Team 4.0

Project Step 7 Final Version

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URL To Index

$\underline{https://web.engr.oregonstate.edu/\sim leathems/CS340_Project/index.html}$

Please note that this has only been tested in Chrome.

A. Summary of Feedback and Changes Made to the Project

The project has undergone several transformations since the original proposal both major and minor. Major transformations include changing the database size, adding an administration section and adding the ability for dentists to book time off, while minor changes addressed issues such as the ease of use of the application, overlooked logic and functionality in the original design.

In going from the step 2.0-draft to 3.0-draft versions of the report the database was reduced from ten entities down to five. The original proposal design included the ability for patients to make an appointment with either a dentist or a hygienist requiring five tables per appointment type. After due consideration and upon advice from Herbert Diaz in the peer review section we decided to limit the appointment making application to making appointments with a dentist only.

Another major change from the step 2.0-draft to 3.0-draft versions of the report includes adding the ability for a dentist to book time off. This was in response to a suggestion from a peer reviewer. It was decided that a procedure called "None" would be made available for dentists to book time off on the schedule and when a dentist implements this functionality the patient id field in the appointment's table is set to NULL thereby satisfying the NULLable requirement, where there needs to be a nullable field in a one-to-many relationship. This procedure called "None" was later renamed to "Unavailable" to address any misunderstandings as to its purpose.

In the step 3.0 final version of the report an Administration section was added to the application, where the objective of this section was to enable the user access to view and alter all the tables that a patient would not have access to. This was partially done due to self-realization of such a need and peer review criticism. In addition, the ability for a dentist to book time off was inserted into this section.

During the term many minor changes were made to the project in each step in response to peer review criticism and the self-discovery of such a need. Changes due to peer review include displaying dentist's names instead of their identification numbers in tables, removing unnecessary fields from a form such as asking the patient for their name when only their account number is required, renaming the procedure used by dentists to book time off from "None" to "Unavailable" as the former caused confusion as to its purpose among reviewers, changes to some of the menu tab names, and adding input validation on the administration side. Changes due to self-discovery include adding a "view appointments" section to enable patients to see a list of their appointments and changing all displayed times to use a 12-hour clock.

The project is a simplified dentist appointment making system and does not address many of the complexities that a real-life system would include and therefore part of the original project design was to include in the report a list of simplifying assumptions which in response to peer review criticism has grown since the project's inception.

B. Project Outline and Database Outline Updated Version

I. Outline

We have made a dentist appointment application with a supporting database that will enable patients to make limited appointments at a dental office by using a website that will form the front end. In addition, through an administration login this application enables staff access to the entire database and provides dentists with the ability to book time off or cancel patient appointments.

Patients can make, change or cancel appointments for a limited range of procedures and are guided through the appointment making, changing and cancelling process step by step using a different page for each step. For procedures not listed on the application patients are directed to phone the office.

Staff can login to an administration site where all tables can be viewed and altered. Functionality includes inserting new patients, procedures, and dentists, deleting procedures and dentists, and adding or removing the procedures a dentist performs. In addition, dentists can use the administration site to cancel patient appointments and schedule time off.

The tables or entities include:

- Dentist
- Dental Procedure
- Dentist Dental Procedure
- Patient
- Dentist Schedule

The schedules require constraints on the days of the week and the hours of the day in which an appointment can be made. These are all implemented in the backend with supporting JavaScript files.

The project is a simplified dentist appointment making system and does not address many of the complexities that a real-life system would include and therefore a list of simplifying assumptions has been compiled:

- The type of appointments that can be made by the online scheduler are of a halfhour in duration. For any other appointment type the patient needs to phone the office.
- Not all dentists can perform all procedures.
- With the patient online appointment scheduler, a patient can only make appointments with the dentist they are registered with. If they want to make an appointment with someone else, then they need to phone the office.

- Cancellations can occur at any time. The appointments application does not handle any fees that might incur as a result of cancelling within 24 hours of the appointment time. The only constraint is that the patient cannot use the application to cancel an appointment that occurred at an earlier time.
- Dentist's time off is accounted for in the schedule by having a "none" field in the
 procedures attribute and filling the schedule with appointments that are NULL in
 the patient field and "none" in the procedure
- The administrator login screen is not a functioning login and is programmed to work to for any password and user name.
- Patients cannot be deleted from the database. It is assumed that a patient is deactivated in the office.
- When a dentist or patient chooses to cancel an appointment all appointments
 regardless of the date are listed from which the user selects one to cancel. Given
 the small size of the database appointments are not filtered by date for this
 purpose as this could potentially make it difficult to find an appointment to cancel.
- Appointments can only be scheduled the day before at the soonest.

II. Database Outline

a. Entities

Dentist

- id(key, autogenerated integer)
- First name (varchar(255))
- Last name (varchar(255))

Dental Procedure

- id (key, autogenerated integer)
- name (varchar(80))
- description (varchar(255))

Dentist - Dental Procedure

- Dentist id
- Dental Procedure id

Patient

- id (key, autogenerated integer)
- First name (varchar(255))
- Last name (varchar(255))
- Phone Number (varchar(10))
- Dentist (foreign key)

Dentist Appointment

- Composite Key (Date, Time and Dentist Id must be unique)
- Date (date-time type, must be a week day only)
- Time (date-time type, must be in half hour time slots between 8-6)
- Patient id (foreign key)
- Dentist Procedure id (foreign key)
- Dentist id (foreign key)

b. Relationships

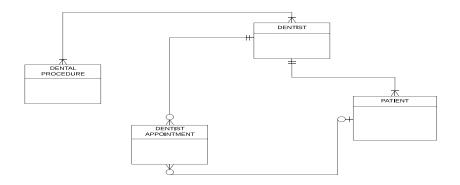
Dentist: (only one) to (one-to-many) with Patient, (one-to-many) to (one-to-many) with Dental Procedure, (only one) to (zero-to-many) with Dentist Appointment (*must ensure each dentist does not double book a time slot in the database or front end*)

Patient: (one-to-many) to (only one) with Dentist, (zero or one) to (zero-to many) with Dentist Appointment

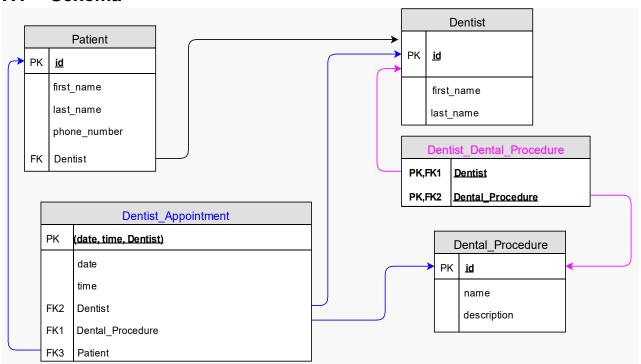
Dental Procedure: (one-to-many) to (one-to-many) with Dentist, (only one) to (zero-to-many) with Dentist Appointment

Dentist Appointment: (zero-to-many) to (only one) with Dentist, and dental Procedure. (zero-to-many) to (zero or one) with Patient.

III. Entity-Relationship Diagram



IV. Schema

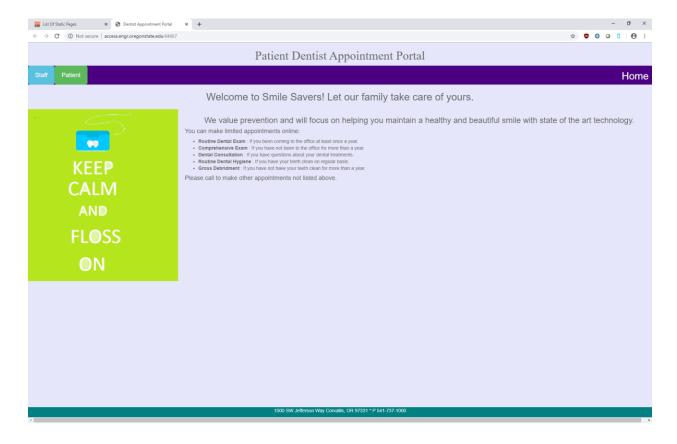


C. Screen Captures

I. General

Site home page.

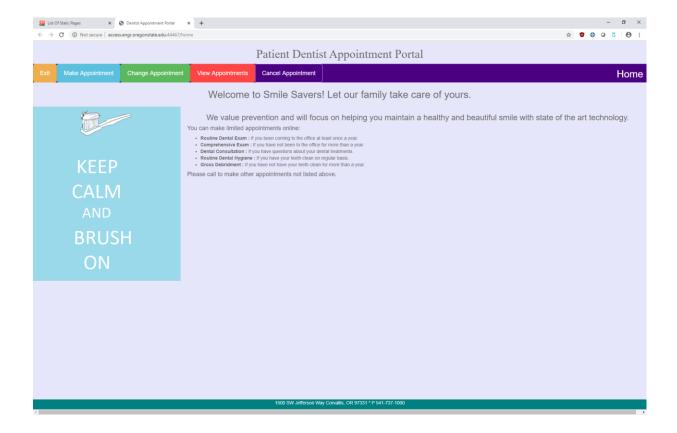
CRUD: Select from procedure all procedures and their descriptions except for the procedure "Unavailable".



II. For Patients

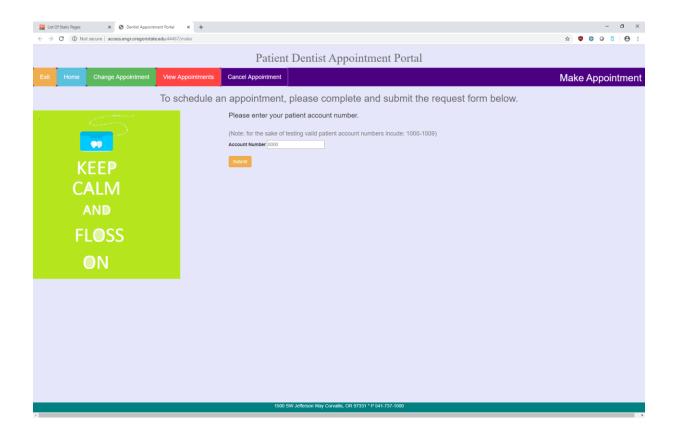
1) Patient home page.

CRUD: *select* from procedure all procedures and their descriptions except for the procedure "Unavailable".



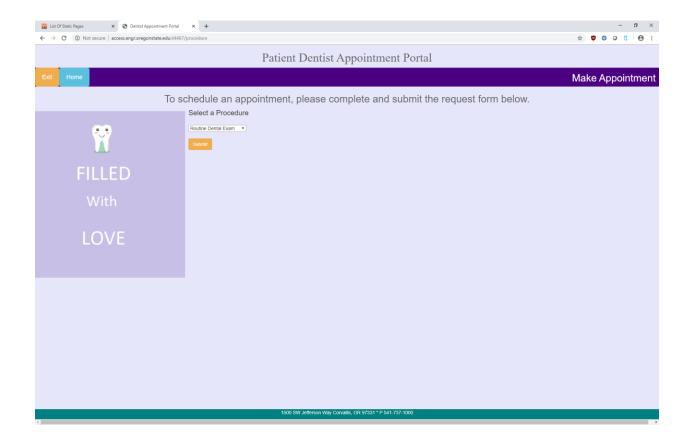
2) Make appointment step 1: enter patient account number.

CRUD: select dentist id and patient id (used to verify) using patient account number (patient id).

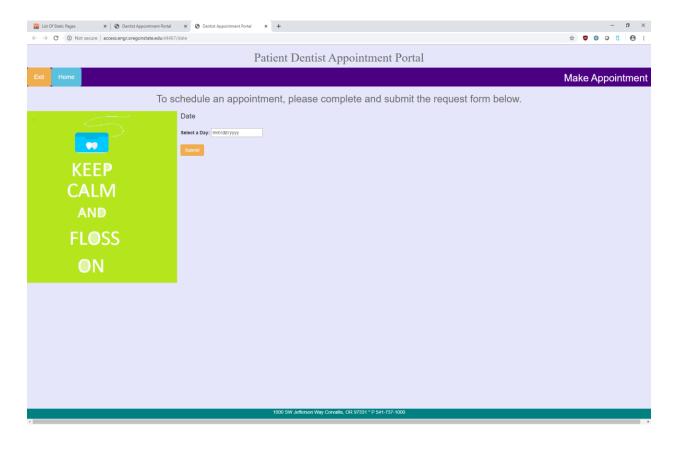


3) Make appointment step 2: select a procedure.

CRUD: *select* the procedures that the patient's dentist performs except for the procedure "unavailable".

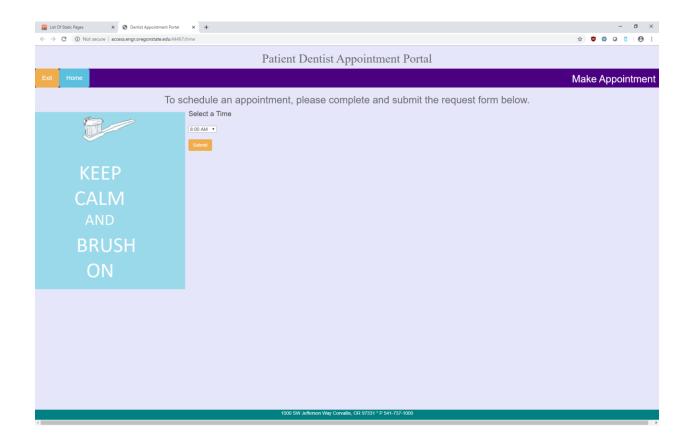


4) Make or change an appointment step 3: select a date. No CRUD functionality.



5) Make or change an appointment step 4: select the time from a drop-down list.

CRUD: select the times (in half hour intervals) that the dentist is unavailable on the given date.



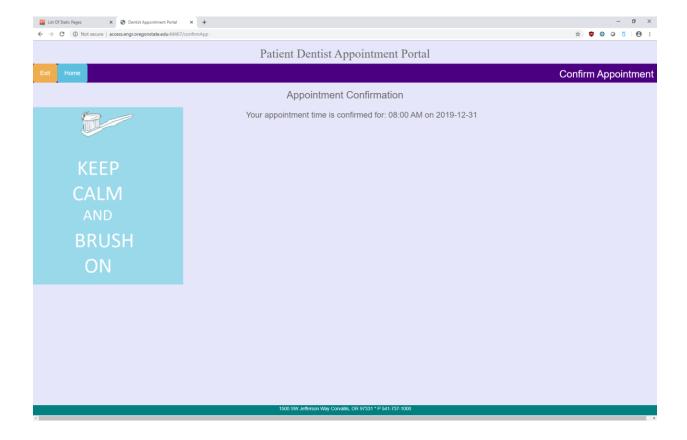
6) Make or change an appointment step 5: confirmation page.

CRUD:

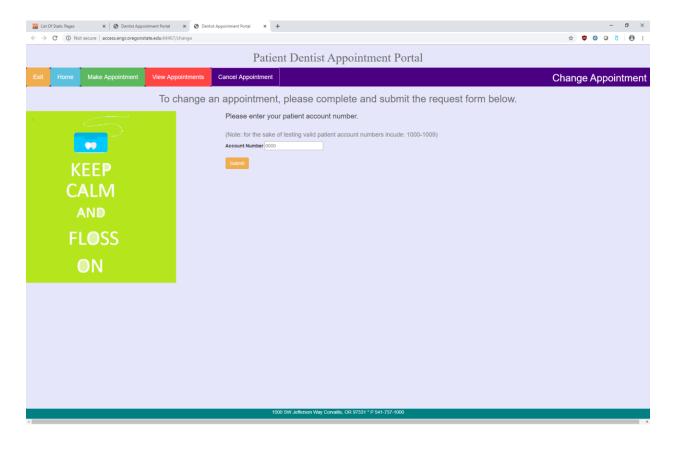
For making an appointment: *insert* into appointment a new appointment with the selected date, time, and procedure and dentist Id and patient account number (patient Id).

or

For changing an appointment: *update* appointment and set the time and date to the newly selected time and date where the appointment is identified by the dentist Id and original date and time



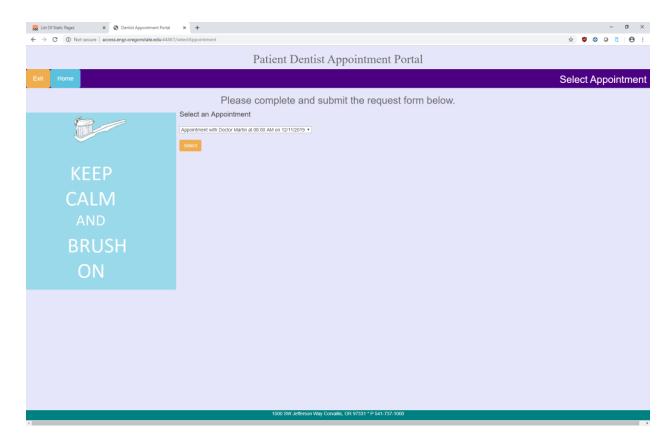
7) Change an appointment step 1: Enter patient account number. No CRUD functionality.



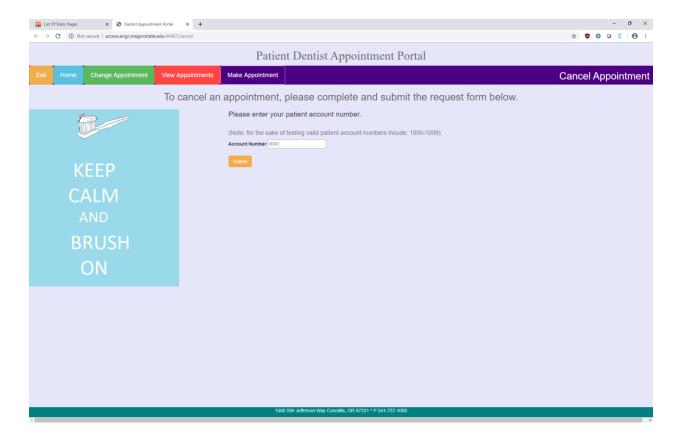
8) Change or cancel an appointment step 2: Select an appointment to change or cancel.

CRUD:

select appointments from appointment for the patient with the given account number (patient id).

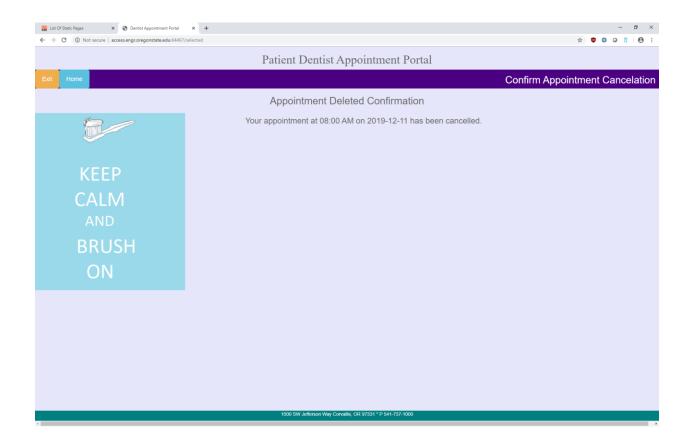


9) Cancel an appointment step 1: enter patient account number (patient id). No CRUD functionality.

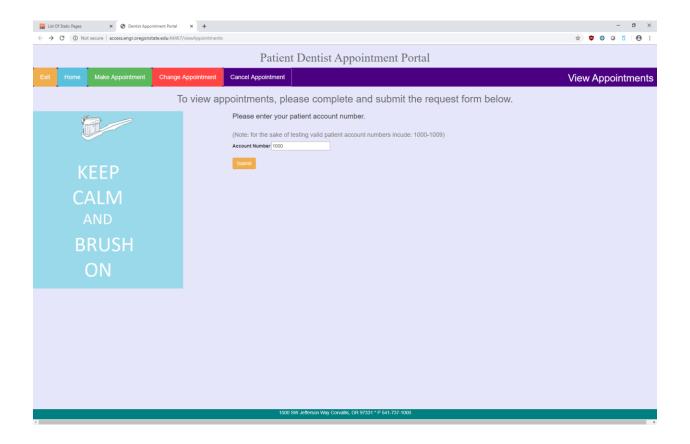


10) Cancel an appointment confirmation page.

CRUD: Delete from appointment the appointment with the specified date, time and dentist Id.

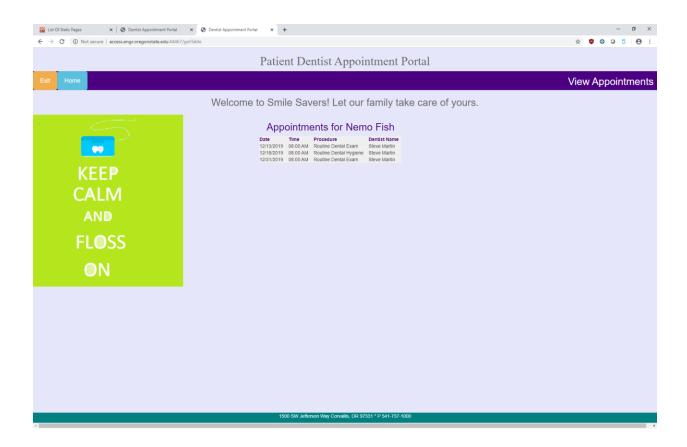


11) View appointments step 1: enter patient account number. No CRUD functionality.



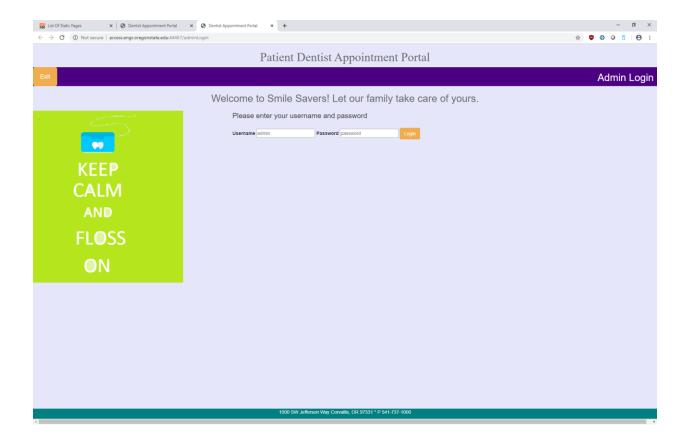
12) View appointments table.

- 1) select the patient's name based on the patient account number (patient id)
- 2) select the patient's appointments from the appointment table and display the dentist's name too through an inner join

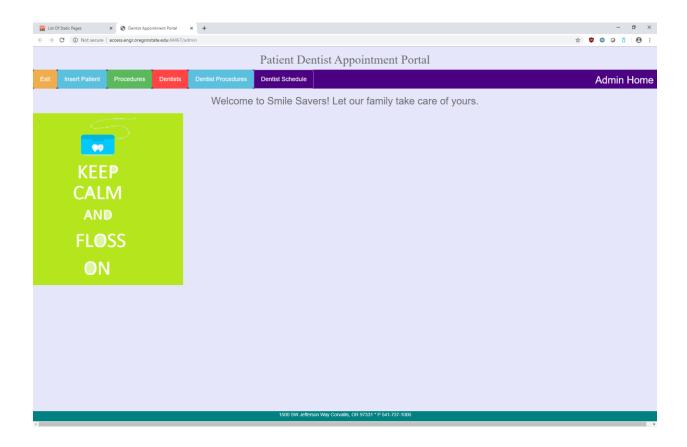


III. For Staff

1) Administrator login. A non-functional login page used to access the administrator side. No CRUD functionality.

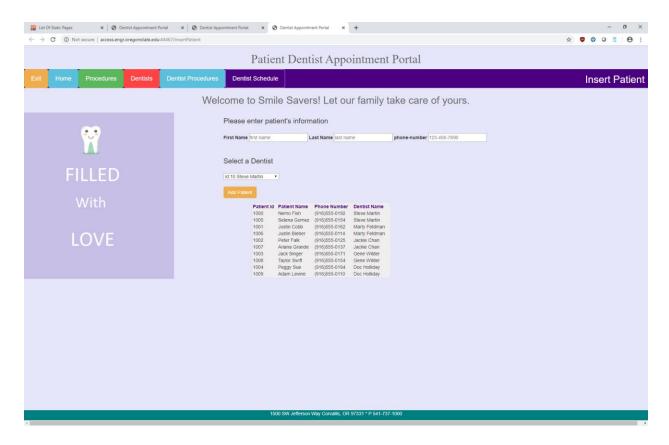


2) Administrator home page. No CRUD functionality.



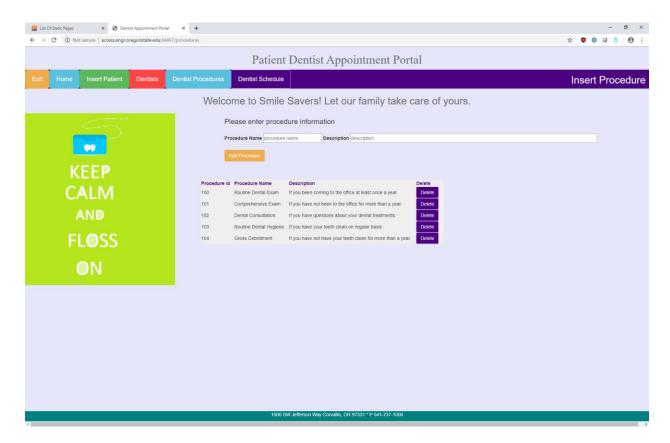
3) Insert a new patient.

- 1) select all dentists to fill a drop-down list
- 2) insert into patient table a new patient with the entered name and selected dentist
- 3) display all patients: *select* all information from the patient table and their dentist's name through an inner join



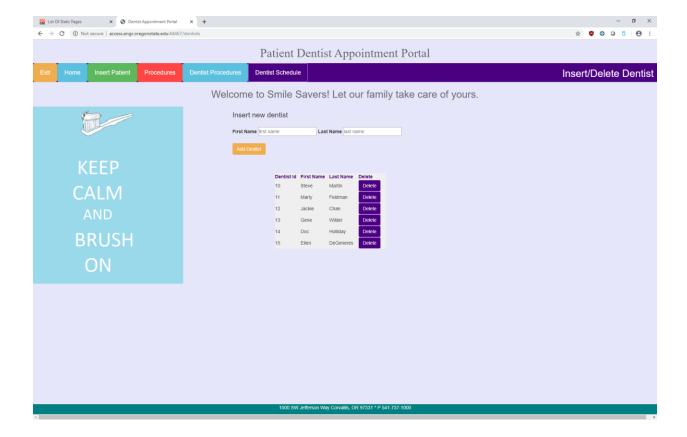
4) Insert or delete a procedure.

- 1) Populate a table with all procedures: Select all from the dental_procedure table
- 2) If Choose to add a procedure: *Insert* into the dental_procedure table the name and description of a new procedure
- 3) If Choose to delete a procedure:
 - i. Delete procedure from many-to-many table dentist_dental_procedure
 - ii. Delete procedure from dental_procedure table

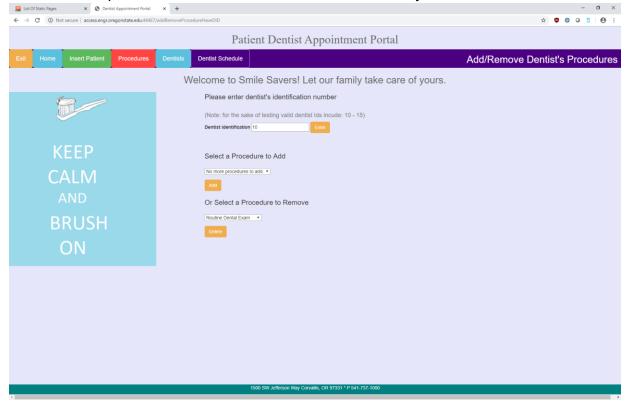


5) Insert or delete a dentist.

- 1) Populate a table with all dentists: select all from the dentist table
- 2) If Choose to add a dentist:
 - i. insert into the dentist table the name of a new dentist
- ii. *insert* into the dentist_dental_procedure table the procedure "Unavailable" with new dentist's id
- 3) If Choose to delete a dentist:
 - i. delete dentist from many-to-many table dentist_dental_procedure
 - ii. delete dentist from dentist table



- 6) Add or remove a dentist's procedures. CRUD:
- 1) To verify the dentist ld: Select the dentist ld from the dentist table
- 2) Get a list of all the procedures the dentist is signed up for. This is used to select a procedure to remove: Select procedure names from the dental_procedure table inner joined with the dental procedure table where the procedure is not "Unavailable".
- 3) Get a list of all the procedures the dentist is not signed up for. The dentist can choose to add one of these to their list of procedures: Select procedure names from dental_procedure where the procedure is not in the list of procedures the dentist is already signed up for
- 4) If choose to add a procedure: *Insert* into many-to-many table dentist_dental_procedure the dentist's *Id* and the procedure *Id*
- 5) If choose to delete a procedure: delete from the many-to-many table dentist_dental_procedure the dentist's Id and the procedure Id
- 6) Get the dentist's name: Select dentist's name from the dentist table using the dentist's account number
- 7) Get a list of all the procedures and their descriptions that the dentist is signed up for to print in a table: Select procedure name and description from dental_procedure inner joined to dentist_dental_procedure where the dentist Id is that entered by the dentist



7) Schedule time off or cancel a patient appointment.

- 1) To verify the dentist Id: Select the dentist Id from the dentist table
- 2) Get a list of appointments for the dentist to optionally select an appointment to delete: Select an appointment from the appointments table for the given dentist Id
- 3) If delete an appointment: Delete an appointment using the selected dentist id, date, and time
- 4) If a dentist chooses to book time off:
- i. Select all times in half-hour intervals that the dentist has appointments on the selected day.
- ii. *Insert* into the appointment table an appointment with the procedure "Unavailable" and the patient field left as NULL.
- 5) Get the dentist's name: Select the dentist's name from the dentist table.
- 6) Put all the dentist's appointments in a table: Select all appointments, including the procedure name and patient name from the appointment table inner and left joined with other tables, where the dentist's id is equal to the input value.

