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Assumptions:
This application provides the scheduling of services at a spa and manages the time for customers. This application stores details like Names, Descriptions (Services selected), and Payments. It will also send reminders to the customers who have their services scheduled.

Project Vision:

To create a user-friendly application that helps customers schedule spa appointments for various services. Spa services require long hours based on the service/s taken and the time to get your turn. This is where the application comes into play that bridges the gap between customers and spa services which enables better management of time and resources for both customers and staff.

Stakeholders:
1. Patrons: The individuals who will be utilizing the spa services by appointment.
2. Owners: These individuals are responsible for all the decisions regarding the business.
3. Managers: They will manage staff and spa, take feedback from customers, and report back to the owners.
4. Spa staff: This includes professionals who are trained for the job.
5. IT Management: These individuals are responsible for the smooth running of the application and responding to and solving any IT-related issues.
6. Credit Processor: This is required for credit card payment processing.

Domain Analysis:

Major Functions:

1. Appointment Scheduling
2. Wide range of Spa services selection including additional amenities like swimming pool, gym, and Spa products.
3. Staff Management
4. Payment processing
5. Spa products inventory management
6. Customer Support
7. Customer Experience
8. Cancellations and Refunds

Users:
1. Patrons
2. Staff
3. Managers
4. Owners
5. IT Administrators

Applications System:
1. Online Appointment booking
2. Services List
3. Service Scheduling
4. Service Pricing
5. Appointment Availability
6. Payment Processing
7. Staff Scheduling
8. Customer support system

Goal Modeling:

Business Goals:

- Boosts revenue by bringing in more clients and clients utilizing more services.
- Improve brand awareness by providing better customer satisfaction.
- Maintain standards that are compliant with the regulation.
- Dynamic facilities and staffing.
- Ensuring a safe and hygienic environment.

Application Goals:
- User-friendly application processing.
- Constant customer support.
- Flexibility of selecting from a variety of spa services.
- Resolve issues faced by customers.
- Platform Independency
  - ➢ Should support all web browsers of different OS.
- Accessible during weak internet access.
- Structured appointment booking process.
- Selecting multiple services at a time

Domain Decomposition:

1. Customer Registration
   - Customer Credentials
   - Customer data verification
   - Payment Information
   - Account creation confirmation
   - Account updating
   - Account Closure.
2. Appointment Confirmation
   - List of services
   - Pricing
   - Filtering
   - Validate service availability.
   - Slot selection
   - Check availability.
   - Confirm slot.
   - Process payment
   - Credit card validation
   - Payment confirmation

- Appointment modification/deletion
- Confirmed status.

3. Inquiries
    - List of available services
    - List of available slots
    - Pricing inquiries
    - Staff-related queries.

4. Customer Support
    - Email Support

5. Limitations
    - A customer can book up to 3 services at a time.
    - Patrons can book services as many times as they need them.
    - Refund process
        - If a customer doesn't show up for the booking, no refund is processed.
        - If a customer cancels the appointment prior to 5 hours of slot time, 100% refund is processed.

6. Staff Management
    - Staff needs to inform leave to the managers prior 1 week.
    - Any emergency leaves are exempted.
    - Staff replacement is done in case of emergencies.

Constraint Modeling:

Procedures for Spa Registration

1. Mode of Registration
   - Web-based application on different OS.
2. Interface
   - Images of services
   - Brief description of services
   - Ease of using the application on any OS.
3. Reliability
   - Maintenance time of two hours every day to fix any issues.
   - Web page crash would be fixed in 2 hours.
   - Hybrid AI cloud security for the application to prevent loss of data.

4. Concurrency
   - In order to make sure that the system can support several users at once, load balancing is used.
   - Slot booking is based on First Come First Serve (FCFS).
5. Security
   - Hybrid AI technology is used to secure credit card details.
   - To login into the application, two-factor authentication is obtained to their registered phone/ email address.
   - Spa slot booking data is secured through appropriate technologies.

6. Software and Hardware Requirements
   - The web-based application is compatible with operating systems such as Windows and macOS.
   - To access the application one must have an internet connection (secure connections only allowed).
7. Performances
   - Based on the browser specifications and the network speeds.
   - The earliest response time is 5 seconds for each payment confirmation, slot search, filtering services, service booking, payment validation and verification.
8. General
   - Ease of use.
   - A single-stop solution for all spa service bookings.
   - Can be accessed from anywhere from their browsers.