seamless and safe transaction process.

4. **User Profiles and Memberships:**

   Users can create profiles on the platform, enabling them to save preferences, track reservation history, and manage their memberships. Memberships can range from short-term (daily) to medium-term (monthly) or long-term (yearly), allowing users to choose the membership duration that suits their work requirements.

5. **Reservation and Revenue Reports:**

   Property owners and managers have access to reservation reports and revenue insights. This helps them understand the utilization patterns of their co-working spaces, track income generated, and make informed decisions to optimize their offerings.

6. **User Support and Assistance:**

   The business also offers customer support to assist users with any queries, concerns, or technical issues they may encounter while using the platform. This support service enhances the overall user experience and ensures a smooth interaction with the platform.

Target customer:

The Co-Working Space Management System is designed to meet the needs of a diverse range **of customers who require a flexible and collaborative workspace**.

The **primary target customers** include:

1. **Freelancers and Remote Workers:** Individuals who work independently or remotely and require a professional workspace outside their home [1].
2. **Small Businesses and Startups:** Small teams and startups that need an affordable and flexible office space to work and collaborate with each other.
3. **Corporate Clients/Customer:** Larger companies looking for temporary workspace for project teams or remote employees [2].
4. **Entrepreneurs:** Individuals starting their own businesses who require an environment conducive to networking and sharing idea, information, or knowledge.

5. **Digital Nomads** (More than 75% are self-employed or have a small business. Whether it's an E-Commerce career or a freelancer): Individuals who frequently travel and need a consistent, reliable, and professional workspace in different locations.

Key Business Processes:

The Co-Working Space Management System involves several key business processes that ensure the efficient operation of the co-working space and provide a good experience for users [3]:

1. **Membership Management:**

This process involves user registration (which are first name, last name, address, and phone number), membership subscription management, and account authentication. It includes options for different membership tiers with varying access privileges.

2. **Space Reservation and Booking:**

Users should be able to view available workspaces, meeting rooms, and facilities in real-time then make reservations through the system. Reservations can be made at any time. If you need to cancel, you must cancel one day before for the refund to be processed. If it is later than that, the system will not refund.

3. **Resource Allocation and Optimization:**

We have implemented an AI algorithm system for Co-Working Space Management System to optimize the allocation of available workspaces based on user needs. Work style and availability, which can be viewed in the system whether this seat is available or how many seats are currently left that you can reserve. This ensures efficient use of resources.

4. **Check-In and Access Control:**

User:

- When a user enters the co-working space, there will be a check-in and the user can check in the system to see that they have already checked in.

Employee:

- Can see who has reserved seats for the day and can manage facilities for users.
- Able to check stocks, extension cords, snacks, computer equipment (mouse, keyboard) that users want.

Manager:

- Have more privilege right than the employee.
- Can see who Log-in/Check-in or reserved seats into Co-Working Space System same as Employee.

5. Payment Processing:

Users have many ways to make a payment which are credit card, bank transfer (For the bank transfer, the system must connect the bank to API Banking. There must be some external banking API), and true wallet. In terms of payment processing time is 30 minutes. If the user does not pay in the specified time, the system will reprocess, and the user must press to reserve a new seat.

6. Analytics and Reporting:

The system collects information about space usage, membership/users' needs and other indicators. Employees generate reports and insights that help make informed decisions for resource allocation in terms of user logins or financial daily spending by users (Employees have to summarize the total revenue for that day, that is, the costs incurred must also be recorded in the system.) or facilities that meet the need of users.

Next, the manager will manage and send the report of the employee's work to the co-working space owner. In addition, managers can also manage employee information whether adding/deleting/updating information.

7. Security and Data Privacy:

The system maintains the security of every user's data with encryption and has measures to protect every user's data such as GDPR or PDPA. Employees can also access or connect to the CCTV system to monitor the safety of all customers who enter the co-working space.

8. Customer Support and Feedback:

Users can contact customer support through the system for assistance. User feedback is collected in the system to improve the service and resolve concerns.

By effectively managing these key business processes, the Co-Working Space Management System aims to provide a comprehensive and user-centric experience for its diverse customer base.

Business needs

1. The system must be a membership system.
2. The system must be provided on a web browser

Functional requirements

Functional requirements

Customer Part

1. The system must be the membership system.
2. Customers need to have an account first, before applying for a membership.
3. Membership system offers different membership tiers with varying period and pricing: Daily / Monthly / Annual.
4. Customer must create an account with filling information into the system including first name, last name, address, and phone number.
5. Customer must deposit money or pay upfront.
6. Users can choose specific time slots when booking workspaces or meeting rooms for a particular day.
7. The Co-working Space Management System must be accessible through web browsers.
8. Users can access the system's features and functionalities using standard web browsers from various operating system (e.g., Window, Mac OS, Ubuntu)
9. Users are required to select a specific date, time, and desired capacity (number of desks and chairs) for their booking.
10. Once the booking details are confirmed, users must proceed with payment before finalizing the reservation.
11. The system supports three payment options: credit card, bank transfer, and TRUE wallet.
12. The system must integrate with external banking APIs for processing bank transfer payments.
13. The booking is confirmed only after successful payment is made.
14. Customer selects a booking slot and doesn't complete payment within 30 minutes, the slot becomes available for other users.

15. To be eligible for a refund, cancellations must be requested at least 24 hours before the reserved time or before the user starts working in the co-working space, whichever comes first.
16. Refunds will be issued to the original payment method used during the booking process.
17. Users can edit, update, and suspending profiles.

Employee Part

18. Employee officers can access the system to view customer reservations, allowing them to manage equipment and resources accordingly.
19. The system shows the reserved co-working spaces to the employee system, reserved dates, and the number of reserved chairs.
20. Employee's system can check the availability stock of supporting items (e.g., power extension cords, snacks, and computer peripherals) for customers' needs.
21. The employee's system side can access the CCTV system in the co-working space to monitor security on-site.

Employee Manager Part

22. Manager's system has the privilege to add, delete, or manage employee information within the system.
23. Manager's system can log in into the system and they can see the total revenue that they get on each particular day and for each particular month, so they can do the income report to the owner of the co-working space.

Quality and System Requirements

24. The system must be able to store the amount of member data maximum to one million.
25. The system must be able to support 1000 concurrent users at one particular time.
26. The system must have design in the tone of blue and white as a color theme.
27. The system must encrypt customer data, including names, addresses, phone numbers, and transaction details, stored in the database

Non-Functional requirements

Usability:

28. Instructions during booking and payment should be clear and concise to avoid confusion.
29. The booking process should be simple, enabling customers to complete reservations effortlessly.
30. Customers should easily view booking history, membership details, and payment records.
31. Modifying reservations, changing time slots, and making edits should be straightforward.
32. Navigation should be intuitive, allowing easy access to features and pages.
33. Collaboration features should support task assignment, communication, and resource coordination.
34. Managers should be able to customize reports and analytics.

Security:

35. User data, including personal and payment information, should be encrypted, and safeguarded.
36. Payment security should cover credit card, bank transfer, and true wallet transactions.
37. Sensitive user data should be encrypted for protection.
38. Data access should be restricted based on roles.

Performance:

39. The system should handle 1000 concurrent users smoothly across all roles.
40. Managerial interface should load quickly and provide easy access to revenue reports, occupancy analytics, and employee management.

Scalability:

41. The database should scale to accommodate up to one million user accounts and their data.

Portability:

42. The design should be cohesive across both Windows and macOS.
43. The interface should adapt to different screen sizes and resolutions.

Identifying Actors [System: Website]

External Parties:

1. **Customer (Primary Actor):**
   - **Role:** Member of the coworking space seeking workspace for work purposes.
   - **Responsibilities:**
     - Create an account on the coworking space system to register as a member.
     - Apply for membership by providing necessary details and selecting membership plans.
     - Access the system to view availability of workspaces, including date, time, desks, and chairs.
     - Book a timeslot for desired work sessions, specifying the number of chairs and desks required.
     - Make secure online payments for membership fees and workspace bookings.
     - Cancel a booking if needed, with the option to receive refunds as per the cancellation policy.

2. **Employee at Coworking Space (Primary Actor):**
   - **Role:** Staff responsible for coworking space operations and customer service.
   - **Responsibilities:**
     - Check and manage reservations to ensure proper workspace allocation.
     - Handle equipment rentals such as power plugs, cables, mouse, and keyboards.
     - Monitor CCTV system for security and safety within the coworking space.
     - Manage stock of snacks and amenities available to customers.
     - Maintain accurate records of reservations and customer interactions in the system.

3. **Manager (Primary Actor):**
   - **Role:** Oversees the overall coworking space operations and administration.
   - **Responsibilities:**
     - Monitor and analyze the coworking space's occupancy, revenue, and expenses.
     - Manage system configurations, access privileges, and security settings.
     - Address any escalated customer issues.
     - Log in with priority to review total daily and monthly revenue, generating income reports for the owner.
     - Manage employee information, including adding and editing staff details.

External Systems:

1. **Email Authentication (Secondary Actor):**
   - **Role:** Ensuring the security and identity verification of users during registration and login processes on our website.
   - **Key Functions:**
     - User Verification: Sends verification emails to users who have registered on our website. These emails contain a verification link or code.
     - Account Activation: Email Authentication verifies that users' email addresses are valid and associated with their accounts.

2. **Bank System (Secondary Actor):**
   - **Role:** Making payment transactions for our website's users integrated through an API.
   - **Key Functionality:**
     - API Integration: Provides an API (Application Programming Interface) that allows our website's payment system to connect and interact with the Bank System for payment processing.
     - Payment Processing: Accepts payment requests and instructions sent via the API, including credit card transactions, bank transfers, and payments via digital wallets like True Wallet.

3. **CCTV System (Secondary Actor):**
   - **Role:** Provides security and monitoring through system.
   - **Key Functionality:**
     - Real-time Monitoring: Provides live video feeds.
     - Recording: Captures and stores video footage
     - Access Control Integration: Links with access control systems to track entry and exit.
     - Staff Identification: Integrates with the registering system to identify staff members.

Bonus: additional requirement statements that involve the integration or utilization of cutting-edge technologies for a Co-Working Space Management System:

1. **Smart Access Control and Biometrics:**

To ensure smooth and safe entry into co-working spaces, an access control system that makes use of palm print or facial scanning should be included. It is a technology that allows people to access the area according to the day and time they reserved a seat using facial recognition or a palm print even if they do not have a mobile phone with them. For a frictionless experience and to ensure that all users are comfortable using our system, we operate in the system by accessing a QR code or NFC technology if you do not consent to the collection of your biometric data.

2. **IoT-Enabled Workspace Customization:**

IoT-Enabled Workspace Customization for co-working space is a concept or project that combines the Internet of Things (IoT) with customized co-working spaces to increase convenience and adjust to meet the needs of the user. The features or customizations that should be brought into this system are: Light and air are controlled via IoT within the workspace according to the climate and user comfort. Design customization: Users can use an app or interface to customize the layout of the space. Tasks such as adjusting lighting colors or arranging tables and chairs according to individual needs, and communication between users, that is, IoT systems can help in communicating between users through systems, applications, or other devices to exchange information.

In terms of deploying this system to employees, there are two ways: first, bring the IOT system into use with the security system, namely the IoT can use sensors and CCTV cameras to customize the security system in the co-working space area. and use it to detect user entry and exit. Second, resource management. An IoT system is a system that can monitor the usage of resources such as electricity consumption or equipment in the work area. It helps to manage resources as efficiently as possible. If users or customers have needs or are missing something, employees will be able to check immediately.

3. **Virtual Reality Meeting Rooms and collaborative AR/VR Experiences:**

Virtual reality (VR) technology has been applied to the co-working space management system to create a virtual conference room from a simulated physical meeting space. Collaborative augmented reality (AR) and virtual reality (VR) experiences are also being developed, allowing colleagues to interact and brainstorm within a shared virtual space, which this system enhances remote collaboration.

4. **Blockchain-Based:**

Blockchain technology is used in payments to ensure transparency and security for users in their payments.

5. **Voice Assistants:**

Voice assistants powered by natural language processing (NLP) may be introduced to assist users in various tasks. Users can use voice commands to reserve meeting rooms, order equipment, adjust environment settings, and receive information.

6. **Wireless Charging Infrastructure:**

Install wireless charging stations throughout our co-working space with the latest in fast-changing technology. This allows users to conveniently charge their devices while they work without worrying about tangled cables.

By integrating these cutting-edge technologies, the Co-Working Space Management System can offer a unique and advanced user experience while optimizing space utilization, convenience, and sustainability.

Reference

[1] B. Wright, "upsuite," 11 May 2022. [Online]. Available: https://www.upsuite.com/blog/find-your-target-market-for-coworking-spaces/.

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[3] C. Ragkhitwetsagul, "Co-Working Space Management System," 5 September 2021. [Online]. Available: https://www.youtube.com/watch?v=7TseLOSXL8E .