Project Step 6 (Portfolio)

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Project Title: Seattle Prenatal Database

Project URL:

http://flip3.engr.oregonstate.edu:9201/

All CRUD steps applied to all entities

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Executive Summary

This database was designed for a perinatal clinic that offers medical and nonmedical services to homeless and low income clients. A high level overview of actions based on peer review feedback and upgrades implemented throughout the course of the quarter is listed below.

Step 1

Attributes, data types, and foreign keys for each entity were eliminated in the entity-relationship diagram, leaving implementation details to be documented in the schema.

Step 2

We considered changing the data type for NonmedicalServices.name to varchar(45) instead of varchar(255). However, we decided against this change, as setting the names to varchar(255) provides more flexibility for naming services and appointments.

ON DELETE commands were created for foreign keys. It is unlikely that a real clinic would delete records of a client, which are legally required to be maintained. However, for the purposes of this assignment, we are allowing deletion. Upon deletion of a client, all references to that client are removed. Upon deletion of a nonmedical employee or provider, all child references are changed to NULL. Deletion of nonmedical services or perinatal appointments are allowed if they do not appear in the corresponding Histories table.

Step 3

We agreed that combining two intersection tables, AppointmentHistories and AppointmentDetails, as well as combining two additional intersection tables, ServiceHistories and ServiceDetails, was an optimal strategy for our database design. This approach eliminates two redundant intersection tables and creates a more streamlined database with serviceIDs and employeeIDs directly inserted into ServiceHistories and perinatalApptID and providerID directly inserted into AppointmentHistories.

Step 4

Reviewers provided feedback regarding the titles drop-down, which allows users to enter a custom title. We recognize the drawbacks to the current design (users can enter duplicate titles with different case, spellings, or abbreviations or invalid titles). The goal of this demonstration website is to showcase a web based UI to maintain a database. Allowing a user to either select an option or enter their own title and passing the selected (or entered) value to the database is a unique feature that we decided to keep.

Step 5

Additional attributes were added to Providers and NonmedicalEmployees (phone number and email), and Clients (phone number, email, and birthday). Update was implemented for Providers and NonmedicalEmployees. Filter and search options were added to each entity. The UI was streamlined to allow all CRUD steps to be accessed from one table.

Overview

With the mission of ending childhood poverty through comprehensive family services that promote self-sufficiency and healthful living, Seattle Prenatal is a clinic inspired by the Homeless Prenatal Program in San Francisco. They provide perinatal services, housing support, job training, and social support to 3,500 low income and homeless families annually. Additionally, Seattle Prenatal frequently hires former clients who have completed their job training programs, with more than half of the 100 staff members coming from the Seattle Prenatal health worker training program. Given the wide breadth of services and medical appointments offered to a growing number of clients, Seattle Prenatal must develop a website to track and manage client participation in these services.

A database driven website will record and manage data regarding clients, providers, nonmedical employees, perinatal appointments, and nonmedical services (i.e., housing support, legal assistance, job training). The database will also include appointment histories to track which appointments individual clients have attended and service histories to track which nonmedical services individual clients have participated in. Seattle Prenatal will be able to browse, edit, delete and add to all entities in the database.

Database Outline

Providers: Records the details of clinical nurse midwives, nurse practitioners, physician assistants, and physicians employed by Seattle Prenatal

- Attributes:
    - providerID: int, not NULL, auto_increment, PK
    - firstName: varchar(45), not NULL
    - lastName: varchar(45), not NULL
    - phone: varchar(45), not NULL
    - email: varchar(320), not NULL
    - title: varchar(45), not NULL
- Relationships:
    - 1:M relationship with Clients. A client may have one primary provider.
    - M:N relationship with PerinatalAppointments implemented through AppointmentHistories intersection table.

Clients: Records the details of clients served by Seattle Prenatal

- Attributes:
    - clientID: int, not NULL, auto_increment, PK
    - firstName: varchar(45), not NULL
    - lastName: varchar(45), not NULL
    - birthday: date, not NULL
    - phone: varchar(45), not NULL
    - email: varchar(320), not NULL
    - providerID: int, FK ON DELETE SET NULL
- Relationships:
    - M:1 relationship between Clients and Providers is implemented with providerID as a FK inside Clients.
    - 1:M relationship with AppointmentHistories. A Client may attend many perinatal appointments.
    - 1:M relationship with ServiceHistories. A Client can attend many nonmedical services.

PerinatalAppointments: Records perinatal appointments offered by Seattle Prenatal

- Attributes:
    - perinatalApptID: int, not NULL, auto_increment, PK
    - name: varchar(255), not NULL
    - billingCode: varchar(45), not NULL
    - description: varchar(255), not NULL
- Relationship

- ○ M:N relationship with Providers implemented through the intersection table AppointmentHistories.
- ○ 1:M relationship with AppointmentHistories. Each appointment history must have one perinatal appointment.

AppointmentHistories: Transactional table of perinatal appointments attended by clients. Serves primarily to record which appointments (with which provider) a particular client has attended. Captures M:N relationships between PerinatalAppointments and Providers as well as between PerinatalAppointments and Clients.

- ● Attributes:
  - ○ apptHistoryID: int, not NULL, auto_increment, PK
  - ○ perinatalApptID int, not NULL, FK ON DELETE RESTRICT
  - ○ providerID: int, FK ON DELETE SET NULL
  - ○ clientID: int, not NULL, FK ON DELETE CASCADE
  - ○ date: date, not NULL
- ● Relationships:
  - ○ M:1 relationship with Clients. Implemented with clientID as a FK inside AppointmentHistories. An appointment history must have one and only one client. A client may be listed in many appointment histories.
  - ○ M:1 relationship with PerinatalAppointments implemented with perinatalApptID as a FK inside AppointmentHistories. An appointment history event must have one and only one perinatal appointment. An appointment may be listed in many appointment histories.
  - ○ M:1 relationship with Providers implemented with providerID as a FK inside AppointmentHistories. An appointment history may have no or one provider. A provider may be listed in many service histories.

NonmedicalEmployees: Records the details of nonmedical employees at Seattle Prenatal (i.e., counselors, social workers, doulas, lactation consultants etc.)

- ● Attributes:
  - ○ employeeID: int, not NULL, auto_increment, PK
  - ○ firstName: varchar(45), not NULL
  - ○ lastName: varchar(45), not NULL
  - ○ phone: varchar(45), not NULL
  - ○ email: varchar(320), not NULL
  - ○ title: varchar(45), not NULL
- ● Relationships:

- ○ M:N relationship with NonmedicalServices through the intersection table ServiceHistories. A nonmedical employee can lead many nonmedical services and each nonmedical service can be lead by many nonmedical employees.

NonmedicalServices: Records details of nonmedical services provided by Seattle Prenatal (i.e., breastfeeding support, legal assistance, personal finance training, nutrition counseling)

- ● Attributes:
    - ○ serviceID: int, not NULL, auto_increment, PK
    - ○ name: varchar(255), not NULL
    - ○ description: varchar(255), not NULL
- ● Relationships:
    - ○ M:N relationship with NonmedicalEmployees implemented through the intersection table ServiceHistories.
    - ○ 1:M relationship with ServiceHistories.

ServiceHistories: Transactional table of nonmedical services attended by clients. Records specific services (led by specific employees) that a client has attended. Captures M:N relationships between NonmedicalServices and Employees, as well as between NonmedicalServices and Clients.

- ● Attributes:
    - ○ serviceHistoryID: int, not NULL, auto_increment, PK
    - ○ clientID: int, not NULL, FK ON DELETE CASCADE
    - ○ serviceID: int, not NULL, FK ON DELETE RESTRICT
    - ○ employeeID: int, FK ON DELETE SET NULL
    - ○ date: date, not Null
- ● Relationships:
    - ○ M:1 mandatory relationship with Clients. Implemented with clientID as a FK inside Service Histories. A Service History event must have one and only one client. A client may be listed in many service histories.
    - ○ M:1 relationship with NonmedicalServices implemented with serviceID as a FK inside ServiceHistories. A service history event must have one and only one Nonmedical Service. A service may be listed in many service histories.
    - ○ M:1 relationship with Nonmedical Employees implemented by inserting an employeeID FK inside ServiceHistories. A service history event may have zero or one Employee. An employee may be listed in many service histories.

Entity-Relationship Diagram
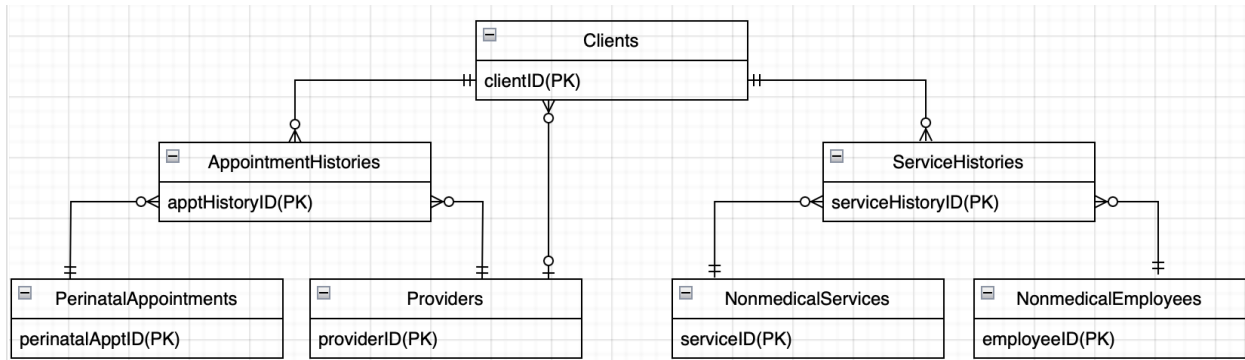
Schema
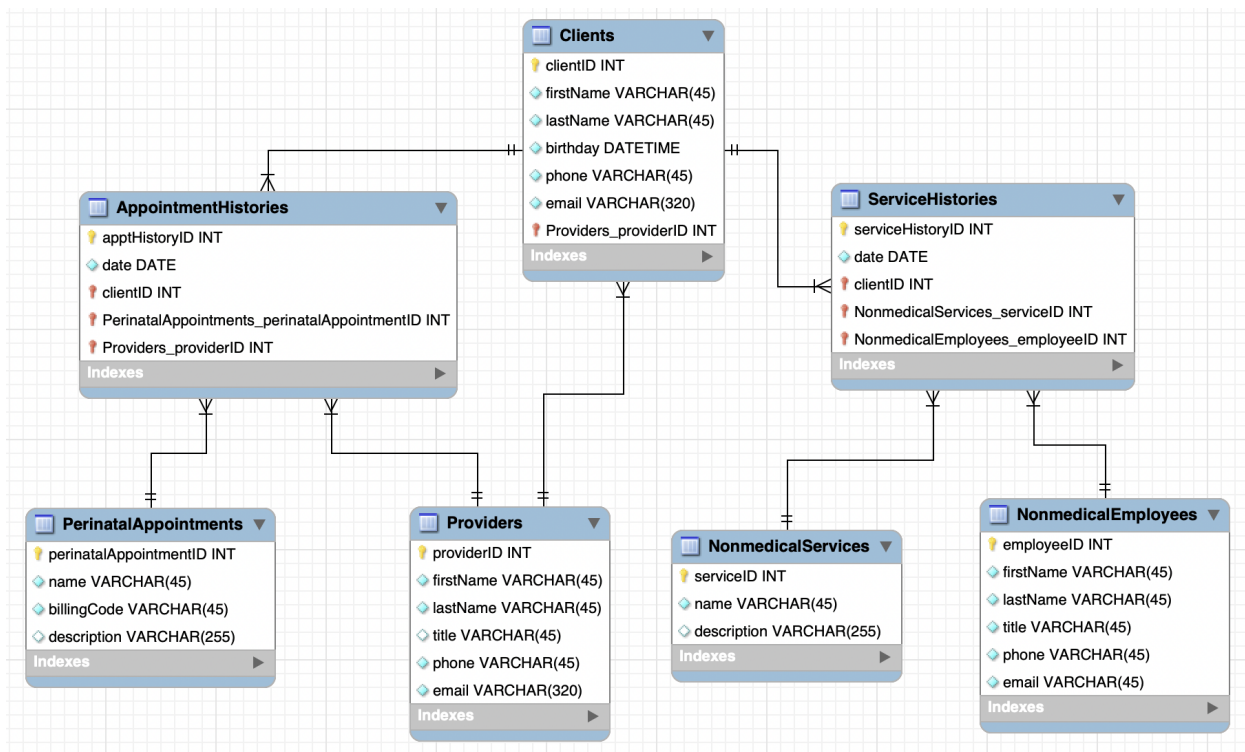
Example data

Providers					
providerID	firstName	lastName	phone	email	title
6	Mark	Sloan	425-888-5555	msloan@seattleprenatal.com	Doctor
7	Miranda	Bailey	425-664-3212	mbailey@seattleprenatal.com	Doctor
8	Izzie	Stevens	206-123-4567	istevens@seattleprenatal.com'	Nurse Practitioner
9	Callie	Torres	206-155-3333	ctorres@seattleprenatal.com	Doctor
10	Arizona	Robbins	206-663-4567	arobbins@seattleprenatal.com'	Doctor

Clients						
clientID	firstName	lastName	birthday	phone	email	providerID
1	Jane	Smith	04-07-1989	206-457-9999	jsmith@gmail.com	9
2	Katie	Lee	10-26-1995	425-331-5678	katie@yahoo.com	7
3	Nicole	Dicaprio	12-05-1998	206-881-2221	nicd@gmail.com	8
4	Meredith	Grey	11-15-2000	206-333-4444	'meredithg@gmail.com	10
5	Christina	Yang	01-18-2001	425-111-6666	cyang@yahoo.com	8

NonmedicalEmployees					
employeeID	firstName	lastName	phone	email	title
11	Lexie	Grey	206-987-1234	lgrey@seattleprenatal.com	Lactation Consultant
12	Jo	Wilson	206-773-4567	jwilson@seattleprenatal.com	Nutritionist
13	Jackson	Avery	206-587-0192	javery@seattleprenatal.com	Lactation Consultant
14	George	OMalley	425-123-0908	gomalley@seattleprenatal.com	Social Worker
15	April	Kepner	425-923-7120	akepner@seattleprenatal.com	Social Worker

PerinatalAppointments			
perinatalApptID	name	billingCode	description
16	8 wk Prenatal	1256-7	8 week prenatal visit

17	6 wk Postpartum	1236-0	postpartum maternal wellness check
18	Family Planning	12344-22	discuss birth control or fertility options
19	24 wk Prenatal	13435-123	24 week prenatal visit
20	16 wk Prenatal	12343-12	16 week prenatal visit

NonmedicalServices

serviceID	name	description
21	Lactation Counseling	1:1 appointment with lactation consultant
22	Breastfeeding Group	Breastfeeding support group led by lactation consultant
23	Housing Assistance	Meeting with social worker to determine housing options
24	Prenatal Nutrition	Appointment with nutritionist to improve and support prenatal nutrition
25	Gestational Diabetes Nutrition	Appointment with nutritionist to support nutrition in setting of gestational diabetes

ServiceHistories

serviceHistoryID	clientID	serviceID	employeeID	date
26	1	22	11	04-03-2021
27	2	21	13	03-29-2021
28	3	23	14	04-05-2021
29	4	24	12	04-12-2021
30	4	25	12	04-13-2021

AppointmentHistories

apptHistoryID	clientID	perinatalApptID	providerID	date
31	1	16	6	04-03-2021
32	1	17	7	04-03-2021
33	2	18	8	03-29-2021
34	5	19	9	04-12-2021
35	3	20	10	04-05-2021

UI Screenshots

Providers Page

READ/BROWSE/DISPLAY Providers

Manage Providers

Seattle Prenatal employs a diverse group of physicians, nurse practitioners, and clinical nurse midwives who are committed to providing the best evidence-based, holistic medical care to pregnant women. Use this page to Add, Browse, or Delete current providers.

+ Add New   Search Last Name. . .   ↺

ID ⇅	First Name ⇅	Last Name ⇅	Phone	Email	Title ⇅ ▼		
6	Mark	Sloan	425-888-5555	msloan@seattleprenatal.com	Doctor	🗑	✎
7	Miranda	Bailey	425-664-3212	mbailey@seattleprenatal.com	Doctor	🗑	✎
8	Izzie	Stevens	206-123-4567	istevens@seattleprenatal.com	Nurse Practitioner	🗑	✎
9	Callie	Torres	206-155-3333	ctorres@seattleprenatal.com	Doctor	🗑	✎
10	Arizona	Robbins	206-663-4567	arobbins@seattleprenatal.com	Doctor	🗑	✎

CREATE/INSERT/ADD NEW Providers

Add Provider

To add a new provider, please enter their information below and click Save.

Provider

First Name:
[   ]

Last Name:
[   ]

Title:
[Title   ▾]

Primary Phone Number:
[xxx-xxx-xxxx   ]

Email:
[example@domain.com]

[Save] [Cancel]

UPDATE Providers

Update Provider

To update records for Arizona Robbins (providerID: 10), please complete the form.

Provider

Primary Phone Number:
[206-663-4567   ]

Email:
[arobbins@seattleprenatal.com]

[Update] [Cancel]

DELETE Providers

flip3.engr.oregonstate.edu:9197 says

Are you sure you want to delete this provider? ID: 10, Name: Arizona Robbins

[Cancel] [OK]

Clients Page

READ/BROWSE/DISPLAY Clients

Manage Clients

Clients are the heart of Seattle Prenatal and we are honored to partner with them during the prenatal period and beyond. Use this table to Add, Browse, Update, or Delete current clients.

+ Add New   Search Last Name. . .   ↺

ID ⇅	First Name ⇅	Last Name ⇅	Birthday	Phone	Email	Provider ⇅ ▼		
1	Jane	Smith	04/07/89	206-457-9999	jsmith@gmail.com	Callie Torres	🗑	✏
2	Katie	Lee	10/26/95	425-331-5678	katie@yahoo.com	Miranda Bailey	🗑	✏
3	Nicole	Dicaprio	12/05/98	206-881-2221	nicd@gmail.com	Izzie Stevens	🗑	✏
4	Meredith	Grey	11/15/00	206-333-4444	meredithg@gmail.com	Arizona Robbins	🗑	✏
5	Christina	Yang	01/18/01	425-111-6666	cyang@yahoo.com	Izzie Stevens	🗑	✏

CREATE/INSERT/ADD NEW Clients

Add Client

To add a new client, please enter their information below and click 'Save'.

Client

First Name:
[   ]

Last Name:
[   ]

Provider:
[Provider   ˅]

Birthday:
[mm/dd/yyyy   📅]

Primary Phone Number:
[xxx-xxx-xxxx   ]

Email:
[example@domain.com]

[Save] [Cancel]

UPDATE Clients

Update Client

To update records for Christina Yang (clientID: 5), please complete the form.

Client

Provider:
[Izzie Stevens   ˅]

Primary Phone Number:
[425-111-6666   ]

Email:
[cyang@yahoo.com   ]

[Update] [Cancel]

DELETE Clients

localhost:9200 says

Are you sure you want to delete this client? ID: 5, Name: Christina Yang

[Cancel] [**OK**]

READ/BROWSE/DISPLAY NonmedicalEmployees

Manage Employees

In order to provide comprehensive services to families, Seattle Prenatal relies on our talented and diverse group of employees. We are privileged to employ motivated and compassionate social workers, case managers, lactation consultants, counselors, health coaches, and nutritionists. Use this page to Add, Browse, or Delete our current employees.

+ Add New   *Search Last Name. . .*   ↺

ID ⇅	First Name ⇅	Last Name ⇅	Primary Phone	Email	Title ⇅ ▼		
11	Lexie	Grey	206-987-1234	lgrey@seattleprenatal.com	Lactation Consultant	🗑	✎
12	Jo	Wilson	206-773-4567	jwilson@seattleprenatal.com	Nutritionist	🗑	✎
13	Jackson	Avery	206-587-0192	javery@seattleprenatal.com	Lactation Consultant	🗑	✎
14	George	OMalley	425-123-0908	gomalley@seattleprenatal.com	Social Worker	🗑	✎
15	April	Kepner	425-923-7120	akepner@seattleprenatal.com	Social Worker	🗑	✎

CREATE/INSERT/ADD NEW NonmedicalEmployees

Add Employee

To add a new employee, please enter their information below and click Save.

Employee

First Name:

Last Name:

Title:
`Title` ▾

Primary Phone Number:
`xxx-xxx-xxxx`

Email:
`example@domain.com`

Save **Cancel**

UPDATE NonmedicalEmployees

Update Employee

To update records for April Kepner (employeeID: 15), please complete the form.

Employee

Primary Phone Number:
`425-923-7120`

Email:
`akepner@seattleprenatal.com`

Update **Cancel**

DELETE NonmedicalEmployees

flip3.engr.oregonstate.edu:9197 says

Are you sure you want to delete this employee? ID: 15, Name: April Kepner

Cancel **OK**

READ/BROWSE/DISPLAY NonmedicalServices

Manage Services

In addition to routine prenatal care, Seattle Prenatal offers an extensive variety of services. Popular services include breastfeeding support group, housing assistance, career counseling, and nutritional counseling. Use this table to Add, Browse, Update, or Delete current services.

+ Add New   Search Name. . .   ↺

ID ⇅	Name ⇅	Description ⇅		
21	Lactation Counseling	1:1 appointment with lactation consultant	🗑	✎
22	Breastfeeding Group	breastfeeding support group lead by lactation consultant	🗑	✎
23	Housing Assistance	meeting with social worker to determine housing options	🗑	✎
24	Prenatal Nutrition	appointment with nutritionist to improve and support prenatal nutrition	🗑	✎
25	Gestational Diabetes Nutrition	appointment with nutritionist to support nutrition in the setting of gestational diabetes	🗑	✎

CREATE/INSERT/ADD NEW NonmedicalServices

Add Service

To add a new service, please enter the information below and click Save.

Service

Name:

Description:

Save   Cancel

UPDATE NonmedicalServices

Update A Service

To update Service ID: 25, Gestational Diabetes Nutrition, please complete the form.

Service

Description:
appointment with nutritionist to support nutrition in the setting of gestational diabetes

Update   Cancel

DELETE NonmedicalServices (confirmation alert and unsuccessful delete alert)

flip3.engr.oregonstate.edu:9197 says

Are you sure you want to delete this service? ID: 25, Name: Gestational Diabetes Nutrition

Cancel   **OK**

The selected service is associated with a service history and cannot be deleted

Close

ServiceHistories Page

READ/BROWSE/DISPLAY ServiceHistories

Manage Service Histories

Service Histories are transactional events that link individual clients to individual nonmedical services and employees on a given date. Use this page to Add, Browse, Edit, and Delete services from a client's records.

ID ⇅	Client ⇅	Service ⇅	Date 📅	Employee ⇅ ▼		
26	Jane Smith	Breastfeeding Group	04/03/21	Lexie Grey	🗑	✎
27	Katie Lee	Lactation Counseling	03/29/21	Jackson Avery	🗑	✎
28	Nicole Dicaprio	Housing Assistance	04/05/21	George OMalley	🗑	✎
29	Meredith Grey	Prenatal Nutrition	04/12/21	Jo Wilson	🗑	✎
30	Meredith Grey	Gestational Diabetes Nutrition	04/13/21	Jo Wilson	🗑	✎

CREATE/INSERT/ADD NEW ServiceHistories

Add Service History

To add a service to a client's history, please enter the information below and click 'Save'.

Service History
Client: Client
Service: Service
Employee: Employee
Date: mm/dd/yyyy

Save Cancel

UPDATE ServiceHistories (UPDATE M:M Relationship)

Update A Service History

To update Service History ID: 30, please complete the form.

Service History
Client: Meredith Grey
Service: Gestational Diabetes Nutrition
Employee: Jo Wilson
Date: 04/13/2021

Update Cancel

DELETE ServiceHistories (DELETE M:M Relationship)

Are you sure you want to delete this history? ID: 30, Client: Meredith Grey, Details: Gestational Diabetes Nutrition with Jo Wilson on 04/13/21

Cancel   OK

PerinatalAppointments Page

READ/BROWSE/DISPLAY PerinatalAppointments

Manage Appointments

Seattle Prenatal offers expert, personalized perinatal care to all clients. Use this page to Add, Update, Review, or Delete current perinatal appointments.

+ Add New   Search Name. . .   ↺

ID ⇅	Name ⇅	Billing Code ⇅	Description ⇅		
16	8 wk prenatal	1256-7	8 week prenatal visit	🗑	✎
17	6 wk postpartum	1236-0	postpartum maternal wellness check	🗑	✎
18	family planning	12344-22	discuss planning for pregnancy	🗑	✎
19	24 wk prenatal	13435-123	24 week prenatal visit	🗑	✎
20	16 wk prenatal	12343-12	15 week prenatal visit	🗑	✎

CREATE/INSERT/ADD NEW PerinatalAppointments

Add Appointment

To add a new perinatal appointment, please enter the information below and click Save.

Appointment

Name:

Billing Code:

Description:

Save   Cancel

UPDATE PerinatalAppointments

Update Appointment

To update Appointment ID: 20, 16 wk prenatal, please complete the form.

Appointment

Description:

15 week prenatal visit

Update   Cancel

DELETE PerinatalAppointments (confirmation alert and unsuccessful delete alert)

localhost:9200 says

Are you sure you want to delete this Appointment? ID: 16, Name: 8 wk prenatal

Cancel   OK

localhost:9200 says

The selected appointment is associated with an appointment history and cannot be deleted

OK

READ/BROWSE/DISPLAY AppointmentHistories

Manage Appointment Histories

Appointment histories are transactional events that link an individual client with a specific appointment and provider on a specific date. Use this table to Add, Update, Browse, or Delete appointments from a client's records.

+ Add New   Search Client Last Name. . .   ↺

ID ↑↓	Client ↑↓	Appointment ↑↓	Date 📅	Provider ↑↓		
31	Jane Smith	8 wk prenatal	04/03/21	Mark Sloan	🗑	✎
32	Jane Smith	6 wk postpartum	04/03/21	Miranda Bailey	🗑	✎
33	Katie Lee	family planning	03/29/21	Izzie Stevens	🗑	✎
34	Christina Yang	24 wk prenatal	04/12/21	Callie Torres	🗑	✎
35	Nicole Dicaprio	16 wk prenatal	04/05/21	Arizona Robbins	🗑	✎

CREATE/INSERT/ADD NEW AppointmentHistories

Add Appointment History

To add a appointment to a client's history, please enter the information below and click 'Save'.

Appointment History

Client:

[Client]

Appointment:

[Appointment]

Provider:

[Provider]

Date:

[mm/dd/yyyy]

Save **Cancel**

UPDATE AppointmentHistories (UPDATE M:M Relationship)

Update An Appointment History

To update Appointment History ID: 35, please complete the form.

Appointment History

Client:

[Nicole Dicaprio]

Appointment:

[16 wk prenatal]

Provider:

[Arizona Robbins]

Date:

[04/05/2021]

Update **Cancel**

DELETE AppointmentHistories (DELETE M:M Relationship)

flip3.engr.oregonstate.edu:9197 says

Are you sure you want to delete this history? ID: 35, Client: Nicole Dicaprio, Details: 16 wk prenatal appointment with Arizona Robbins on 04/05/21

Cancel   **OK**