SMART DENTASSIST

Interactive System for Dental Support and Patient Management

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Home Page

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Patient Registration

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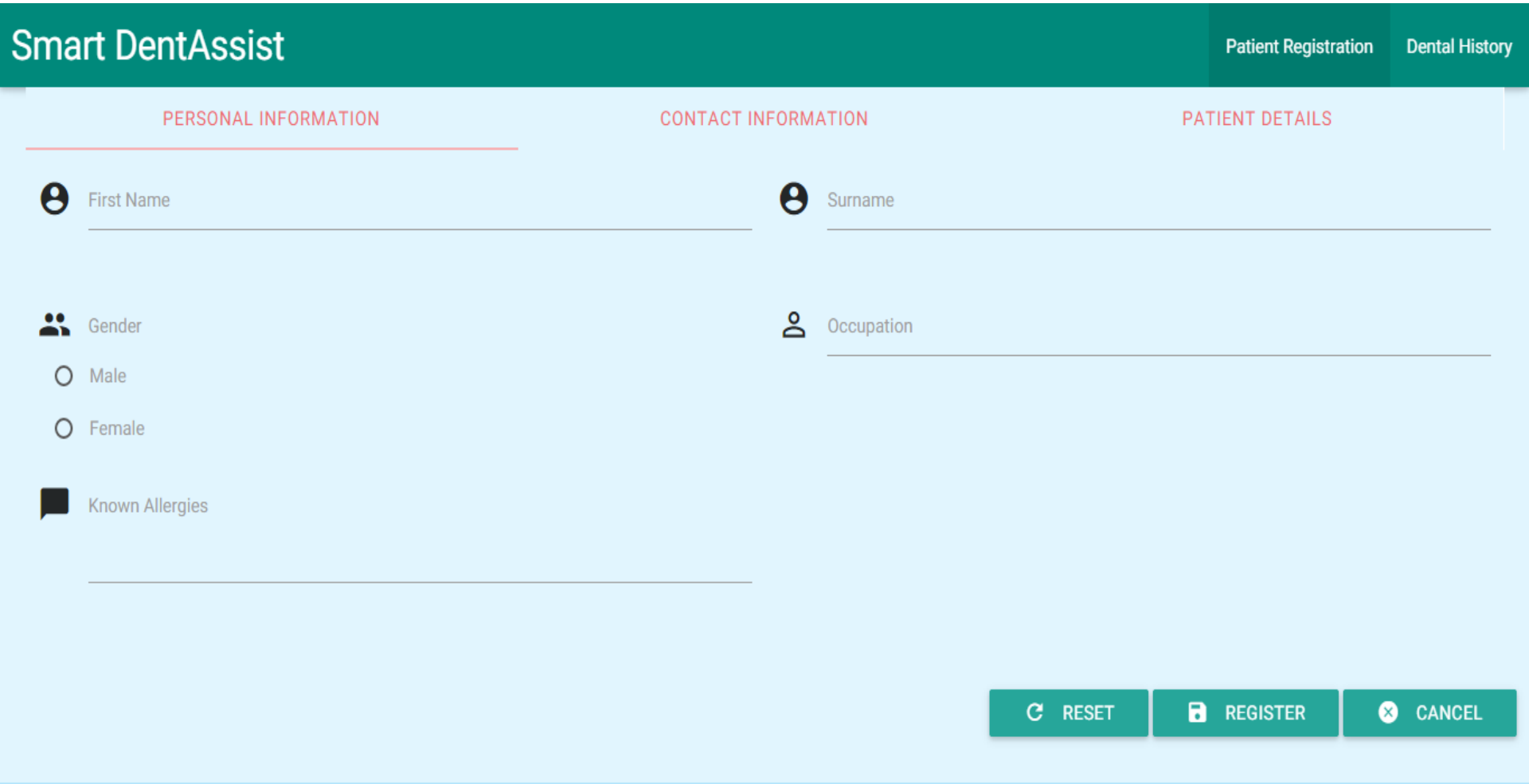
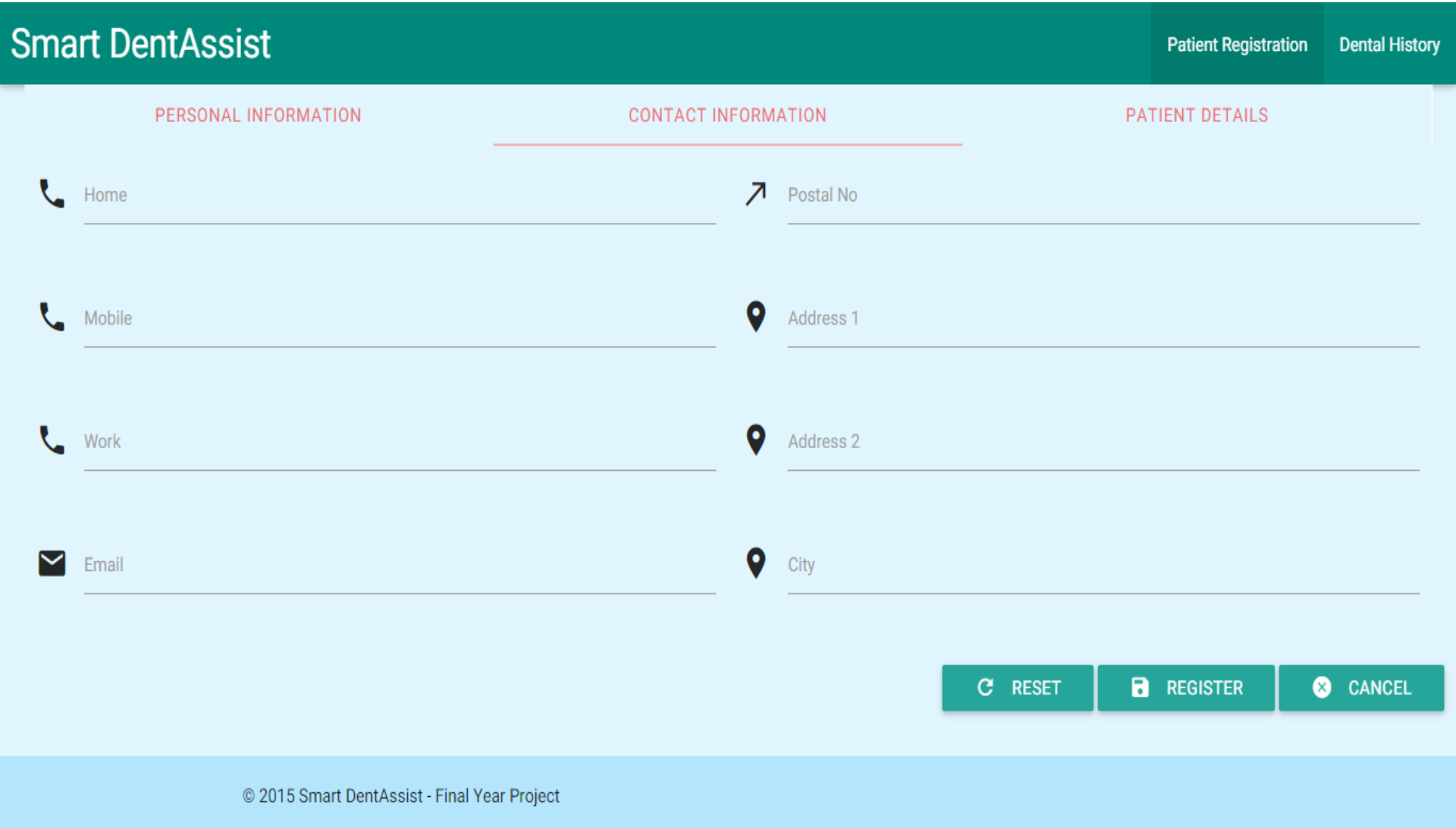
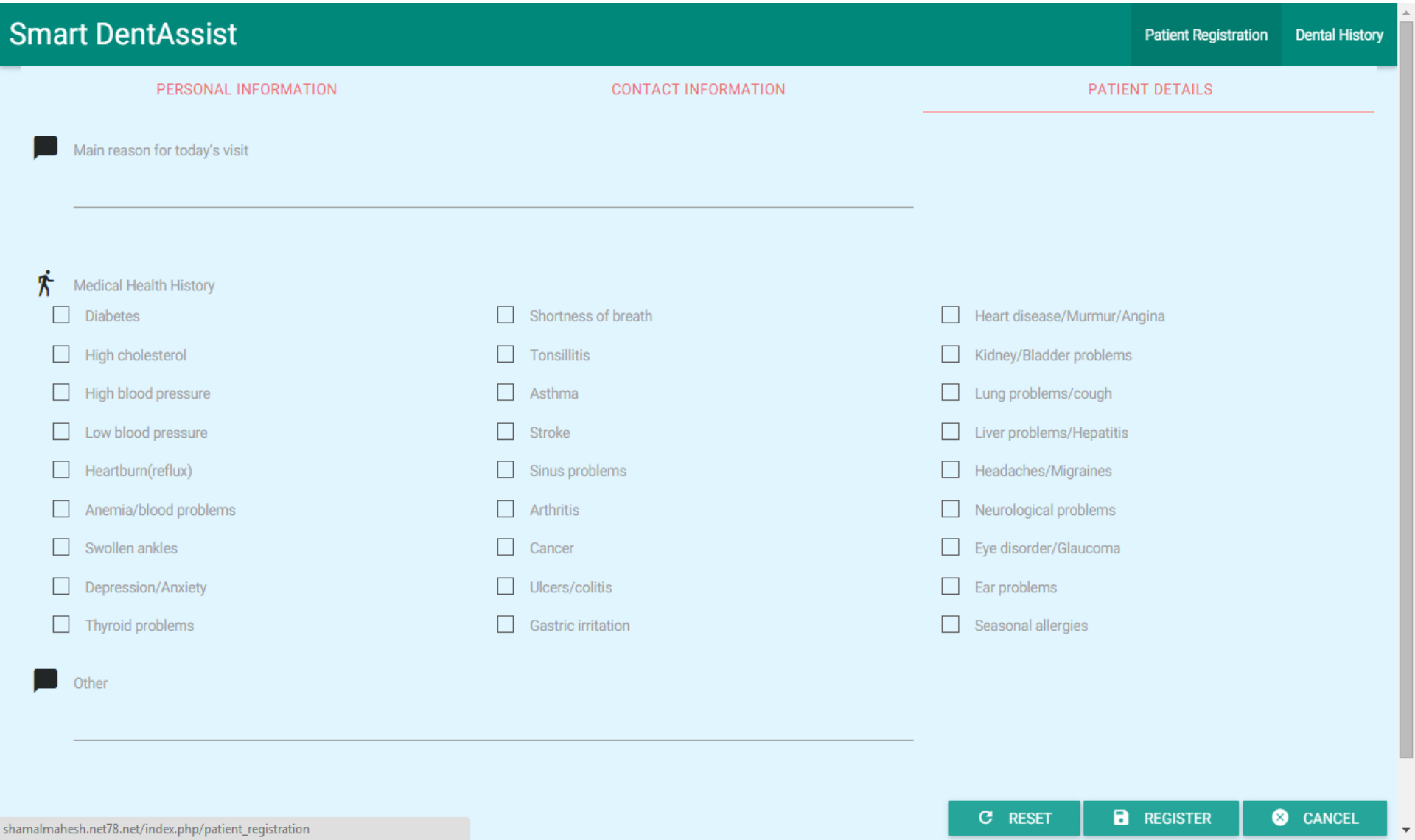
Personal Information



Contact Information



Health Information



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Dental Health History

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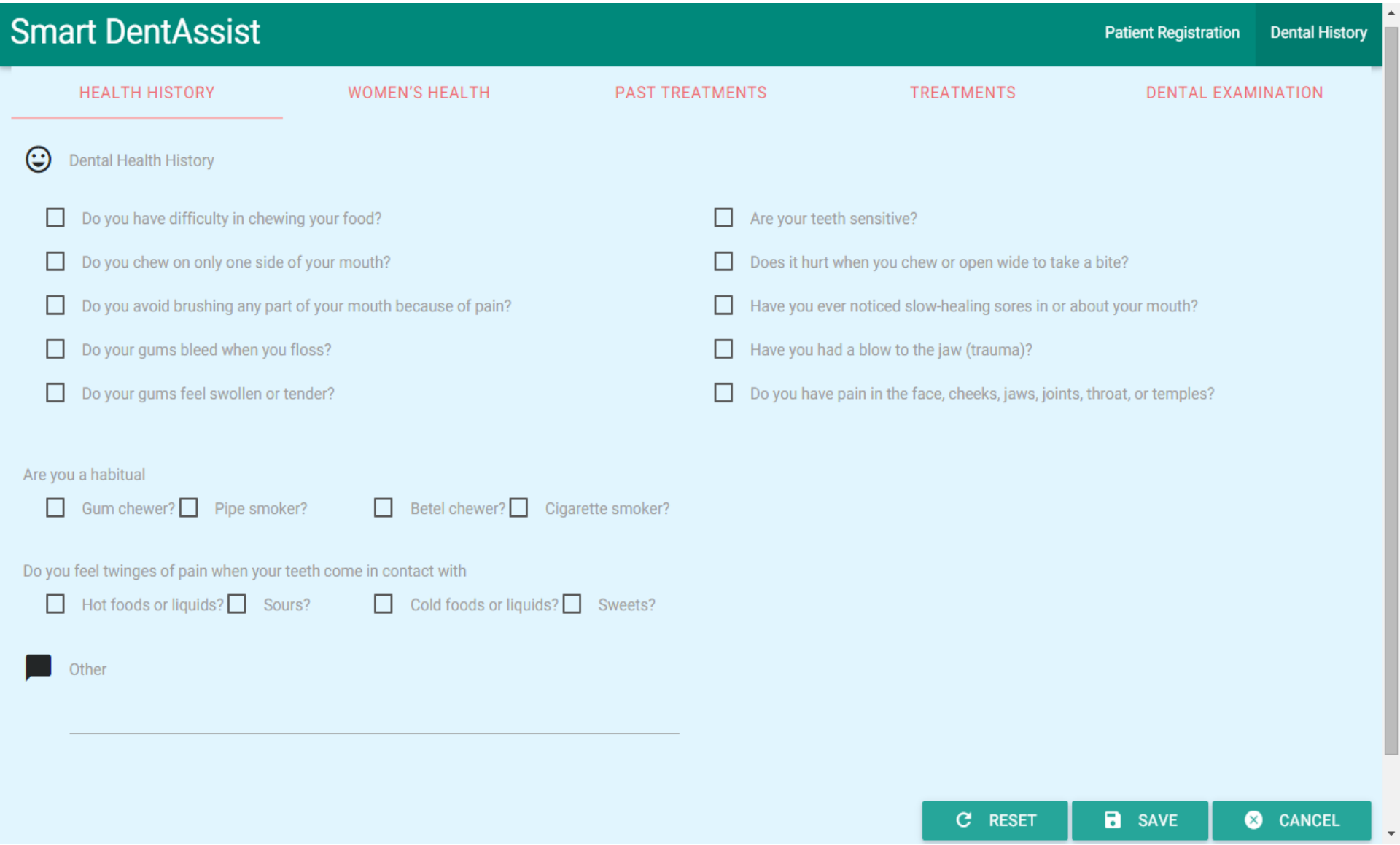
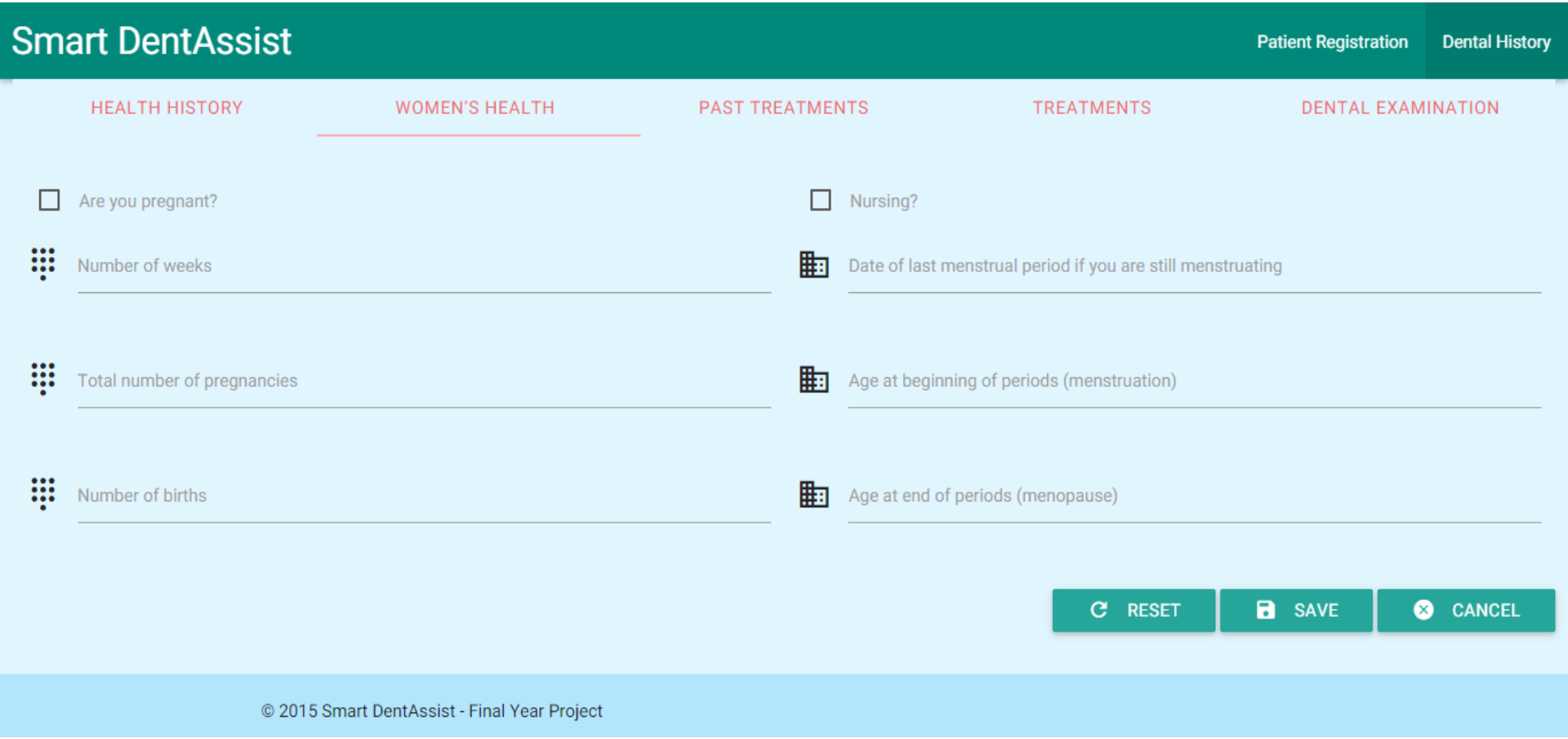
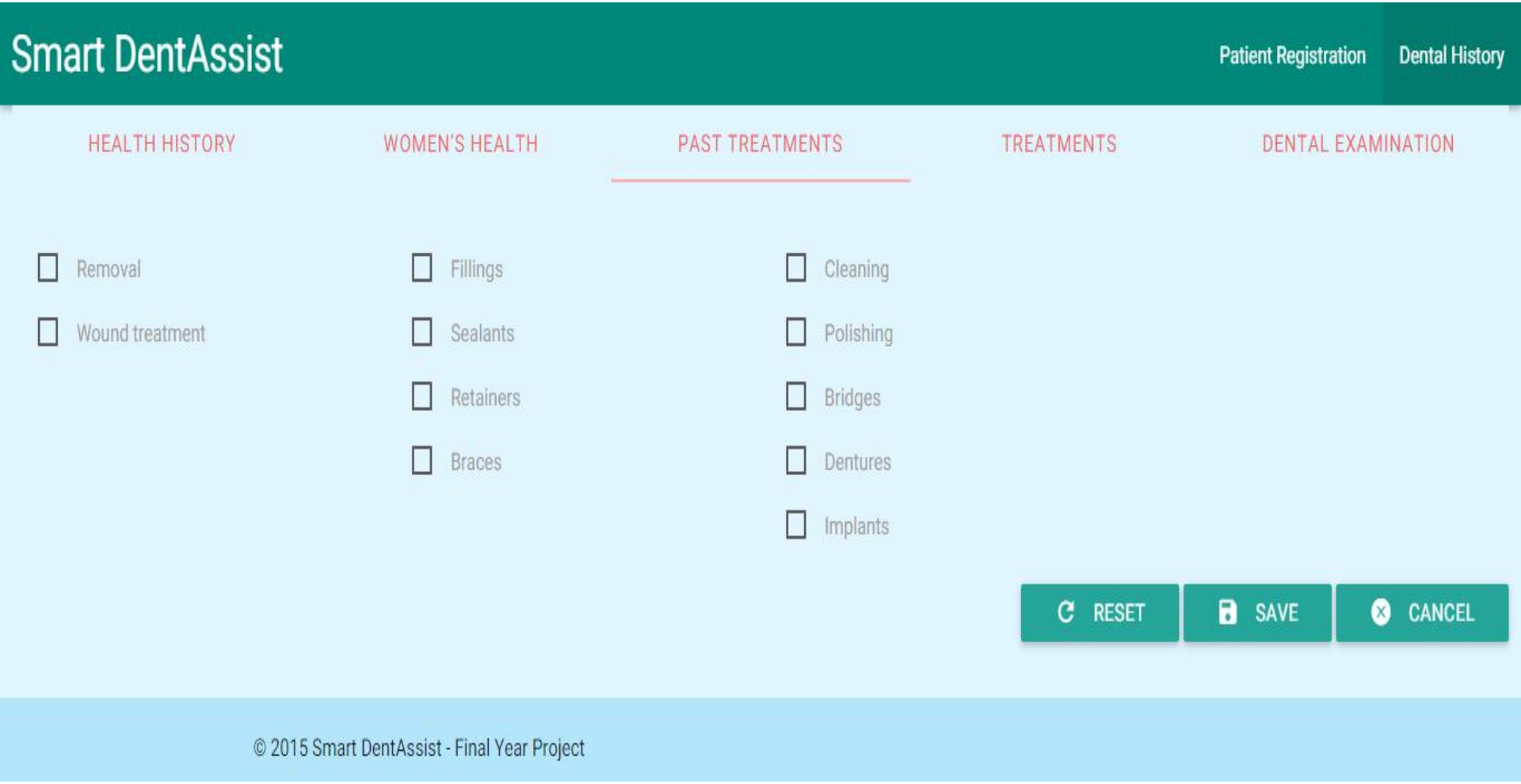
Medical Health



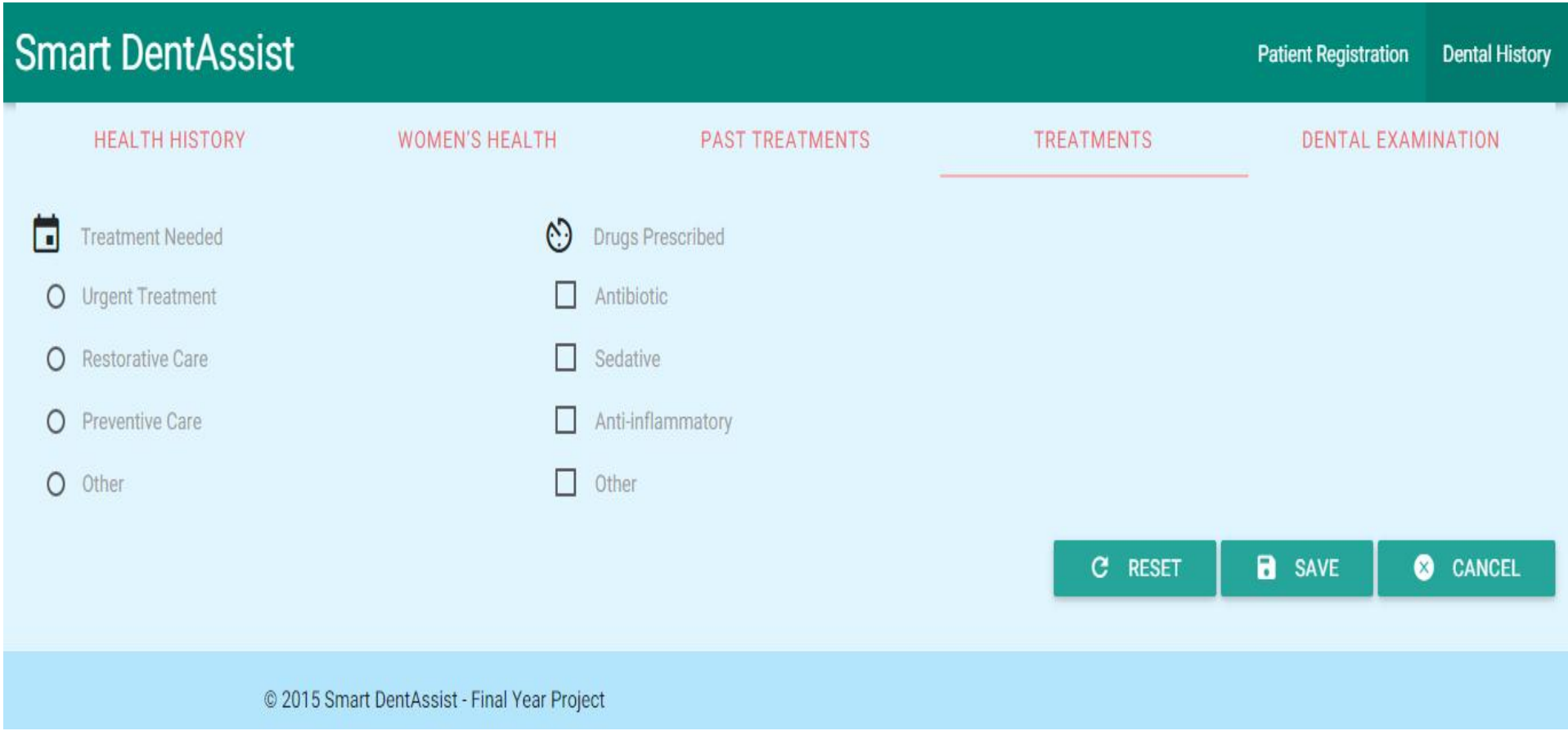
Women's Health



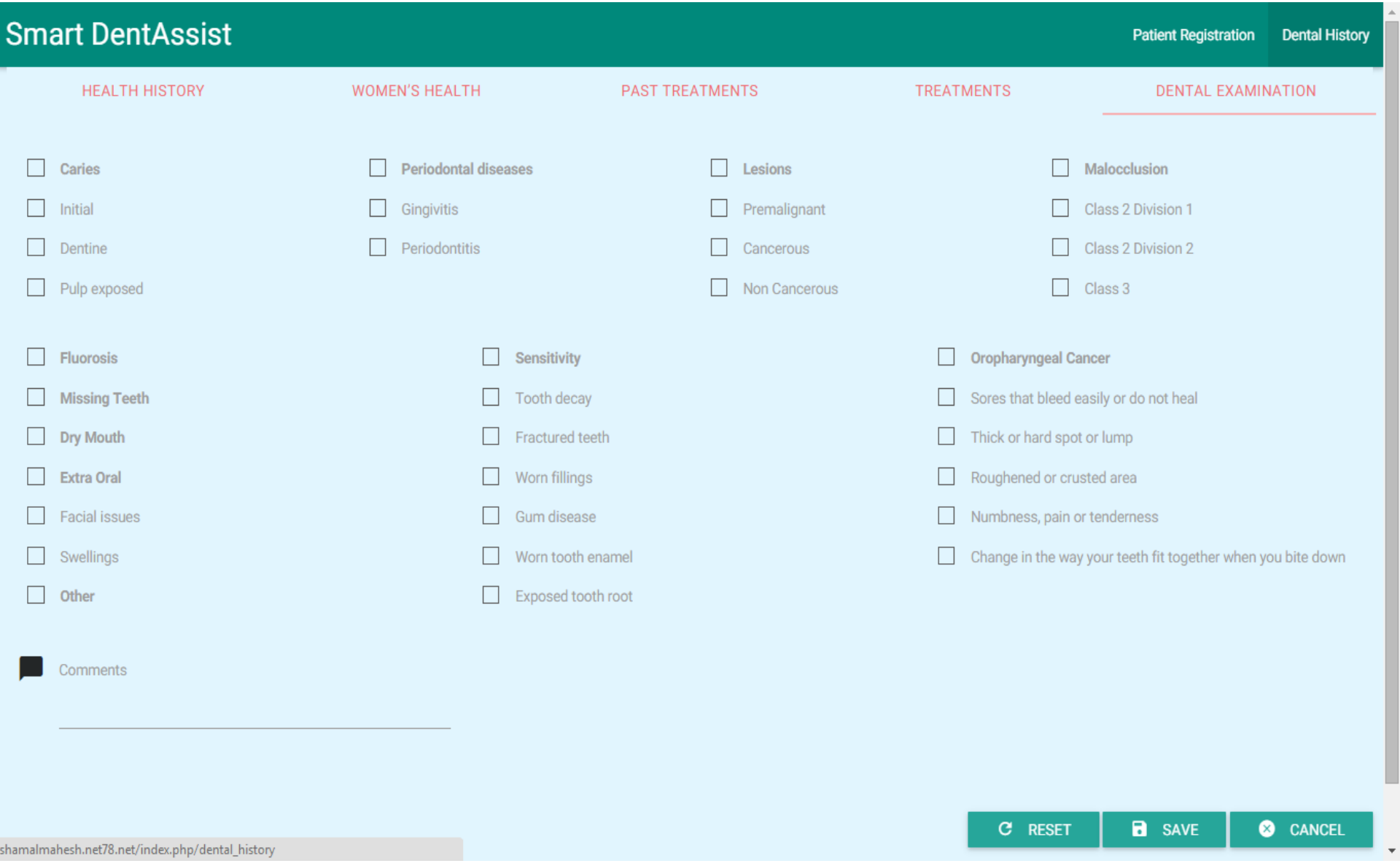
Past Dental Treatments



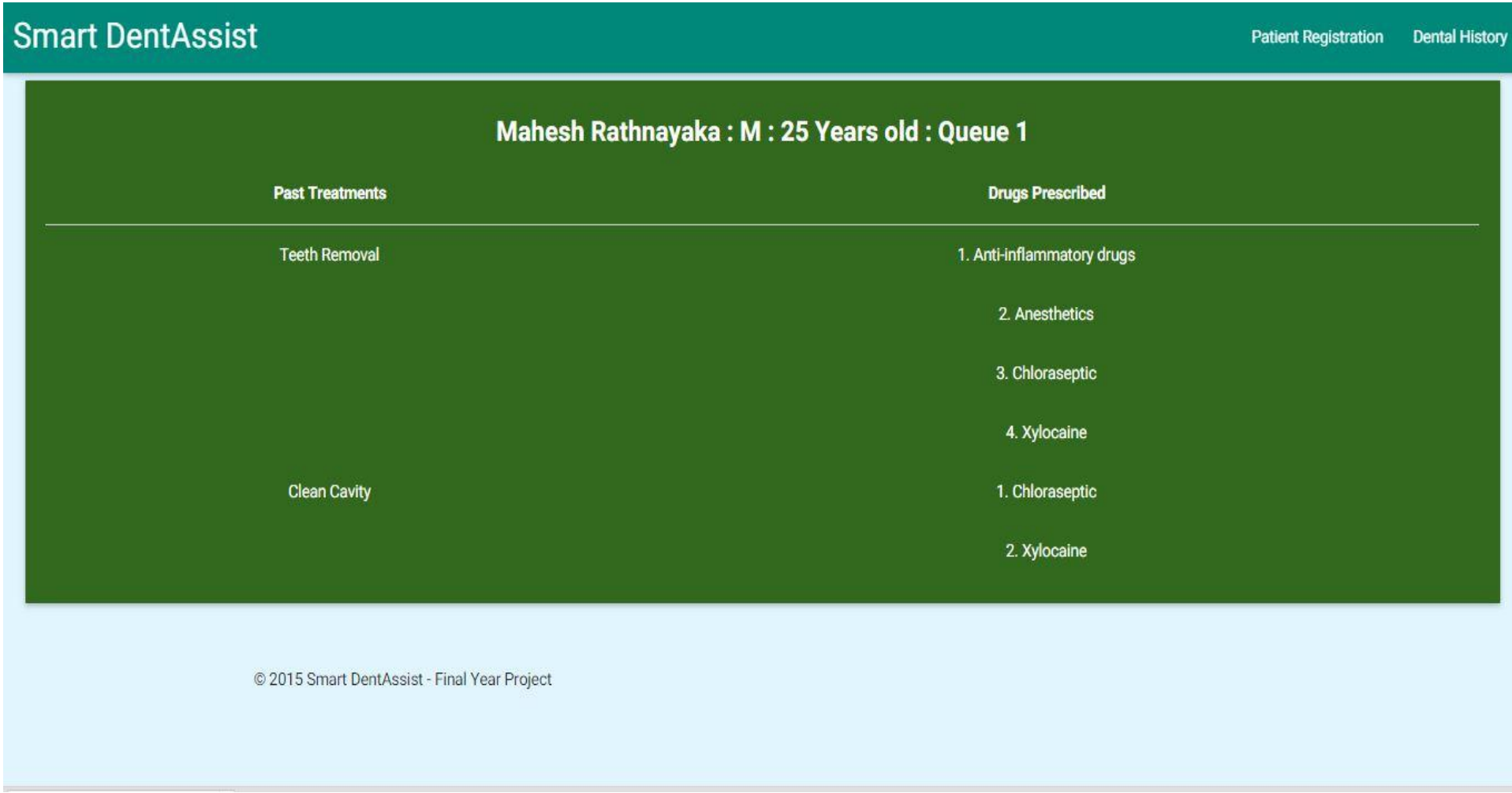
Required Treatment



Dental Examination Observations



Patient History Profile



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Hardware Interfaces

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Laptop computer

Intraoral camera

Tablet PC

Bar code reader

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Software Interfaces

- The system - **Java version 1.7**
- The webpages - **php, HTML, CSS, JavaScript and jQuery.**
- The database - **MySQL version 5.5**

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Use Cases

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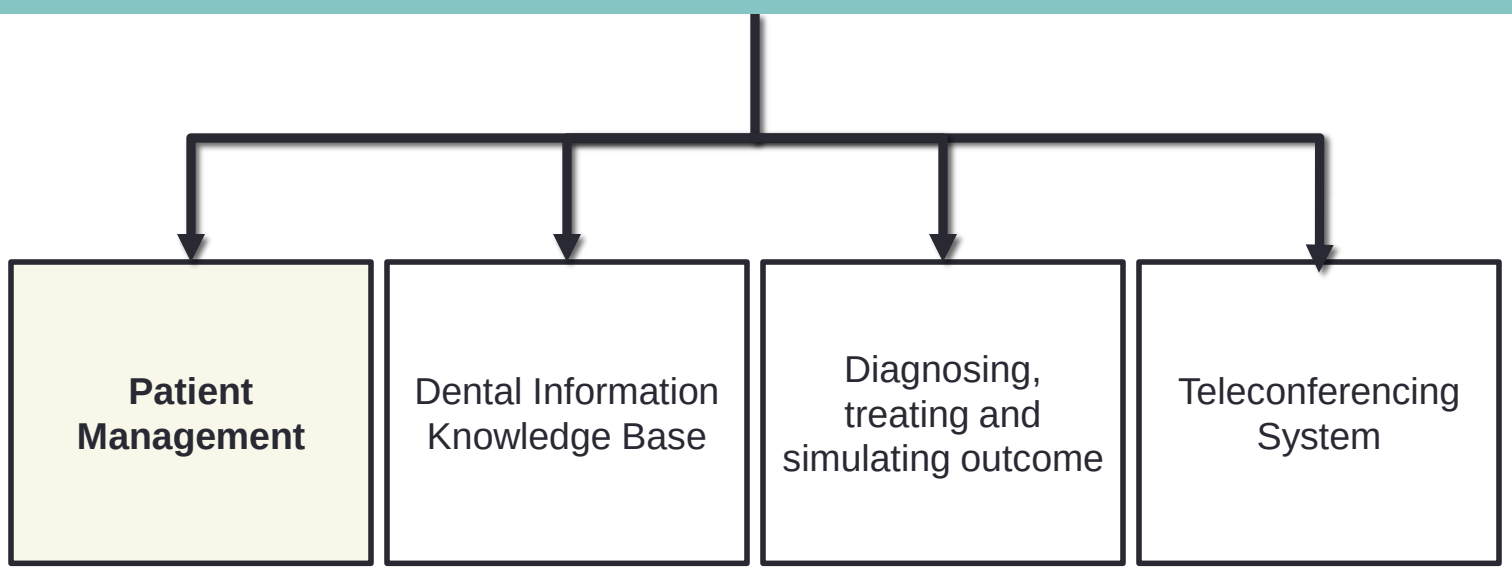

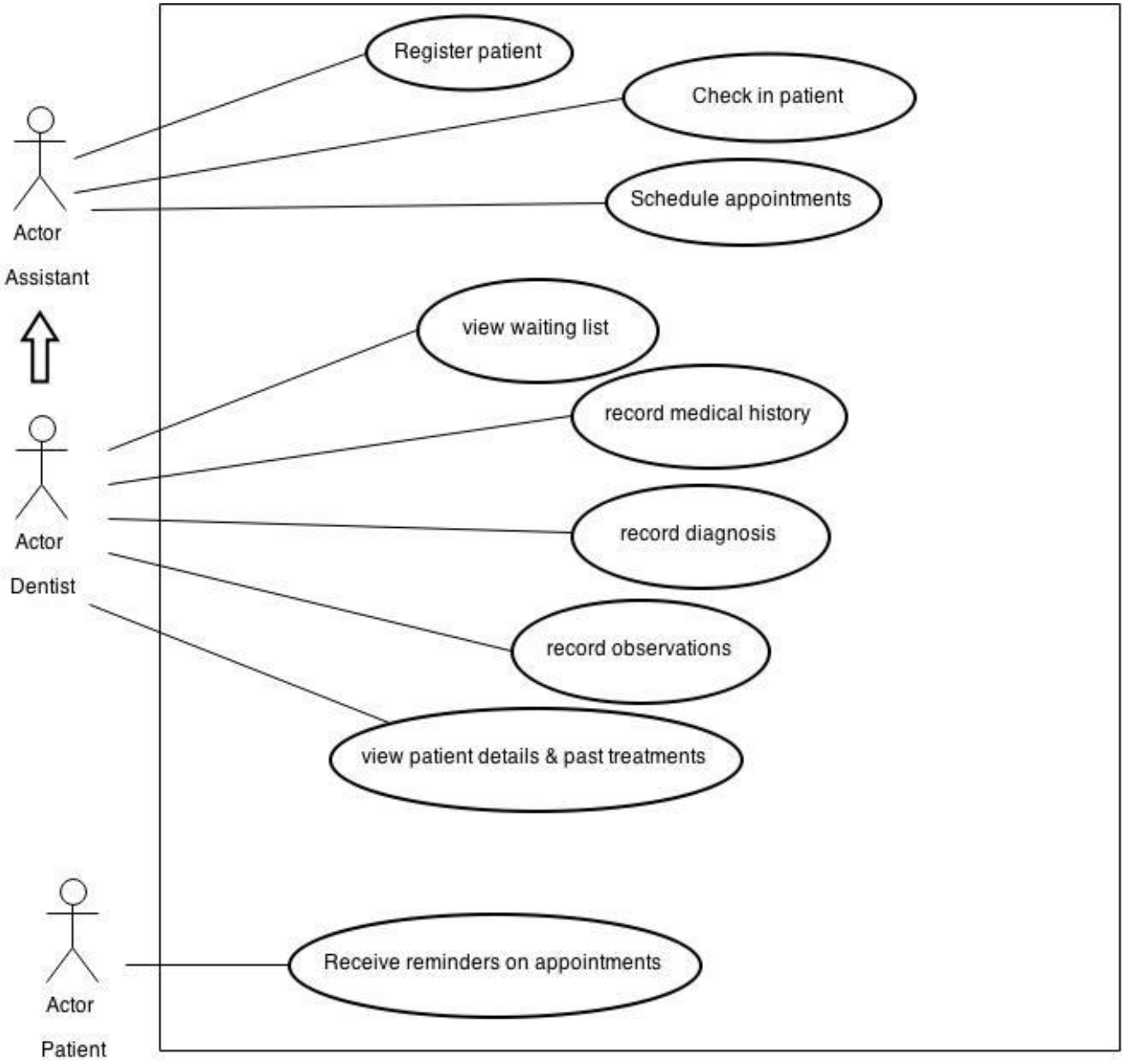
Register patient
Check in patient
Schedule appointments
Actor
Assistant
view waiting list
record medical history
record diagnosis
record observations
view patient details & past treatments
Actor
Dentist
Receive reminders on appointments
Actor
Patient

Use case	Register Patient
Pre-condition	1. Application is up and running 2. Database connection is active
Actor	Assistant / Nurse
Main Success Scenarios	1. Enter patient basic personal information 2. Enter patient contact details information 3. Enter patients' general medical history
Extension	

Use case	Check in Patient
Pre-condition	1. Application is up and running 2. Database connection is active 3. Patient must be already registered
Actor	Assistant / Nurse
Main Success Scenarios	1. Go to check in interface 2. Scan patient barcode with bar code reader 3. Doctor’s waiting list & schedule are automatically updated
Extension	

Use case	Schedule appointment
Pre-condition	1. Application is up and running 2. Database connection is active 3. Patient must be already registered
Actor	Assistant / Nurse
Main Success Scenarios	1. Scan patient barcode / search patient 2. Select time and date 3. Enter reason for appointment / patient complaint 4. Add appointment
Extension	

Use case	View waiting list
Pre-condition	1. Application is up and running 2. Database connection is active
Actor	Dentist
Main Success Scenarios	1. Open daily schedule 2. View list of upcoming appointments
Extension	

Use case	Record medical history
Pre-condition	1. Application is up and running 2. Database connection is active 3. Patient is already registered
Actor	Dentist
Main Success Scenarios	1. Scan patient barcode / search patient 2. Open dental health history interface 3. Check/tick options and make comments if necessary 4. Save to the system
Extension	

Use case	Record diagnosis
Pre-condition	1. Application is up and running 2. Database connection is active 3. Patient is already registered 4. Patient history is saved
Actor	Dentist
Main Success Scenarios	1. Scan patient barcode / search patient 2. Open treatment interface 3. Check/tick treatment types, drugs and treatment priority 4. Add comments 5. Save to the system
Extension	3a. if there are any other details to be stored, the dentist can store them as comments.

Use case	Record observations
Pre-condition	1. Application is up and running 2. Database connection is active 3. Patient is already registered 4. Patient history is saved
Actor	Dentist
Main Success Scenarios	1. Scan patient barcode / search patient 2. Open observations interface 3. Check/tick observations, signs, symptoms 4. Add comments 5. Save to the system
Extension	

Use case	View patient details & past treatments
Pre-condition	1. Application is up and running 2. Database connection is active 3. Patient is already registered 4. Patient history is saved 5. Patient diagnosis & observations are saved
Actor	Dentist
Main Success Scenarios	1. Scan patient barcode / search patient 2. Open patient profile interface 3. View past treatments, methods, drugs used, outcome
Extension	3a. If the patient is new, only the registration details will be displayed

Use case	Receive reminders on appointments
Pre-condition	1. Application is up and running 2. Database connection is active 3. Patient is registered in the system
Actor	Patient
Main Success Scenarios	1. Receive text message / mail reminders of upcoming appointments
Extension	

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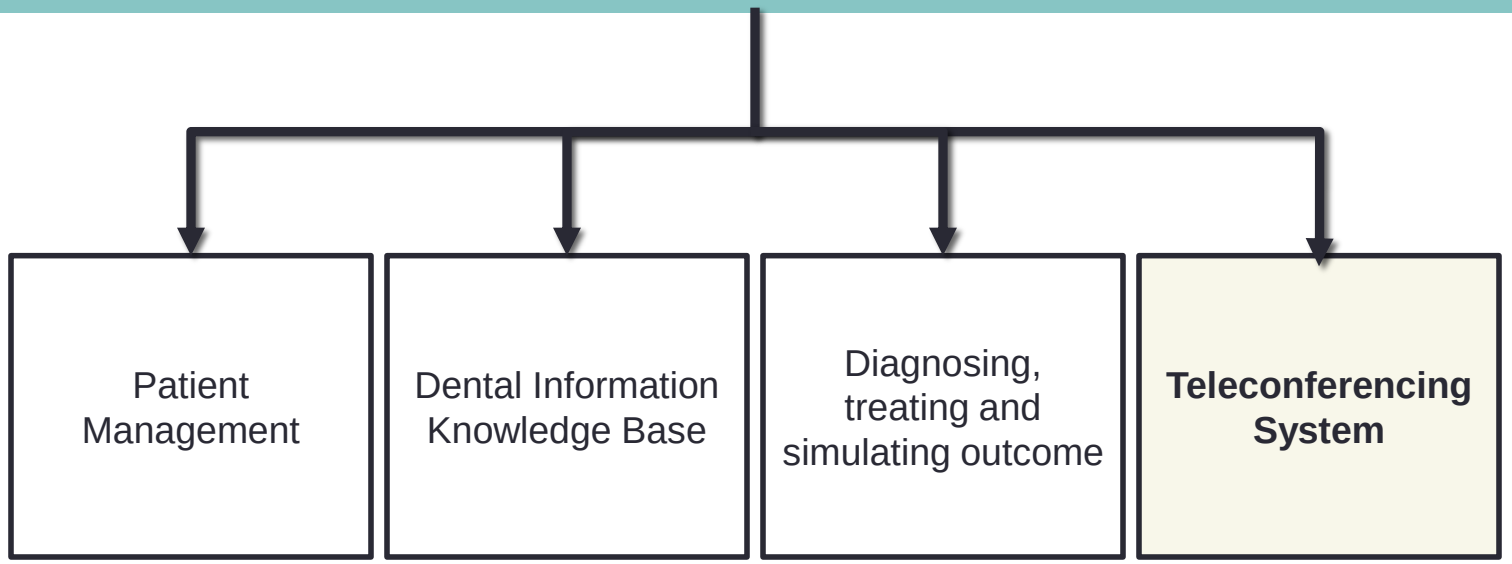

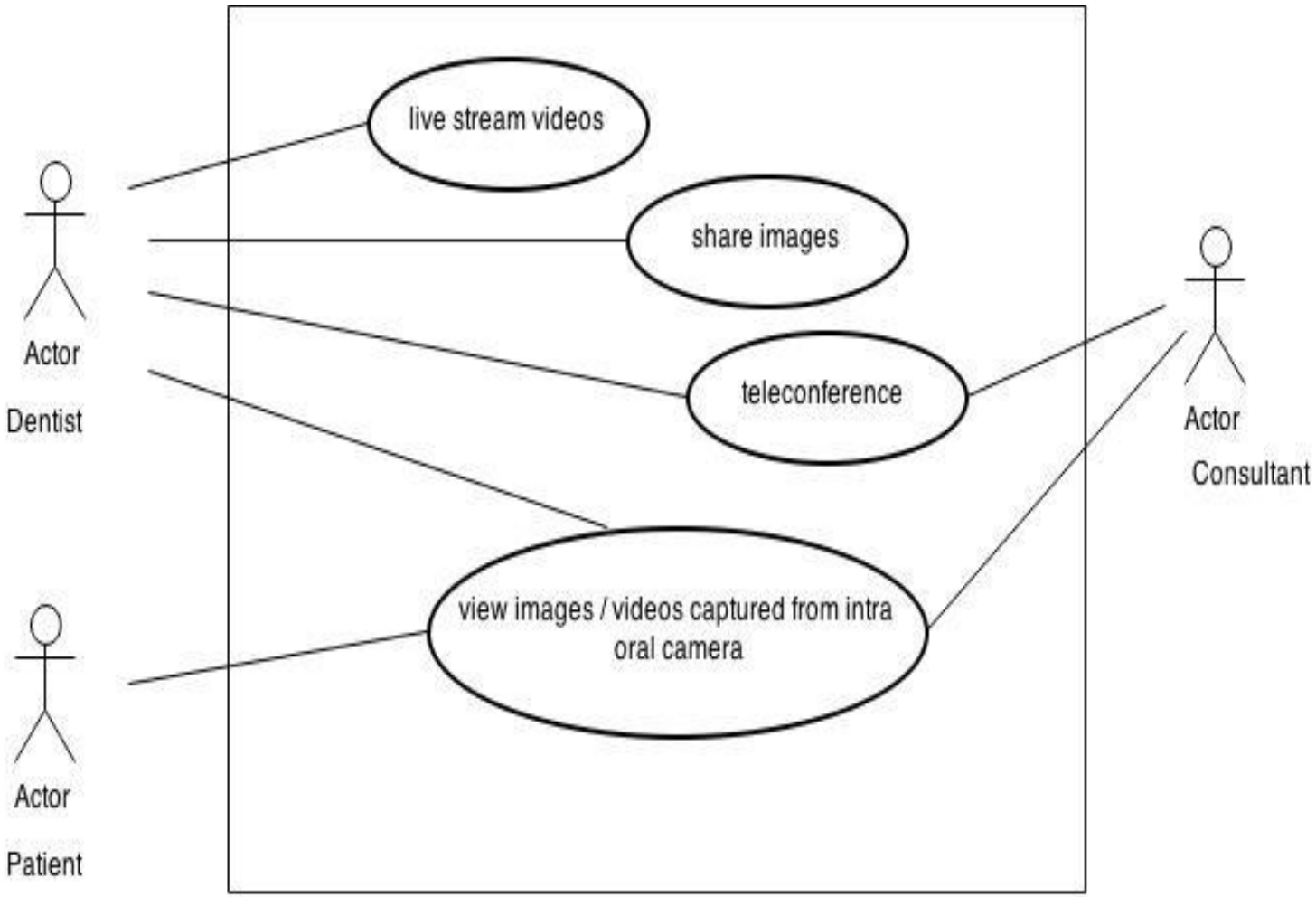
live stream videos
share images
teleconference
view images / videos captured from intra oral camera
Actor
Dentist
Actor
Patient
Actor
Consultant

Use case 01	Live Stream videos
Pre-condition	1. Healthy internet connection 2. Application up and running and working hardware properly
Actor	Dentist
Main Success Scenarios	1. Get the list of online specialists/consultants 2. Send request to one or more specialists/consultants 3. Connect with people who accepted the request 4. Make online the video via the web application
Extension	1. a. No specialist/consultant available at the time

Use case 02	View images/videos captured from intra oral camera
Pre-condition	1. Application is up and running 2. Hardware device is linked with the application
Actor	Dentist/Consultant
Main Success Scenarios	1. Select the patient profile 2. Connect device and get the inputs from it 3. View/save images/videos against the selected patient online 4. Share images/videos with other specialists/consultants
Extension	Inputs taken from the device is not recognized

Use case 03	Teleconference
Pre-condition	1. Application is up and running 2. Healthy internet connection
Actor	Dentist
Main Success Scenarios	1. Get the list of online specialists/consultants 2. Select one or more from the list to start teleconferencing with 3. Start the conference with the selected personnel.
Extension	3.a. share media with the participants if needed.

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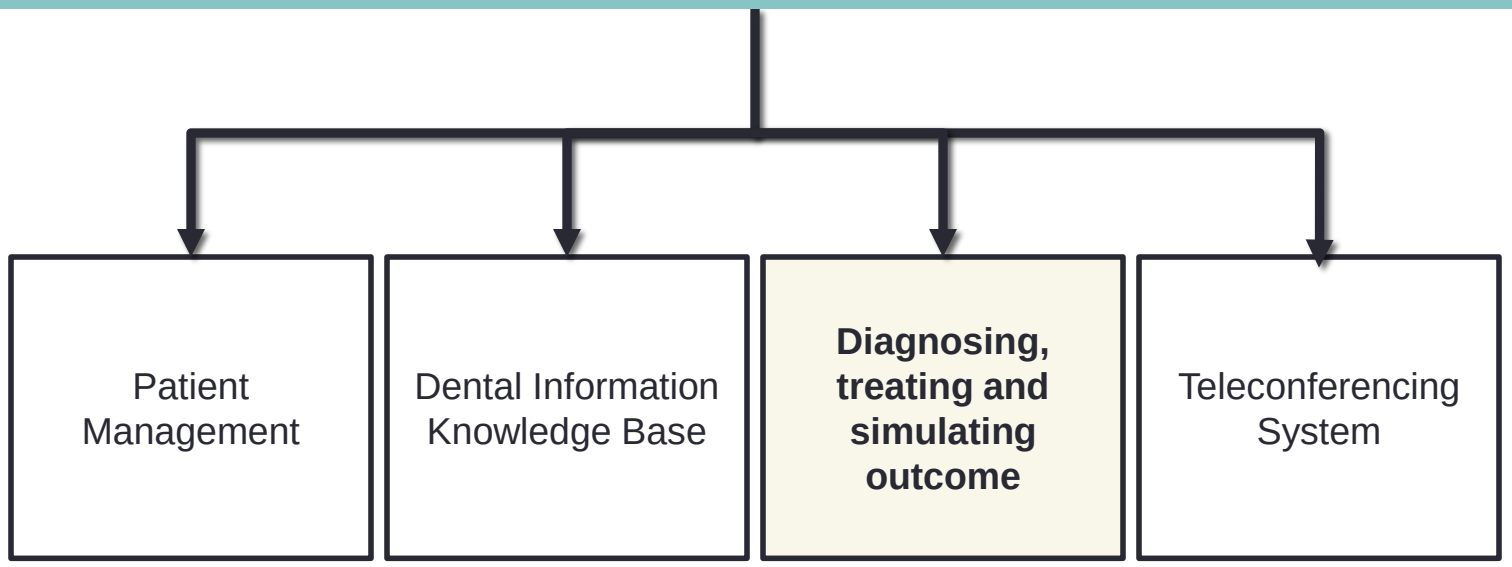

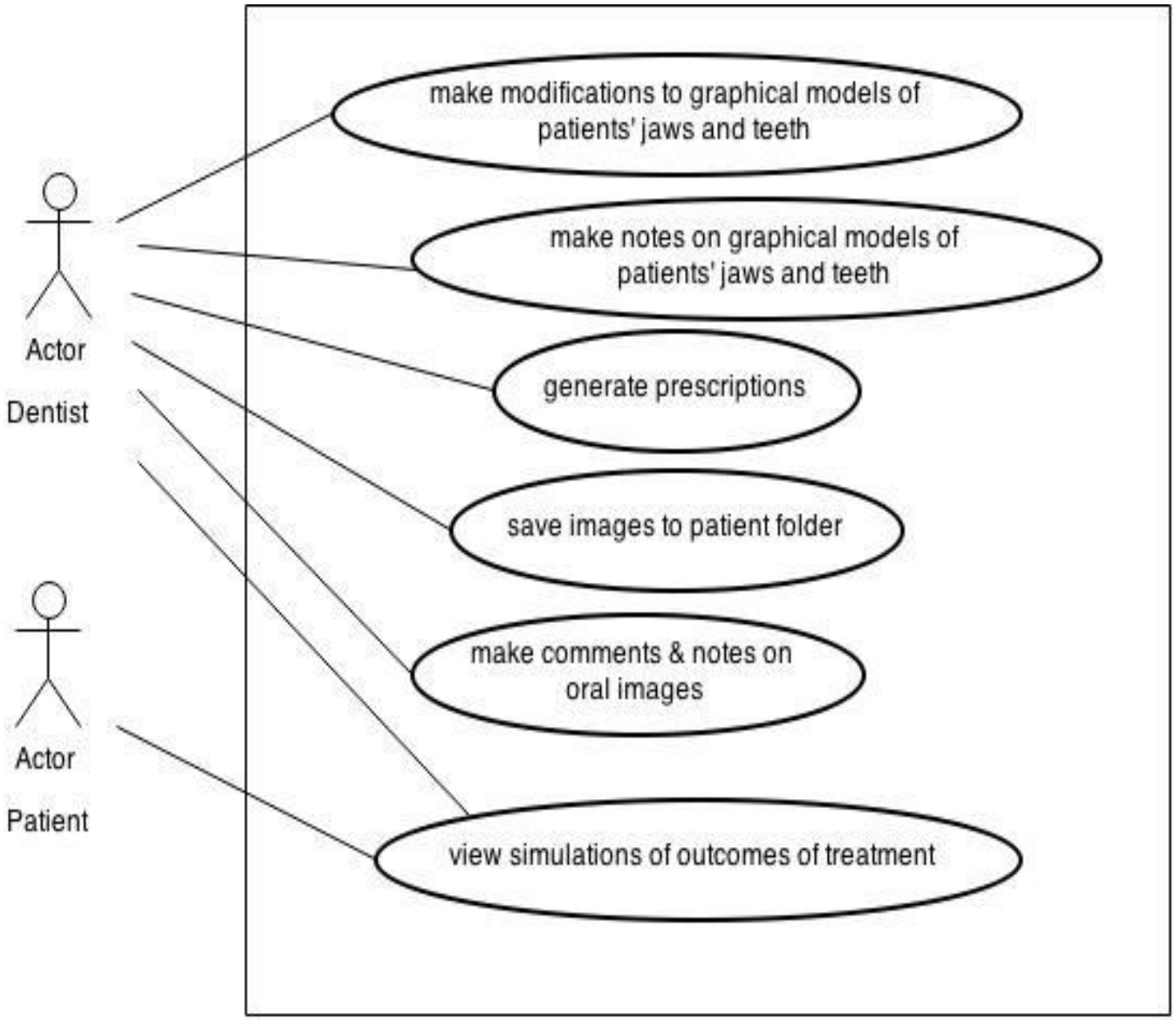
make modifications to graphical models of patients' jaws and teeth
make notes on graphical models of patients' jaws and teeth
generate prescriptions
save images to patient folder
make comments & notes on oral images
view simulations of outcomes of treatment
Actor
Dentist
Actor
Patient

Use case	3D modeling
Pre-condition	1. Application is up and running 2. Images are captured
Actor	Dentist
Main Success Scenarios	1. Capture images 2. Select 2D images 3. Select output type
Extension	1a. Captured images are not clear 2a. Select a valid source images

Use case	Simulating outcome
Pre-condition	1. Application is up and running 2. Images are captured
Actor	Dentist
Main Success Scenarios	1.Select 3D model. 2. Select treatment type. 3. Select treatment period 4. Click “Simulate”.
Extension	1a. Selected model not compatible

Use case	3D model editing(Manual 3d modeling)
Pre-condition	1. Application is up and running 2. Images are captured
Actor	Dentist
Main Success Scenarios	1. Select 3D model. 2. Edit 3D model. 3. Click “View”.
Extension	1a. Selected model not compatible

Use case	Create prescriptions
Pre-condition	1. Application is up and running 2. Images are captured 3. Patient's diagnosis is stored
Actor	Dentist
Main Success Scenarios	1 Select patient's teeth images. 2. Select treatment. 3. Comments images 3. Click "Create Prescription".
Extension	1a. Selected model not compatible

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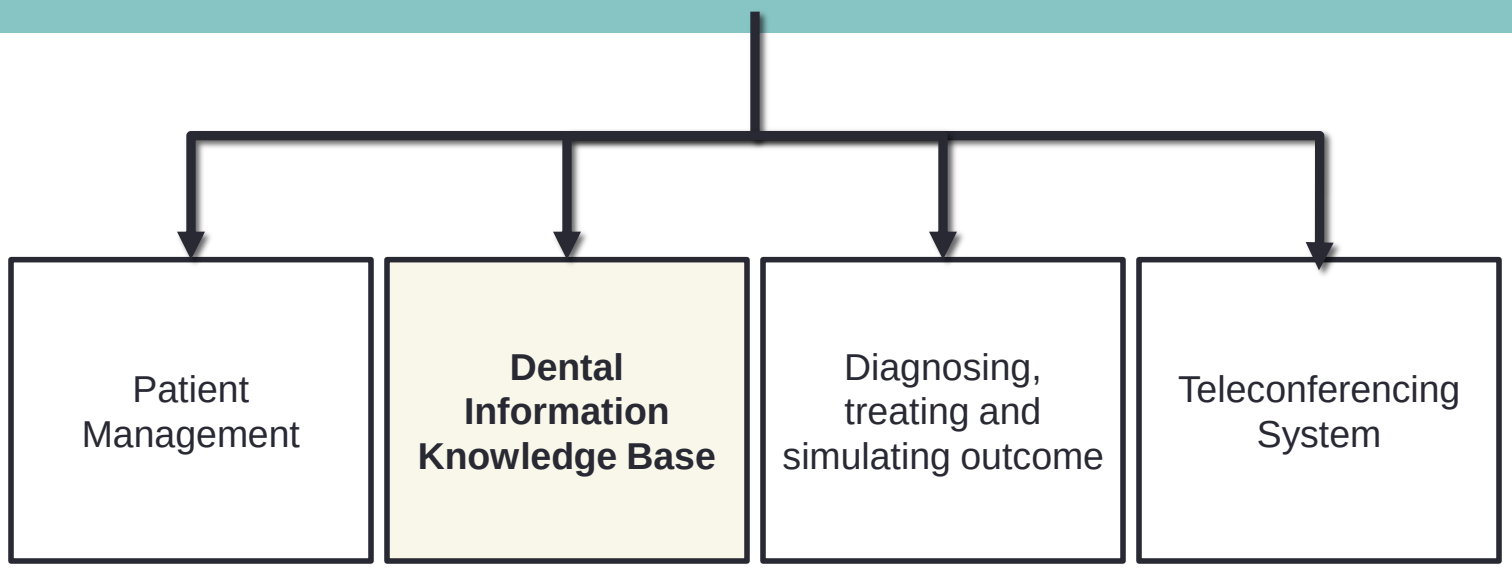

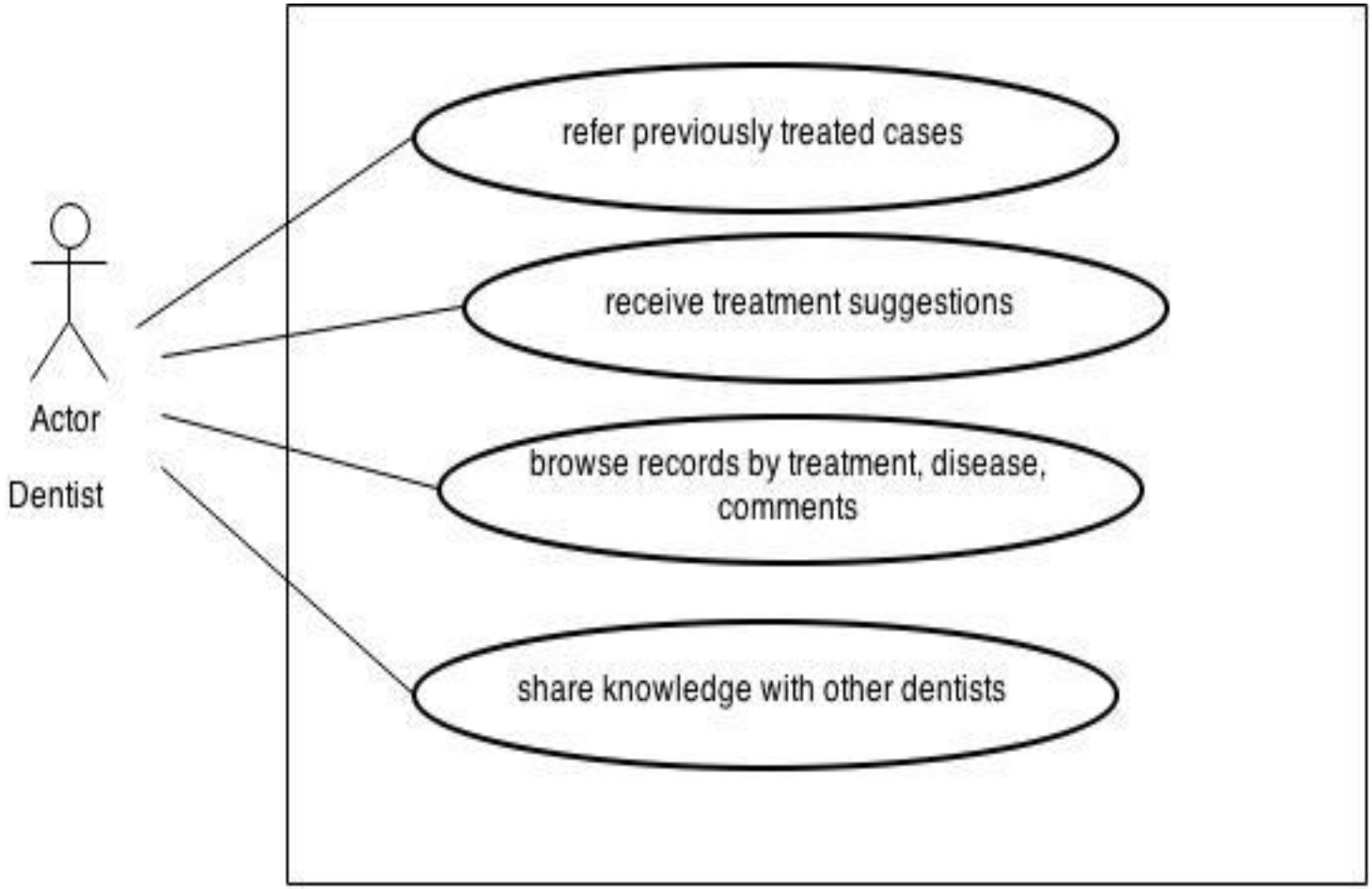
refer previously treated cases
receive treatment suggestions
browse records by treatment, disease, comments
share knowledge with other dentists
Actor
Dentist

Use case 01	Refer previous treatments
Pre-condition	1. Application is up and running 2. Database connection is active
Actor	Dentist
Main Success Scenarios	1. Select the patient profile 2. Select the patient history 3. Patient’s previous treatments will load in the web page
Extension	3.a. Previous treatments page not load for new patients

Use case 02	Receive treatment suggestions
Pre-condition	1. Application is up and running 2. Database connection is active
Actor	Dentist
Main Success Scenarios	1. Select the patient profile 2. Add comments to the patient oral health 3. Click the ‘suggestions/help’ button 4. Popup suggestions for treatments and drugs
Extension	3.a. Comments must filled in the web page

Use case 03	Share knowledgebase
Pre-condition	1. Application is up and running 2. Database connection is active
Actor	Dentist
Main Success Scenarios	1. Select the patient profile 2. Click the ‘Share knowledgebase’ button 3. Popup knowledgebase details to select 4. Share details to central database
Extension	2.a. Knowledgebase can share with profile to profile and also with category wise.

Use case 04	Make comments on oral images
Pre-condition	1. Application is up and running 2. Database connection is active
Actor	Dentist
Main Success Scenarios	1. Select the patient profile 2. Click the ‘Add Image’ button 3. Load the intra-oral camera images 4. Select relevant image 5. Click ‘Add Comment’ button 6. Popup the editor panel 7. Add comments to the image 8. Save the image
Extension	3.a. Images are not loaded if the location is empty

Use case 05	Make notes on oral images
Pre-condition	1. Application is up and running 2. Database connection is active
Actor	Dentist
Main Success Scenarios	1. Select the patient profile 2. Click the ‘Add Image’ button 3. Load the intra-oral camera images 4. Select relevant image 5. Click ‘Add Note’ button 6. Popup the image editing panel 7. Add notes on the image 8. Save the image
Extension	3.a. Images are not loaded if the location is empty 8.a. Notes are empty image will not saved

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Software System Attributes

- **Correctness** - The correctness of the details which is in data base should be 100% correct always.

- **Accuracy** – The accuracy of treatment and diagnosis suggestions should be 100% accurate.

- **Availability** - The dentist can access any data in the database at any time and the dentist should be able to use teleconferencing at any time.

- **Confidentiality** – Information must be kept private from the outside world.

- **Usability** – The system's user interfaces must be kept simple and easy to handle.

- **Safety** -Database backup is required in case of a database crash or an operating system failure. A backup shall consist of a complete reproduction of every file on the server.

- **Security** - The system shall implement difference access levels to its users.

- **Performance** – The system should process the images captured and suggest the diagnosis report which has a latency of not more than 45 seconds.

- **Deployable** - System can be deployed in any platform with the minimal memory, space performance etc. requirements.

- **Scalability** – System can be extended in future i.e. to access it through cloud servers.

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Thank You!