DENTAL CLINIC MANAGEMENT SYSTEM

**System Requirements**

1.Login System

| UC Name | | *UC001* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Allows users to authenticate and access the system.* | | | | | | | |
| Dependency | |  | | | | | | | |
| Actors | | *Primary actor - Registered user* | | | | | | | |
| Preconditions | | *User account is created and active.*  *The system is operational and accessible by users.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: User enters username and password.* * *Step 2: System validates credentials.* * *Step 3: If credentials are valid the user is logged in to the system, else login attempt fails.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: User retries to enter into the system by reentering their credentials.* * *Step 2: If the login attempt fails, the user selects the “Forgot Password” option.* * *Step 3: System prompts the user to enter their email address for password reset.* * *Step 4: System sends a password reset link to the user’s email.* | | | | | | | |
| Non functional requirements | | *Usability:The login interface should be user-friendly and easily understood, with clear instructions.*  *Security: The system must use a strong encryption method to protect user passwords, so that sensitive information remains secure and confidential.*  *Access to sensitive information or administrative features should be restricted based on user roles and permissions.*  *Performance: The system should be able to handle a high volume of login requests simultaneously without slowing down or freezing.*  *Reliability: The system should be highly reliable, with minimal downtime.* | | | | | | | |
| Postconditions | | *If credentials are valid the user is successfully logged into the system.*  *If user credentials are not valid and they need to follow the alternative route for password reset, the user will receive instruction on resetting their password.* | | | | | | | |

2.Fixing Appointment

| UC Name | | *UC002* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *The receptionist can schedule and manage appointments for patients in the clinic.* | | | | | | | |
| Dependency | | *This use case depends on UC001 (login) as the receptionist must login to the system to fix appointments.* | | | | | | | |
| Actors | | *Primary actor - Receptionist*  *Secondary actor - Patients, Dentists* | | | | | | | |
| Preconditions | | *The receptionist has access to the dental clinic management system.*  *The schedule of the dentists’ availability is up-to-date.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The receptionist logs into the system.* * *Step 2: The receptionist opens the appointment scheduling interface in the dental clinic management system.* * *Step 3: The receptionist opens a medical card for the patient.* * *Step 4: The receptionist enters the patient's personal information, reason for appointment, and specific treatment name.* * *Step 5: The receptionist assigns the appointment to an available dentist; to a specific dentist if required by patient or specific dental service.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the selected date and time is not available, the receptionist selects an alternative date or suggests the patient to select an alternative date.* * *Step 2: If the patient already has an opened medical card in the system, the receptionist shall add the new treatment to that existing card.* * *Step 3: If additional information is requested for the patient such as insurance details, or past medical history, the receptionist requests the missing information.* | | | | | | | |
| Non functional requirements | | *Performance: The system should handle multiple appointment bookings simultaneously without slowing down.*  *Usability: The appointment scheduling interface should be efficient and easily usable by the receptionist.*  *Security: Patient information must be accessible only to authorized personnel.* | | | | | | | |
| Postconditions | | *The appointment is successfully booked and added to the dentist's schedule.*  *The patient receives confirmation for the appointment and additional information if needed.* | | | | | | | |

3.Manage employee information; active or inactive status.

| UC Name | | *UC003* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case enables HR workers to manage employee information, including their active or inactive status.* | | | | | | | |
| Dependency | | *This use case may depend on UC001 (login) for user authentication and access control.* | | | | | | | |
| Actors | | *Primary actor - HR worker*  *Secondary actor - Employee* | | | | | | | |
| Preconditions | | *HR workers have authorization to access employee information.*  *The system is operational and accessible.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: HR worker logs into the system.* * *Step 2: HR worker searches for specific employee records using filters.* * *Step 3: HR worker selects an employee record to view or to update.* * *Step 4: HR worker updates the employee’s active/inactive status as required.* * *Step 5: HR worker saves the changes made into the system.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the search filters applied by the HR worker yield no results, they refine the search criteria and try again.* * *Step 2: If the selected employee record is locked for editing by another HR worker, the system notifies the current HR worker and prompts them to try again later or request access from the other HR worker.* * *Step 3: If the HR worker encounters validation errors while updating the employee's active/inactive status , they correct the errors and attempt to save the changes again.* | | | | | | | |
| Non functional requirements | | *Security: Access to employee information is restricted to authorized HR workers only, with secure authentication mechanisms in place.*  *Performance: The system should handle a large number of employee records efficiently, with quick response time for data retrieval and updates.* | | | | | | | |
| Postconditions | | *The employee's active/non-active status is updated according to the HR worker's actions.*  *Changes made by the HR worker are saved and reflected in the system's employee records.* | | | | | | | |

4.Calculating employee wages

| UC Name | | *UC004* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves the calculation of employee wages.* | | | | | | | |
| Dependency | | *This use case may depend on UC007 (attendance management )which involves employee attendance tracking.* | | | | | | | |
| Actors | | *Primary actor: HR workers,Employee* | | | | | | | |
| Preconditions | | *Employee records must be up-to-date with accurate work hours, rates, and other relevant data.*  *Payroll configurations such as tax rates and deduction policies, must be correctly set up in the system.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: HR Manager selects the employee whose wages need to be calculated.* * *Step 2: The system retrieves the employee's work hours, rates, and other relevant data for the specified period.* * *Step 3: The system calculates the gross wages based on the employee's hourly rate and hours worked, considering any overtime or special rates.* * *Step 4:Deductions such as taxes, or benefits are applied to calculate the net wages.* * *Step 5: The system generates wage statements for employees.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: The system calculates wages for multiple employees selected by the HR manager.* * *Step 2: Special rules or adjustments are applied to specific employees, such as bonuses.* | | | | | | | |
| Non functional requirements | | *Accuracy: The system must accurately calculate wages based on predefined rules, ensuring correct deductions and net pay calculations.*  *Security:Access to wage calculation data and reports should be restricted to authorized HR workers and employees.*  *Ensure data encryption and secure transmission of wage statements to maintain confidentiality.* | | | | | | | |
| Postconditions | | *The system generates accurate wage statements for the selected employees, reflecting their gross wages, deductions, and net pay for the specified period.*  *The wage calculation process is logged and documented for reference purposes.* | | | | | | | |

5. Generating receipts

| UC Name | | *UC005* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the process of generating receipts for financial transactions.* | | | | | | | |
| Dependency | | *This use case may depend on UC012(treatment plan) and UC019(service catalog management).* | | | | | | | |
| Actors | | *Primary actor: Finance worker* | | | | | | | |
| Preconditions | | *The finance worker is logged into the dental clinic management system.Financial transactions, such as payments received or refunds issued, have been recorded in the system.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1:Finance worker selects the option to generate a receipt for a specific financial transaction.* * *The system prompts the worker to enter the transaction ID or search for the transaction by patient name or date.* * *Once the transaction is located, the system generates a receipt containing details such as the transaction ID, patient name, date of transaction, description of services or items, payment amount, and any applicable taxes or discounts.* * *The finance worker verifies the details on the receipt for accuracy.* * *The finance worker prints or saves the receipt for record-keeping purposes.* * *The system updates the transaction status to indicate that a receipt has been generated.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the generated receipt contains errors such as incorrect amounts, the finance worker corrects the information and regenerates the receipt.* * *Step 2: If there is missing information in the transaction details, the finance worker communicates with the relevant departments to resolve the issue and update the transaction information in the system.* | | | | | | | |
| Non functional requirements | | *Reliability: The system should maintain accurate and reliable financial records, ensuring that generated receipts reflect the correct transaction details.Compliance: Receipts should comply with relevant accounting standards and regulations governing financial documentation in healthcare settings.Security: Access to receipt generation functionalities should be restricted to authorized finance staff members, with secure authentication mechanisms in place.Usability: The receipt generation process should be user-friendly, with clear prompts and intuitive navigation.* | | | | | | | |
| Postconditions | | *A receipt is generated and stored in the system for the specified financial transaction, providing an official record of the transaction.* | | | | | | | |

6.Inventory Management

| UC Name | | *UC006* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves managing inventory within the dental clinic management system, including stock tracking, ordering, and replenishment.* | | | | | | | |
| Dependency | | *This use case may depend on UC008 (database management )which involves employee attendance tracking.* | | | | | | | |
| Actors | | *Primary Actor: Inventory Manager*  *Secondary Actor: Suppliers, Accounting Department* | | | | | | | |
| Preconditions | | *The inventory database must be populated with initial stock data, including product names, quantities, and pricing.*  *The system should have access to supplier information and procurement policies.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Inventory manager logs into the inventory management module of the system.* * *Step 2: The system displays the current inventory levels, including available stock quantities and item details.* * *Step 3: Inventory manager initiates stock tracking and updates inventory levels based on received shipments or sales.* * *Step 4: The system generates alerts or notifications for low stock levels or reorder points.* * *Step 5: Inventory manager places orders with suppliers for replenishing low-stock items.* * *Step 6: The system records purchase orders, tracks order statuses, and updates inventory upon order fulfillment.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: The system suggests reorder quantities and timing based on demand patterns and stock turnover rates.* * *Step 2: Inventory manager adjusts reorder quantities or priorities based on urgent needs or budget constraints.* | | | | | | | |
| Non functional requirements | | *Performance: The inventory management system should handle real-time updates and queries efficiently, even with a large number of items in the inventory.*  *Security: Access to inventory management functionalities should be restricted to authorized personnel, with secure authentication and role-based access controls.*  *Reliability: The system should accurately track inventory movements and maintain data integrity to prevent discrepancies.* | | | | | | | |
| Postconditions | | *Inventory levels are accurately updated and maintained in the system after each transaction or inventory adjustment.*  *Purchase orders, supplier communications, and inventory records are logged and documented which may be used for analysis purposes.* | | | | | | | |

7. Leave and Attendance Management

| UC Name | | *UC007* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves tracking employee attendance, managing leave requests, and calculating leave balances.* | | | | | | | |
| Dependency | | *This use case depends on use case UC001(login).* | | | | | | | |
| Actors | | *Primary Actor: HR Manager*  *Secondary Actor: Employees, System Administrator* | | | | | | | |
| Preconditions | | *Employee profiles and roles must be set up in the system, including leave policies and entitlements.*  *The system should have access to employee work schedules and attendance data.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The system displays employee attendance records, including check-in/check-out times and breaks.* * *Step 2: HR manager reviews and approves/rejects employee leave requests, including vacation, sick leave, and other types of absences.* * *Step 3: The system calculates accrued leave balances based on employee attendance and leave transactions.* * *Step 4: HR manager generates reports or views leave balances for individual employees or the entire team.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Employee submits a leave request.* * *Step 2: The system automatically checks for leave conflicts, such as overlapping requests or insufficient leave balances.* * *Step 3: HR manager reviews and adjusts leave requests as needed before approval.* | | | | | | | |
| Non functional requirements | | *Security: Access to leave management functionalities should be restricted to authorized personnel, with secure authentication and role-based access controls.*  *Accuracy: The system must accurately track attendance, calculate leave balances, and apply leave policies.* | | | | | | | |
| Postconditions | | *Employee attendance records and leave balances are updated and maintained accurately in the system.*  *HR Managers can view reports and monitor leave requests.* | | | | | | | |

8.Data Backup

| UC Name | | *UC008* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Maintain regular backups of the database system to ensure data integrity and availability.* | | | | | | | |
| Dependency | |  | | | | | | | |
| Actors | | *Primary Actor: Database Administrator, Manager* | | | | | | | |
| Preconditions | | *The database system is set up and operational.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Database system initiates scheduled backup process.* * *Step 2: The system creates a backup of the database, including patient records, appointment schedules, and employee information.* * *Step 3: The backup is stored securely in a designated location, ensuring data confidentiality and integrity.* * *Step 4: Regular backup logs are maintained for auditing and monitoring purposes.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the scheduled backup process fails to initiate, the system alerts administrators and attempts to perform the backup at the next scheduled time.* * *Step 2: In case of backup failure due to technical issues (e.g., insufficient storage space, connectivity issues), the system logs the error and retries the backup process.* * *Step 3: If data restoration from backups is required (e.g., due to data corruption, accidental deletion), the system follows predefined recovery procedures to restore the database to a consistent state, ensuring minimal data loss and downtime.* | | | | | | | |
| Non functional requirements | | *Security: Backup files must be encrypted to protect sensitive patient and employee information.*  *Performance: Backup processes should be optimized to minimize impact on system performance and ensure timely completion.*  *Reliability: Regular backups should be scheduled and tested periodically to ensure reliability and availability of data in case of system failures or disasters.* | | | | | | | |
| Postconditions | | *Regular backups of the database, including patient records, appointment schedules, and employee information, are successfully maintained. Data backup and recovery procedures are in place to safeguard against data loss and ensure business continuity.* | | | | | | | |

9. Appointment reminder feature

| UC Name | | *UC009* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Implement a feature in our web application to send appointment reminders to clients, either online or via SMS, to avoid scheduling conflicts and improve communication.* | | | | | | | |
| Dependency | | *This use case may depend on UC002(fixing appointment) for controlling the appointments to send the notifications and from UC013(language localization) to send the reminder in the language the user prefers.* | | | | | | | |
| Actors | | *Primary Actor: Web application users (administrators, receptionists,patients)*  *Secondary Actor: -* | | | | | | | |
| Preconditions | | *The web application is operational and has access to client appointment schedules and contact information* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The system retrieves upcoming appointments from the database.* * *Step 2: For each appointment, the system checks if a reminder needs to be sent based on predefined criteria (e.g., time before appointment).* * *Step 3: If a reminder is required, the system prepares the reminder message.* * *Step 4: The system sends the reminder to the client through the selected communication channel (online notification or SMS).* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the system encounters an error while retrieving appointments or preparing reminders, it logs the error and proceeds to the next appointment.* * *Step 2: If the selected communication channel fails (e.g., internet connection issue for online notifications, SMS service outage), the system retries sending the reminder after a short delay.* * *Step 3: If the retry attempts fail, the system logs the failed reminder and alerts administrators for manual intervention.* | | | | | | | |
| Non functional requirements | | *Scalability: The reminder system should be able to scale up seamlessly to accommodate a growing number of clients and appointments without compromising performance.*  *Customization: The system should allow administrators to customize reminder messages according to the clinic's branding and communication style.*  *Localization: Support for multiple languages and regional settings to cater to clients from diverse linguistic backgrounds.* | | | | | | | |
| Postconditions | | *Clients receive appointment reminders through their preferred communication channel, reducing the likelihood of missed appointments.*  *The system logs all reminder activities, including successful deliveries and any errors encountered, for future reference and analysis.*  *Administrators can review the reminder logs to ensure that reminders are being sent as expected and take corrective actions if necessary.* | | | | | | | |

10.Electronic Prescribing (e-Prescribing)

| UC Name | | *UC010* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Enable the electronic prescribing of medications within the Dental Clinic Management System.* | | | | | | | |
| Dependency | |  | | | | | | | |
| Actors | | *Primary Actors: Dentists, Patients*  *Secondary Actors: Pharmacy, Healthcare Provider* | | | | | | | |
| Preconditions | | *The patient has provided consent for the dentist to electronically prescribe medications on their behalf.*  *Patient's medical history, allergies, and other information are available in the system.* | | | | | | | |
| Description of the Main Sequence | | *Step 1: Patient's medical history, allergies, and insurance information are available in the system.*  *Step 2: Dentist selects medications, dosage, and instructions for the prescription.*  *Step 3: Dentist reviews and confirms the prescription details.*  *Step 4: System securely transmits the electronic prescription to patient.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If medication history or allergy information is missing, the system prompts the dentist to review patient records before prescribing.* * *Step 2: If potential medication interactions are detected, the system alerts the dentist to review and modify the prescription as necessary.* | | | | | | | |
| Non functional requirements | | *Performance: Ensure efficient processing and minimal latency for electronic prescription transactions to maintain system responsiveness.*  *Security: Implement industry-standard security measures to protect electronic prescription data from unauthorized access, interception, or tampering, with robust user authentication and access controls.*  *Scalability: Design the electronic prescribing system to accommodate growth in user base, patient volumes, and transaction loads over time, with support for horizontal and vertical scaling strategies.*  *Usability: Ensure that the user interface of the electronic prescribing system is intuitive, user-friendly, and consistent, with comprehensive training and onboarding materials provided to users.* | | | | | | | |
| *Postconditions* | | *Dentist successfully electronically prescribes medications to the patient.*  *Patient receives the electronic prescription and presents it to the pharmacy for medication fulfillment.*  *Pharmacy or healthcare provider receives the electronic prescription and processes it for dispensing medication.*  *Electronic prescription records are stored for documentation and auditing purposes.* | | | | | | | |

11.Remote online consults

| UC Name | | *UC011* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Enable remote consultations and virtual appointments between dentists and patients, utilizing telehealth technologies. Provide secure video conferencing and messaging functionalities to facilitate effective communication* | | | | | | | |
| Dependency | |  | | | | | | | |
| Actors | | *Primary Actors:Dentists, Patients*  *Secondary Actors: IT staff (technical support team), healthcare regulators ,Receptionists* | | | | | | | |
| Preconditions | | * *Availability of online communication infrastructure,including video conferencing software and messaging platforms.* * *Compliance with healthcare regulations, and secure access to patient records.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Dentists schedule remote consultations or virtual appointments through the online platform.* * *Step 2: Patients join the virtual appointments using secure video conferencing links provided by the platform.* * *Step 3: Dentists and patients communicate effectively using video conferencing and messaging functionalities for diagnosis, treatment planning, and follow-ups.* | | | | | | | |
| *Description of the Alternative Sequence* | | * *Step 1: If technical issues occur during the virtual appointment (e.g., poor video quality), dentists and patients troubleshoot or switch to alternative communication methods (e.g., phone call) to continue the consultation.* * *Step 2: If patients encounter difficulties accessing the online platform, clinic staff provide assistance in troubleshooting or rescheduling the appointment.* | | | | | | | |
| Non functional requirements | | *Accessibility: The remote consultation platform should be accessible to users with disabilities, complying with accessibility standards such as WCAG (Web Content Accessibility Guidelines) to ensure equal access to dental services.*  *Data Storage: Patient data shared during virtual appointments should be securely stored in compliance with data protection regulations, with proper backup and disaster recovery measures in place.*  *User Feedback Mechanism: Provide a feedback mechanism within the platform to allow users to submit feedback and suggestions for improvement, enabling continuous enhancement of the remote consultation experience.* | | | | | | | |
| Postconditions | | *Dentists and patients successfully conduct remote consultations and virtual appointments, improving access to dental care and reducing the need for in-person visits.*  *Patient data exchanged during virtual appointments is securely stored and compliant with privacy regulations, maintaining patient confidentiality.* | | | | | | | |

12.Treatment Plan

| UC Name | | *UC012* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Develop a comprehensive plan for the entire treatment of the patient, including necessary interventions, total costs, and the timeline for the entire process.* | | | | | | | |
| Dependency | | *This use case may depend on UC019(service catalog management) for getting the price of the services or treatments the patient may need.* | | | | | | | |
| Actors | | *Primary Actors:Dentists, Patients,Receptionists*  *Secondary Actors:Dental Assistants,Insurance Representative* | | | | | | | |
| Preconditions | | * *Availability of patient medical history, diagnostic tests, and consultation with the dentist.* * *Understanding of patient preferences, budget, and treatment options.* | | | | | | | |
| *Description of the Main Sequence* | | * *Step 1: Dentist reviews patient medical records and diagnostic results to assess the current oral health status.* * *Step 2: Dentist discusses treatment options with the patient, considering factors such as oral health goals, budget, and timeline.* * *Step 3: Dentist develops a customized treatment plan outlining the necessary interventions, procedures, estimated costs, and timeline for each phase of treatment.* * *Step 4: Treatment coordinator presents the treatment plan to the patient, explaining the recommended interventions, associated costs, and payment options.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the patient requests alternative treatment options or expresses concerns about the proposed plan, the dentist explores alternative approaches and revises the treatment plan accordingly.* * *Step 2: If the estimated costs exceed the patient's budget, the treatment coordinator works with the patient to explore financing options or adjust the treatment plan to accommodate the budget constraints.* | | | | | | | |
| Non functional requirements | | *Accuracy: The treatment plan should accurately reflect the patient's oral health status, treatment needs, and preferences.*  *Clarity: The treatment plan should be presented in a clear and understandable manner to the patient, avoiding technical jargon or ambiguity.*  *Transparency: The patient should have access to detailed information about the proposed treatment plan, including procedures, costs, and expected outcomes, to make informed decisions.* | | | | | | | |
| Postconditions | | *The patient and dentist agree on a comprehensive treatment plan tailored to the patient's needs and preferences.*  *The treatment coordinator assists the patient in scheduling appointments, coordinating treatment phases, and managing financial arrangements according to the agreed-upon plan.* | | | | | | | |

13. Language Localization

| UC Name | | *UC013* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Implement language localization functionality in the software to allow users to select their preferred language for interface display.* | | | | | | | |
| Dependency | |  | | | | | | | |
| Actors | | *Primary Actors:System Users (Administrators, Staff, Patients)* | | | | | | | |
| Preconditions | | * *Availability of language translation resources for the desired languages.* * *Understanding of user preferences and language settings* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: System users access the software settings or preferences menu.* * *Step 2: Users select their preferred language from the list of available languages.* * *Step 3: The software dynamically adjusts the interface elements, menus, and text content to display in the selected language.* * *Step 4: Users interact with the software using the newly selected language for improved accessibility and usability.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the desired language is not available in the list of options, users may request additional language support through feedback or support channels.* * *Step 2: System administrators evaluate user requests and prioritize the addition of new languages based on user demand and resource availability.* | | | | | | | |
| Non functional requirements | | *Flexibility: The software should support a wide range of languages to accommodate diverse user preferences and demographics.*  *Accuracy: Language translations should be accurate and culturally appropriate to ensure effective communication and user understanding.*  *Performance: The language localization feature should have minimal impact on software performance, ensuring smooth and responsive user experience across all supported languages.* | | | | | | | |
| Postconditions | | *Users can interact with the software interface in their preferred language, enhancing user experience and accessibility.*  *System administrators have the capability to add or update language translations as needed to support evolving user needs and preferences.* | | | | | | | |

15. Image Management

| UC Name | | *UC015* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Allows users to store* and manage digital images such as intraoral photos, panoramic radiographs, and dental models and also view previous images uploaded by the clinic. | | | | | | | |
| Dependency | | *This use case may depend on UC016(Patient Management).* | | | | | | | |
| Actors | | *Primary actor - Dentist , Patient*  *Secondary actor - Marketing staff, IT personnel* | | | | | | | |
| Preconditions | | *The system is active and accessible.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The system checks if the storage infrastructure is capable of handling large volumes of digital images efficiently.* * *Step 2: The system identifies the type of image entered.* * *Step 3: The user in case uploads the new desired image with all the extra annotation they may want to insert.* * *Step 4: The dentist can implement organizational features like tagging, categorization, and search functionality to streamline image retrieval and management* * *Step 5: The system seamlessly integrates the new image with patient records, ensuring easy access and correlation during consultations and treatment planning.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: In case of image not uploading, the user tries to reenter the image.* * *Step 2: In case of a crash, the patient/doctor can report it to IT personnel who can provide ongoing support to address any technical issues.* | | | | | | | |
| Non functional requirements | | *Security: Access to patient records is restricted to authorized dental clinic workers, with secure authentication mechanisms in place.*  *Performance: The system should handle a large number of uploaded images in real time without crashing.* | | | | | | | |
| Postconditions | | *All uploaded images are correctly stored in the designated storage system and are accessible within the patient records.* | | | | | | | |

16. Patient Management:

| UC Name | | *UC016* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case gives the authorized user the ability to create, update, and maintain comprehensive patient records including personal information, medical history, insurance details and any other information.* | | | | | | | |
| Dependency | | *This use case depends on UC001 for user authentication and access control, UC002 for appointment scheduling, UC008 for database management, UC012 for treatment plan.* | | | | | | | |
| Actors | | *Primary actor - Patient , Dentist(Healthcare Providers)* | | | | | | | |
| Preconditions | | *The system is operational and accessible.*  *Healthcare providers have authorization to access patient information.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The patient logs in his credentials to enter his own personal information such as medical history and insurance details and more.* * *Step 2: The system saves the information mentioned above in the database.* * *Step 3: If the healthcare provider matches the allowed access credentials, they can view and add patient information.* * *Step 4: The changes done by the dentist are saved onto the database.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Users encounter an error during data entry.* * *Step 2: Pop-up guides the user to correct the errors/reenter the information.* * *Step 3: User decides to cancel registration.* * *Step 4: Registration is aborted, no new patient record is created.* | | | | | | | |
| Non functional requirements | | *Security: Patient data must be encrypted and securely stored.*  *Performance: System should be able to handle a large number of patient registrations without significant delay.* | | | | | | | |
| Postconditions | | *A new patient record is created in the system.* | | | | | | | |

17. Patient Feedback and Surveys:

| UC Name | | *UC017* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case allows the collection of patient feedback and satisfaction surveys to assess the quality of care and enhance patient experience.* | | | | | | | |
| Dependency | |  | | | | | | | |
| Actors | | *Primary actor - Patient*  *Secondary actor - Healthcare provider, Clinical staff* | | | | | | | |
| Preconditions | | *The patient must have received care from the healthcare provider and clinical staff.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The healthcare provider initiates the feedback/survey process after a procedure is done.* * *Step 2: The system generates a feedback/survey form with relevant questions.* * *Step 3: The patient fills out the feedback/survey form.* * *Step 4: System collects and stores the feedback/survey responses.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: The patient can choose to skip the survey.* * *Step 2: In case of a wrong input, a pop-up guides the user to reenter said information.* | | | | | | | |
| Non functional requirements | | *Performance: System should be able to handle a large volume of feedback/surveys without significant delay.* | | | | | | | |
| Postconditions | | *Patient feedback and survey responses are stored in the system for analysis and improvement purposes.* | | | | | | | |

18. Cybersecurity Measures for Threat Detection and Prevention:

| UC Name | | *UC018* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Implements advanced threat detection algorithms, anomaly detection systems, and authentication protocols to prevent cybersecurity threats and safeguard patient data.* | | | | | | | |
| Dependency | | *This use case may depend on UC001 for user authentication and access control.* | | | | | | | |
| Actors | | *Primary actor - IT personnel ( System administrators)* | | | | | | | |
| Preconditions | | *The system is operational and accessible.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The system monitors the traffic and system log- ins for suspicious activity.* * *Step 2: Threat detection algorithms analyze incoming data for abnormal behaviors and identify them.* * *Step 3: Upon detection of a threat, the system initiates measures such as isolating affected systems or blocking malicious IP addresses..* * *Step 4: Encryption protocols secure patient data during storage and transmission, preventing unauthorized access.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: The system detects a threat but fails to prevent/fix it.* * *Step 2: The system alerts the system administrator about the detected threat.* * *Step 3: The system administrator investigates the alert and deals with it manually.* | | | | | | | |
| Non functional requirements | | *Performance: Threat detection algorithms must operate in real-time with minimal latency.*  *Security: Encryption protocols must comply with industry standards and best practices.* | | | | | | | |
| Postconditions | | *Patient data remains secure, and the system is protected against cybersecurity threats.* | | | | | | | |

19. Service Catalog Management

| UC Name | | *UC019* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Development of a service catalog within the system listing all available dental services, along with detailed descriptions, pricing information, and terms and conditions.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - System administrator , dental clinic staff* | | | | | | | |
| Preconditions | | *The system is operational and accessible.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The administrator adds new dental services to the catalog with detailed descriptions, pricing information, and terms and conditions..* * *Step 2: The system stores the new added services in the catalog database.* * *Step 3: The users access the information in the catalog.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: The system administrator updates the previous saved information of the catalog.* | | | | | | | |
| Non functional requirements | | *Usability: The service catalog interface must be user-friendly and easy to navigate.*  *Performance: The system should handle concurrent access to the catalog without significant delay.* | | | | | | | |
| Postconditions | | *The service catalog is up-to-date with all available dental services, their descriptions, pricing information, and terms and conditions.* | | | | | | | |

20. Patient Search and Filtering.

| UC Name | | *UC020* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *Provides search functionality to quickly find patient records based on name, ID, or other identifiers, with filtering options to narrow down search results.* | | | | | | | |
| Dependency | | *This user case is dependent on UC016(patient management) and on UC008(database management) for accessing the patient management database.* | | | | | | | |
| Actors | | *Primary actor - Dental clinic staff (dentist)* | | | | | | | |
| Preconditions | | *The system is operational and accessible.*  *The database is functional and accessible and the data is categorized.*  *Only identified users can access patient information* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The dentist (healthcare provider) enters search criteria such as ID or other identifiers.* * *Step 2: The system retrieves the patient records matching the search criteria.* * *Step 3: The dentist (healthcare provider) reviews the searched result.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: There are no matches for the search.* * *Step 2: a pop-up identifies the dentist (healthcare provider) that there are no matches.* | | | | | | | |
| Non functional  requirements | | *Performance: The search function should return results quickly, even with a large database.*  *Usability: The search interface should be efficient and easy to use.* | | | | | | | |
| Postconditions | | *Healthcare providers successfully find and review patient records matching the search criteria or filters.* | | | | | | | |

21. Dentist management.

| UC Name | | *UC021* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case gives the dentist the ability to check patient records and to look and find all his personal information as well as look at his schedules, vacations, payment and more.* | | | | | | | |
| Dependency | | *This use case depends on UC001 for user authentication and access control, UC002 for appointment scheduling, UC008 for database management, UC012 for treatment plan, UC004 for employment management* | | | | | | | |
| Actors | | *Primary actor - Dentist* | | | | | | | |
| Preconditions | | *The system is operational and accessible.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The dentist logs in his credentials to enter his own personal information.* * *Step 2: The system saves the information mentioned above in the database.* * *Step 3: If the dentist id matches the allowed access credentials, they can view and add patient information.* * *Step 4: The changes done by the dentist are saved onto the database.* * *Step 5: They can view all the information related to them.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Users encounter an error during data entry.* * *Step 2: Pop-up guides the user to correct the errors/reenter the information.* | | | | | | | |
| Non functional requirements | | *Security: Dentist data must be encrypted and securely stored.*  *Performance: System should be able to handle a large number of dentist registrations without significant delay.* | | | | | | | |
| Postconditions | | *A new dentist record is created safely in the system.* | | | | | | | |

22.Multi-platform Accessibility.

| UC Name | | *UC022* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the requirement for the dental management system software to be accessible across multiple platforms, including desktop computers, tablets, and smartphones.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - Users (Dentists, Dental assistants, Receptionists,Staff that will interact with the software)* | | | | | | | |
| Preconditions | | *The dental management system software is uploaded and accessible.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Users access the dental management system software.* * *Step 2: The software detects the device and screen size/resolution.* * *Step 3: The software adapts its interface for optimal user experience.* * *Step 4: Users interact with the system using their respective devices.* * *Step 5: The system processes user requests and performs necessary actions.* * *Step 6: Users view and manage patient records, appointments, and other data.* * *Step 7: Users log out or exit the system.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Users access the dental management system software.* * *Step 2: The software encounters compatibility issues with the user's device or operating system.* * *Step 3: Users attempt to troubleshoot the compatibility issues by adjusting settings or updating their device's software.* * *Step 4: Despite troubleshooting efforts, the compatibility issues persist, preventing users from accessing the software.* * *Step 5: Users reach out to the system support team or customer service for assistance with resolving the compatibility issues.* * *Step 6: The support team investigates the compatibility issues and identifies potential solutions or workarounds.* * *Step 7: If necessary, the support team provides users with alternative access methods, such as accessing the system through a different device or platform.* * *Step 8: Users follow the provided instructions to access the system using the alternative method suggested by the support team.* * *Step 9: Users successfully access the dental management system software using the alternative access method, ensuring continuity in managing dental practice operations.* | | | | | | | |
| Non functional requirements | | *Compatibility with various devices and operating systems.*  *Responsive design for optimal user experience across different screen sizes and resolutions.*  *Support for accessing the system through web browsers or dedicated mobile apps.* | | | | | | | |
| Postconditions | | *Users successfully access and utilize the dental management system software across multiple platforms, ensuring flexibility and convenience in managing dental practice operations.* | | | | | | | |

//23.Scalability and Performance.

| UC Name | | *UC023* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the requirement for the dental management system software to be scalable and performant, capable of accommodating growing volumes of patient data and increased user load.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - System administrators, IT personnel* | | | | | | | |
| Preconditions | | *The dental management system software is uploaded. The system is online, functional and operational.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: System administrators monitor system performance metrics and data volume.* * *Step 2: As patient data and user load increase, the system dynamically scales resources to meet demand.* * *Step 3: Performance optimization techniques such as caching, indexing, and database sharding are implemented to enhance system responsiveness.* * *Step 4: System administrators utilize monitoring tools to track system performance and identify bottlenecks.* * *Step 5: Identified bottlenecks are addressed through optimization measures.* * *Step 6: System administrators continue to monitor system performance and make adjustments as needed.* * *Step 7: The system maintains optimal performance and scalability under varying workload conditions.* | | | | | | | |
| Description of the Alternative Sequence | | *None* | | | | | | | |
| Non functional requirements | | * *Architecture designed for scalability to accommodate growing volumes of patient data and increased user load.* * *Performance optimization techniques such as caching, indexing, and database sharding.* * *Implementation of monitoring tools to track system performance metrics and identify bottlenecks for optimization.* | | | | | | | |
| Postconditions | | *The dental management system software is capable of handling increasing volumes of patient data and user load while maintaining optimal performance. System administrators have the necessary tools and techniques to monitor, optimize, and ensure scalability and performance of the system.* | | | | | | | |

24. Accessible support resources.

| UC Name | | *UC024* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the requirement for the dental clinic management system to provide accessible support resources for users, including FAQs, online support, forums, troubleshooting, and software inquiries, within the website application interface.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - Users (Dentists, Dental assistants, Receptionists,Staff that will interact with the software, Clients)* | | | | | | | |
| Preconditions | | *The dental clinic management system website application is accessible and operational.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Users navigate to the support section within the website application.* * *Step 2: Users are presented with options to access support resources such as FAQs, online support, forums, troubleshooting guides, and avenues for software inquiries.* * *Step 3: Users select the desired support resource based on their query or issue.* * *Step 4: Users are provided with relevant information and guidance to address their query or resolve their issue.* * *Step 5: Users utilize the support resource to troubleshoot problems, seek assistance, or obtain information about the software.* * *Step 6: Users may engage with online forums to seek advice from peers or contribute to discussions.* * *Step 7: Users may submit software inquiries or requests for additional support if needed.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Users navigate to the support section within the website application.* * *Step 2: Users encounter an unexpected error or issue accessing the support resources.* * *Step 3: Users attempt to refresh the page or navigate to the support section again, but the issue persists.* * *Step 4: Users notice a message indicating technical difficulties or server downtime.* * *Step 5: Users are unable to access the support resources through the website application.* * *Step 6: Users resort to alternative support channels such as contacting customer support via phone or email.* * *Step 7: Users receive assistance from customer support representatives to address their queries or issues.* * *Step 8: Customer support logs the reported issue and works towards resolving it promptly.* * *Step 9: Users receive follow-up communication from customer support regarding the resolution of the issue.* * *Step 10: Users may provide feedback or additional information to aid in resolving the issue effectively.* | | | | | | | |
| Non functional requirements | | * *Accessibility of support resources within the website application interface.* * *Availability of diverse support resources including FAQs, online support, forums, troubleshooting guides, and avenues for software inquiries.* * *User-friendly interface for easy navigation and access to support resources.* * *Timely and accurate provision of information and assistance through support resources.* | | | | | | | |
| Postconditions | | *Users have access to a comprehensive range of support resources within the dental clinic management system website application, enabling them to troubleshoot issues, seek assistance, and obtain information effectively and efficiently. The availability of accessible support resources enhances user experience and facilitates smooth operation of the system.* | | | | | | | |

//25.Regular Support and Maintenance.

| UC Name | | *UC025* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the requirement for the dental clinic management system website application to undergo regular support and maintenance activities, including routine software updates, bug fixes, performance enhancements, and the addition of new features based on user feedback and emerging trends in dental clinic management.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - System administrators, Developers* | | | | | | | |
| Preconditions | | *The dental clinic management system website application is deployed and operational.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: System administrators monitor system performance and user feedback.* * *Step 2: Based on user feedback and emerging trends, developers identify areas for improvement and new feature enhancements.* * *Step 3: Developers prioritize identified tasks and plan for routine software updates.* * *Step 4: Routine software updates are scheduled and implemented, addressing bug fixes, security vulnerabilities, and performance optimizations.* * *Step 5: Developers conduct testing and quality assurance to ensure the stability and functionality of the updated system.* * *Step 6: Upon successful testing, the updated version of the system is deployed to the production environment.* * *Step 7: System administrators communicate with users regarding the availability of new features and improvements.* * *Step 8: Users provide feedback on the updated system, which informs future maintenance and enhancement cycles.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: System administrators identify a critical bug or security vulnerability in the system.* * *Step 2: Developers prioritize the resolution of the critical issue and expedite the development of a patch or fix.* * *Step 3: Routine maintenance activities are temporarily suspended to focus resources on addressing the critical issue.* * *Step 4: Developers conduct rigorous testing and validation of the fix to ensure its effectiveness and stability.* * *Step 5: The patch or fix is deployed urgently to the production environment to mitigate the critical issue.* * *Step 6: System administrators communicate with users regarding the issue, its resolution, and any temporary impacts on system functionality.* * *Step 7: Users are advised to update their systems promptly to apply the fix and ensure continued operation.* | | | | | | | |
| Non functional requirements | | *Regular scheduling and execution of software updates to maintain system stability and security.*  *Timely resolution of reported bugs and issues to minimize disruption to system functionality.*  *Integration of new features and enhancements based on user feedback and industry trends to improve user experience and system effectiveness.*  *Continuous monitoring and evaluation of system performance to identify areas for optimization and improvement.* | | | | | | | |
| Postconditions | | *The dental clinic management system application undergoes regular support and maintenance activities, ensuring its continued reliability, security, and performance. Users benefit from a system that is updated with new features, bug fixes, and performance enhancements, providing an optimal experience for managing dental clinic operations.* | | | | | | | |

//26.User Interface Architecture.

| UC Name | | *UC026* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the requirement for the dental clinic management system website application to have a well-defined user interface architecture. This includes how the website application will be sectioned, organized, functionalized, and the entire software architecture of everything the users will interact with firsthand.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - Users (Dentists, Dental assistants, Receptionists,Staff that will interact with the software, Clients)* | | | | | | | |
| Preconditions | | *The dental clinic management system website application is deployed and operational.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: System architects and UI/UX designers collaborate to define the overall structure and layout of the website application.* * *Step 2: The website application is sectioned into distinct modules or components, each serving a specific function or feature set.* * *Step 3: User interface elements such as menus, navigation bars, buttons, and forms are designed and implemented to facilitate user interaction.* * *Step 4: The system architecture is designed to ensure seamless navigation and accessibility for users across different devices and screen sizes.* * *Step 5: Functionalities such as patient management, appointment scheduling, billing, and reporting are integrated into the user interface architecture according to user requirements and best practices.* * *Step 6: User interface components are organized in a logical and intuitive manner to enhance usability and user experience.* * *Step 7: User interface architecture undergoes usability testing and validation to ensure effectiveness and user satisfaction.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: During usability testing, users provide feedback indicating difficulties in navigating certain sections of the website application.* * *Step 2: UI/UX designers conduct a review of the existing user interface architecture to identify areas for improvement.* * *Step 3: Based on user feedback and usability analysis, UI/UX designers propose modifications to the layout, organization, or functionality of specific user interface components.* * *Step 4: System architects evaluate the proposed changes and assess their impact on system performance, scalability, and maintainability.* * *Step 5: Approved modifications are incorporated into the user interface architecture through iterative design and development cycles.* * *Step 6: The updated user interface architecture undergoes further testing and validation to ensure that the proposed changes effectively address user feedback and usability issues.* * *Step 7: Users are provided with access to the updated version of the website application, incorporating improvements to the user interface architecture based on their feedback.* | | | | | | | |
| Non functional requirements | | * *Clear and intuitive organization of user interface components to facilitate ease of navigation and task completion.* * *Responsive design to ensure optimal user experience across various devices and screen sizes.* * *Accessibility features to accommodate users with disabilities and ensure compliance with accessibility standards.* * *Scalable and maintainable architecture to support future expansion and updates to the website application.* | | | | | | | |
| Postconditions | | *The dental clinic management system website application features a well-defined user interface architecture that enhances usability, navigation, and overall user experience. Users can interact with the system effortlessly, accessing all necessary functionalities efficiently and effectively. The user interface architecture is flexible and adaptable, allowing for future enhancements and modifications to meet evolving user needs and technological advancements.* | | | | | | | |

27.Flexible Payment Options.

| UC Name | | *UC027* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the requirement for the dental clinic management system website application to support flexible payment options. This includes the integration of various payment methods such as cash, credit/debit cards, checks, and online payments, with seamless integration with payment gateways to ensure secure transaction processing.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - Users (Dentists, Dental assistants, Receptionists,Staff that will interact with the software, Clients)* | | | | | | | |
| Preconditions | | *The dental clinic management system website application is deployed and operational.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: System administrators configure the payment options available within the website application.* * *Step 2: Users initiate payment for services rendered within the dental clinic management system.* * *Step 3: Users are presented with a choice of payment methods including cash, credit/debit cards, checks, and online payments.* * *Step 4: Users select their preferred payment method and provide necessary payment details.* * *Step 5: The website application securely processes the payment transaction through integration with payment gateways.* * *Step 6: Payment gateways authenticate and authorize the transaction, ensuring the security and validity of the payment.* * *Step 7: Upon successful authorization, users receive confirmation of the completed payment transaction.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Users encounter technical difficulties during the payment process, such as errors or delays in transaction processing.* * *Step 2: Users contact customer support or seek assistance within the website application for resolution of the payment issue.* * *Step 3: System administrators investigate the reported payment issue and identify the root cause, such as connectivity issues with payment gateways or system errors.* * *Step 4: System administrators implement temporary measures to address the payment issue and ensure continuity of service for users.* * *Step 5: Technical support teams work to resolve the underlying technical issue, such as troubleshooting connectivity problems or resolving software bugs.* * *Step 6: Once the payment issue is resolved, system administrators communicate with users to provide updates and ensure satisfaction with the resolution.* * *Step 7: Users are able to successfully complete their payment transactions without further interruption.* | | | | | | | |
| Non functional requirements | | * *Seamless integration with payment gateways to ensure secure and reliable transaction processing.* * *Support for a wide range of payment methods to accommodate user preferences and convenience.* * *Robust error handling and recovery mechanisms to address payment processing issues promptly and efficiently.* * *Compliance with industry standards and regulations for secure handling of financial transactions.* | | | | | | | |
| Postconditions | | *The dental clinic management system website application provides users with flexible payment options, enabling them to make payments conveniently and securely for services rendered. Users experience a seamless payment process with reliable transaction processing and receive confirmation of completed transactions in a timely manner. The integration of various payment methods enhances user satisfaction and contributes to the overall effectiveness of the system.* | | | | | | | |

28.Appointment Waitlist Management.

| UC Name | | *UC028* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case describes the requirement for the dental clinic management system website application to include appointment waitlist management functionality. This functionality enables the system to track patients requesting earlier appointments and automatically fill cancellations or rescheduled slots based on predefined criteria.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary actor - Users (Dentists, Dental assistants, Receptionists,Staff that will interact with the software, Clients)* | | | | | | | |
| Preconditions | | *The dental clinic management system website application is deployed and operational.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Users submit requests to be added to the appointment waitlist for earlier appointments.* * *Step 2: The system captures and records patient information and appointment preferences.* * *Step 3: When appointment cancellations or rescheduling occur, the system identifies available slots.* * *Step 4: The system evaluates the waitlist based on predefined criteria such as appointment urgency, patient availability, and appointment type.* * *Step 5: Patients meeting the predefined criteria are automatically selected from the waitlist to fill available slots.* * *Step 6: Selected patients are notified of the available appointment slot and provided with options to confirm or decline.* * *Step 7: Upon confirmation, the appointment slot is allocated to the selected patient, and the system updates the appointment schedule accordingly.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Users encounter difficulties in accessing the waitlist management functionality within the website application.* * *Step 2: Users report the issue to system administrators or technical support for resolution.* * *Step 3: System administrators investigate the reported issue and identify any technical issues or user interface discrepancies.* * *Step 4: Technical support teams work to address the reported issue, such as resolving software bugs or improving user interface navigation.* * *Step 5: Once the issue is resolved, system administrators communicate with users to provide updates and ensure satisfaction with the resolution.* * *Step 6: Users are able to access and utilize the waitlist management functionality without further interruption.* | | | | | | | |
| Non functional requirements | | * *Efficient tracking and management of patient requests for earlier appointments to optimize appointment scheduling.* * *Automated selection and notification of patients from the waitlist based on predefined criteria to streamline appointment filling processes.* * *User-friendly interface for patients to submit waitlist requests and receive notifications of available appointment slots.* * *Robust error handling and recovery mechanisms to address technical issues and ensure uninterrupted operation of the waitlist management functionality.* | | | | | | | |
| Postconditions | | *The dental clinic management system website application includes appointment waitlist management functionality, allowing users to efficiently track and manage patient requests for earlier appointments. The automated selection and notification process ensures that available appointment slots are filled promptly and effectively, contributing to improved appointment scheduling and patient satisfaction. Users benefit from a streamlined process for managing appointment waitlists, enhancing the overall effectiveness and efficiency of the system.* | | | | | | | |

29. Website Advertisement.

| UC Name | | *UC029* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | The website requires contact details and links to various platforms for advertising purposes. | | | | | | | |
| Dependency | | *User account management (if required to log in and access advertising options). UC001* | | | | | | | |
| Actors | | *Primary Actor: Marketing staff* | | | | | | | |
| Preconditions | | *The website visitor has access to a web browser and internet connection.*  *The website visitor wants to access features or functionalities that require registration.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The website visitor navigates to the website registration page.* * *Step 2:The website displays a registration form requesting contact details (e.g., email address, name) and optionally links to their social media profiles or other online platforms.* * *Step 3:The website visitor enters their contact details and optionally adds links to their online platforms in the designated fields.* * *Step 4:The website visitor submits the registration form.* * *Step 5: The website validates the entered information (e.g., email format).* * *Step 6: The website creates a user account for the visitor.* * *Step 7: The website informs the visitor about successful registration (e.g., confirmation message).* * *Step 8: Grants the visitor access to the restricted features or functionalities.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If validation fails (e.g., invalid email format), the website displays an error message indicating the specific issue and prompts the visitor to correct the information.* * *Step 2: The visitor can then edit the information and resubmit the form.* | | | | | | | |
| Non functional requirements | | *The registration process should be user-friendly and easy to complete.*  *The website should ensure the security and privacy of the collected user data.*  *The website response time should be fast during registration.* | | | | | | | |
| Postconditions | | *The website visitor has a registered account on the website.*  *The visitor has access to the website's restricted features or functionalities.*  *The website may have obtained the visitor's contact details and links for potential marketing purposes (depending on the website's privacy policy).* | | | | | | | |

30. (Meet the Team): A page dedicated to understanding the past experiences and qualifications of each team member.

| UC Name | | *UC030* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves the creation of a webpage dedicated to providing information about each team member, including their past experiences and qualifications.* | | | | | | | |
| Dependency | | *None* | | | | | | | |
| Actors | | *Primary Actor: Visitor*  *Secondary Actor: Team Members* | | | | | | | |
| Preconditions | | *The user has access to the internet and a web browser.*  *The "Meet the Team" page exists and is accessible on the website.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The user navigates to the "Meet the Team" page on the website.* * *Step 2: The page displays information about each team member, including: Name and photo, Job title, Brief biography or description of their experience and skills, Contact information (e.g., email address)* * *Step 3: The user can browse through the profiles of different team members.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1; If the Website Administrator encounters technical issues or limitations while updating the "Meet the Team" page, they may seek assistance from technical support or attempt the action again after resolving the issue.* * *Step 2: In case of changes in team composition or updates to team members' information, the Website Administrator regularly revises the "Meet the Team" page to ensure accuracy and relevance.* | | | | | | | |
| Non functional requirements | | *The "Meet the Team" page should have a visually appealing layout and design for enhanced user experience.*  *Page load times should be optimized to ensure quick access to information for website visitors.*  *Information presented on the page should be concise, well-organized, and easy to navigate.* | | | | | | | |
| Postconditions | | *The "Meet the Team" page is updated with information about each team member's past experiences and qualifications.*  *Website visitors can access and review the "Meet the Team" page to learn about the team members.* | | | | | | | |

31. Calculating Debt

| UC Name | | *UC031* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves enabling users to access and view their debt with the dental clinic, including details about their purchases(bills).* | | | | | | | |
| Dependency | | *This use case may depend on UC008 (Database management)* | | | | | | | |
| Actors | | *Primary Actor: Finance worker* | | | | | | | |
| Preconditions | | *Users are registered or have accounts within the dental clinic system.*  *Debt information for users are accurately recorded and stored in the dental clinic system.*  *Users have appropriate permissions to access their debt information.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The patient logs in to the system.* * *Step 2: The system verifies the patient's identity.* * *Step 3: The system displays if the patient has any debts.* * *Step 4: If there are any outstanding debts (unpaid services), the system calculates the total amount owed and displays it to the patient.* * *Step 6: The patient can view the details of their outstanding debts* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: The patient logs in to the system.* * *Step 2: The system verifies the patient's identity.* * *Step 3: The system encounters an error while retrieving the patient's debt.* * *Step 4: The system displays an error message to the patient.* | | | | | | | |
| Non functional requirements | | *The system should be secure and protect patient data confidentiality.*  *The system should be responsive and display information quickly.* | | | | | | | |
| Postconditions | | *The patient is aware of any outstanding debts.* | | | | | | | |

32. Before & After Gallery

| UC Name | | *UC032* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This describes a Before & After Gallery feature for a dental service provider's website. The gallery showcases patient smile transformations achieved through various procedures.* | | | | | | | |
| Dependency | | *This feature depends on a system for managing patient information (e.g., before and after photos, procedures performed). UC016 (patient management)* | | | | | | | |
| Actors | | *Primary Actor: Patient*  *Secondary Actor: Website Administrator* | | | | | | | |
| Preconditions | | *The website administrator has access to a database of patient photos and treatment details.*  *Patients have consented to having their before and after photos displayed.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The website administrator accesses the Before & After Gallery section of the Content Management System (CMS).* * *Step 2: The administrator selects the type of transformation to showcase (e.g., full smile reconstruction, smile enhancement, dental implants).* * *Step 3: The system displays a list of patients who have undergone the selected procedure and have consented to having their photos displayed.* * *Step 4: The administrator selects a patient and uploads their before and after photos.* * *Step 5: The system displays the before and after photos side-by-side, along with a brief description of the treatment performed (optional).* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If no patients have consented to having their photos displayed for a particular procedure, the system displays a message informing the user.* | | | | | | | |
| Non functional requirements | | *The gallery should be user-friendly and easy to navigate for website visitors.*  *The photos should be high quality and clearly show the transformation.*  *The system should be secure and protect patient privacy.* | | | | | | | |
| Postconditions | | *The Before & After Gallery is updated with new patient transformations.* | | | | | | | |

33. Emergency appointments

| UC Name | | *UC033* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This describes a process for scheduling emergency dental appointments.* | | | | | | | |
| Dependency | | *This process depends on use case UC002 that can handle urgent appointments and dentist availability.* | | | | | | | |
| Actors | | *Primary Actor: Patient*  *Secondary Actor: Dental Office Staff* | | | | | | | |
| Preconditions | | *The customer experiences a qualifying dental emergency (e.g., broken tooth, bleeding).*  *The dental office has a system for managing appointments and identifying availability for emergency slots.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The customer contacts the dental office by phone or online emergency booking system (if available).* * *Step 2: The customer explains the nature of their dental emergency to the dental office staff.* * *Step 3: The staff verifies the customer's information and assesses the urgency of the situation.* * *Step 4: The staff checks for available emergency appointments and schedules the customer for the soonest possible slot.* * *Step 5: The staff confirms the appointment details (date, time, dentist) with the customer.* * *Step 6: The system to react in a different way like a pop-up when the emergency button is pressed* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If no emergency appointments are available, the staff:* * *Step 2: Explains the situation to the customer and offers options such as waiting for a cancellation or referral to another provider.* * *Step 3: Provides the customer with self-care advice while they wait for an appointment.* | | | | | | | |
| Non functional requirements | | *The process should be as fast and efficient as possible to minimize wait times for emergency patients.*  *The dental office staff should be trained to handle emergency situations calmly and professionally.* | | | | | | | |
| Postconditions | | *The customer has an emergency dental appointment scheduled or receives alternative guidance.*  *The dental office schedule is updated to reflect the emergency appointment.* | | | | | | | |

34. Informational blogs

| UC Name | | *UC034* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *The sentence describes an informational blog aimed at educating customers about dental health, not emergency situations.* | | | | | | | |
| Dependency | | *This use case may depend on UC029 (website advertisement).* | | | | | | | |
| Actors | | *Primary Actor: System administrators*  *Secondary Actor: Users* | | | | | | | |
| Preconditions | | *The administrators have the knowledge and expertise on dental topics.*  *The platform is functional and accessible to readers.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Administrators create blog posts on the following topics such as causes of short teeth, solutions for missing front teeth, teeth straightening process etc* * *Step 2: The blog platform publishes the content.* * *Step 3: Users can access and read the blog posts for information.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If there are delays in drafting or reviewing the informational blogs, the System Administrator may communicate updates or expected publication dates to users to manage expectations.* * *Step 2: In case of technical issues or errors in publishing the blogs on the website, the System Administrator may troubleshoot the problem or seek assistance from technical support to ensure the timely availability of the content to users.* | | | | | | | |
| Non functional requirements | | *The informational blogs should be written in clear and understandable language, catering to users with varying levels of dental knowledge.*  *The website's navigation should be user-friendly, allowing users to easily find and access the informational blogs section.* | | | | | | | |
| Postconditions | | *Users gain knowledge about dental health topics.* | | | | | | | |

35. Donations

| UC Name | | *UC035* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves the dedication of a sector within the system for donations to diverse causes, contributions from employees, and provisions for discounts and complimentary services for individuals facing challenges.* | | | | | | | |
| Dependency | | *This use case depends on UC038 (financial monthly report).* | | | | | | | |
| Actors | | *Primary Actor: User who will donate.* | | | | | | | |
| Preconditions | | *There must be a defined set of causes eligible for support.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The clinic chooses a cause to support.* * *Step 2: The clinic specifies the amount.* * *Step 3: System processes the donation or contribution.* * *Step 4: System notifies the organization administrator of the dedication.* * *Step 5: (Optional) System notifies the recipient of the dedication (depending on the cause/challenge).* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: Donor may be ineligible to make a dedication (e.g., insufficient account balance).* * *Step 2: The chosen cause/challenge may not be currently supported.* * *Step 3: System error occurs during processing.* | | | | | | | |
| Non functional requirements | | *System should be secure for handling financial transactions.*  *System should be responsive and easy to use.*  *The dedication process should be transparent and auditable.* | | | | | | | |
| Postconditions | | *The chosen cause or challenge receives the dedicated funds or benefits the recipient with a discount.*  *The dedication is recorded in the system for future reference.* | | | | | | | |

36. Sign up method for a free check-up waiting list.

| UC Name | | *UC036* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves implementing a sign-up method for a waiting list that can accommodate up to 10 patients. These patients are eligible for free quick check-ups, and the waiting list resets every month.* | | | | | | | |
| Dependency | |  | | | | | | | |
| Actors | | *Primary Actor: Patients*  *Secondary Actor: Clinic Staff* | | | | | | | |
| Preconditions | | *The clinic offers free quick check-up services to a limited number of patients each month.*  *The clinic has a system in place to manage appointments and waiting lists.*  *Patients are aware of the availability of free quick check-ups and the sign-up process.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Patients visit the clinic's website or contact the clinic through other channels to sign up for the waiting list.* * *Step 2: The patients provide their contact information and any necessary details required for scheduling the quick check-up.* * *Step 3: Clinic staff receive and record the patient's information in the waiting list system.* * *Step 4: As slots become available, clinic staff contact patients on the waiting list to schedule their free quick check-up appointments.* * *Step 5: Patients attend their scheduled appointments for the quick check-up services.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the waiting list reaches its maximum capacity of 10 patients before the end of the month, clinic staff inform subsequent patients who attempt to sign up that they will be added to the waiting list for the following month.* * *Step 2: In case of cancellations or no-shows for scheduled appointments, clinic staff may fill the vacant slots by contacting patients on the waiting list for that month.* | | | | | | | |
| Non functional requirements | | *The waiting list sign-up process should be user-friendly and accessible through multiple channels (e.g., website, phone, email).*  *Clinic staff should promptly contact patients on the waiting list as slots become available to schedule their appointments.*  *Patient information should be securely stored and managed within the waiting list system to ensure privacy and confidentiality.* | | | | | | | |
| Postconditions | | *Patients are successfully added to the waiting list for free quick check-up appointments.*  *Clinic staff effectively manage the waiting list and schedule appointments for patients in a timely manner.*  *Patients receive the free quick check-up services they signed up for, contributing to their healthcare needs and satisfaction.* | | | | | | | |

37. The system must grant free admission to visitors aged two or under.

| UC Name | | *UC037* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *This use case involves the system granting free admission to visitors who are aged two or under.* | | | | | | | |
| Dependency | | *This may depend on UC008 (database) and UC017 (patient management).* | | | | | | | |
| Actors | | *Primary Actor: Visitor*  *Secondary Actor: System Administrator* | | | | | | | |
| Preconditions | | *The event or venue has implemented an admission system.*  *Visitors' ages can be accurately determined at the time of admission.*  *Admission policies regarding free admission for children aged two or under are established and communicated to staff and visitors.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: Visitors arrive at the event or venue.* * *Step 2: The admission system or staff inquire about the age of each visitor.* * *Step 3: If a visitor is aged two or under, the system grants them free admission.* * *Step 4: For visitors older than two years, the system applies the regular admission fee.* * *Step 5: Visitors receive their tickets or passes and are granted entry accordingly.* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If there are discrepancies or uncertainties about a visitor's age, the admission system or staff may request identification or additional verification to determine eligibility for free admission.* * *Step 2: In the absence of a functioning admission system, staff manually verify visitors' ages and apply appropriate admission fees.* | | | | | | | |
| Non functional requirements | | *The admission system should accurately determine visitors' ages to apply the appropriate admission fee.*  *Admission procedures should be efficient to minimize wait times for visitors, including those eligible for free admission.*  *Staff should be trained to handle inquiries about free admission eligibility and provide assistance as needed.* | | | | | | | |
| Postconditions | | *Visitors aged two or under are admitted to the event or venue free of charge.*  *Visitors receive their tickets or passes and can proceed with their visit.*  *The admission process proceeds smoothly without significant delays or issues.* | | | | | | | |

38. Monthly financial report

| UC Name | | *UC038* | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Summary | | *The system shall generate a comprehensive monthly financial report for the clinic summarizing gross income, expenses, taxes, and other relevant financial data.* | | | | | | | |
| Dependency | | *This requirement depends on the existence of a financial data storage system within the application UC008 (database management).* | | | | | | | |
| Actors | | *Primary Actor: Clinic Administrator* | | | | | | | |
| Preconditions | | *The current month must be closed (i.e., all transactions for the month are finalized).*  *Financial data for the month must be accessible within the system.* | | | | | | | |
| Description of the Main Sequence | | * *Step 1: The Clinic Administrator initiates the report generation process by selecting the "Generate Monthly Financial Report" option within the system.* * *Step 2: The system retrieves relevant financial data for the month, including gross income, expenses (categorized), taxes paid, and any other pertinent financial information.* * *Step 3: The system generates a report that summarizes the retrieved data in a clear and organized format. This may include tables, charts, and key financial metrics.* * *Step 4; The report is presented to the Clinic Administrator for review and download/printing (optional).* | | | | | | | |
| Description of the Alternative Sequence | | * *Step 1: If the current month is not closed, the system displays an error message informing the administrator and prompting them to close the month before generating the report.* * *Step 2: If there is an issue accessing financial data, the system displays an error message indicating a system error and recommends contacting technical support.* | | | | | | | |
| Non functional requirements | | *The report generation process should be efficient and complete within a reasonable timeframe.*  *The report should be presented in a user-friendly format that is easy to understand and interpret.*  *The system should allow for exporting the report in various formats (e.g., PDF, CSV) for further analysis or sharing.* | | | | | | | |
| Postconditions | | *A comprehensive monthly financial report is available for the Clinic Administrator to review and use for financial analysis and decision-making.*  *The system remains operational after report generation is complete.* | | | | | | | |