

## CS 340 – Final

### SciGuys SuperPharm

URL: <http://flip3.engr.oregonstate.edu:8565/>

#### A) Updates made from initial draft and relevant feedback

- “state”, “zip” attributes in “Addresses” table changed from varchar to char(2) and char(5)
  - Change made because: We realized that these are static and varchar is unnecessary
- “nationalProviderIdentifier” attribute in “Healthcare\_Providers” and other tables changed from INT to CHAR(10)
  - Change made because: We realized that this can begin with 0 thus not an INT and statically contains 10 characters
- “nationalDrugCode” attribute in “Drugs” and other referencing tables changed from INT to CHAR(12)
  - Change made because this attribute may begin with 0 and will statically contain only 12 characters (10 digits plus 2 dashes)
- “shipDate” attribute in “Prescriptions” table changed so a NULL value is possible.
  - To meet requirement for nullable attribute
- “addressID” attribute in patients table changed so NULL value is possible
  - To meet requirement for a Nullable relationship between Addresses and Patient
  - Patient can be homeless without an address
- Primary Key added for M:M table
  - Change made to avoid duplicate entries into M:M table
- Entity and Address naming fixed to keep consistency
  - Change made after Ethan Davis /TA pointed out inconsistency after step 3
- Relationship description added between intersection table and entities
  - Added after TA note after step 3
- Removal of Manufacturer and Manufacturer-Drug tables
  - Removes the M:M relationship between drug and manufacturer
  - Removed due to the reduction of requirement to only have 1 M:M vs 2 M:M relationships

#### B) - Outline and Database Outline – Updated Version

Sciguys Specialty Pharmacy is a high-end specialty pharmacy that sells a limited number of expensive specialty medications. The pharmacy carries 20 drugs in stock. The pharmacy typically serves 100 patients per year and each patient has an average of 2 prescriptions filled monthly. Therefore, the pharmacy fills 2400 prescriptions per year. The prescriptions, because they are high-end specialty medications, typically only are prescribed by 10 local healthcare providers. The database will be used to store the prescription data, medication data, patient data (including address), and prescriber information.

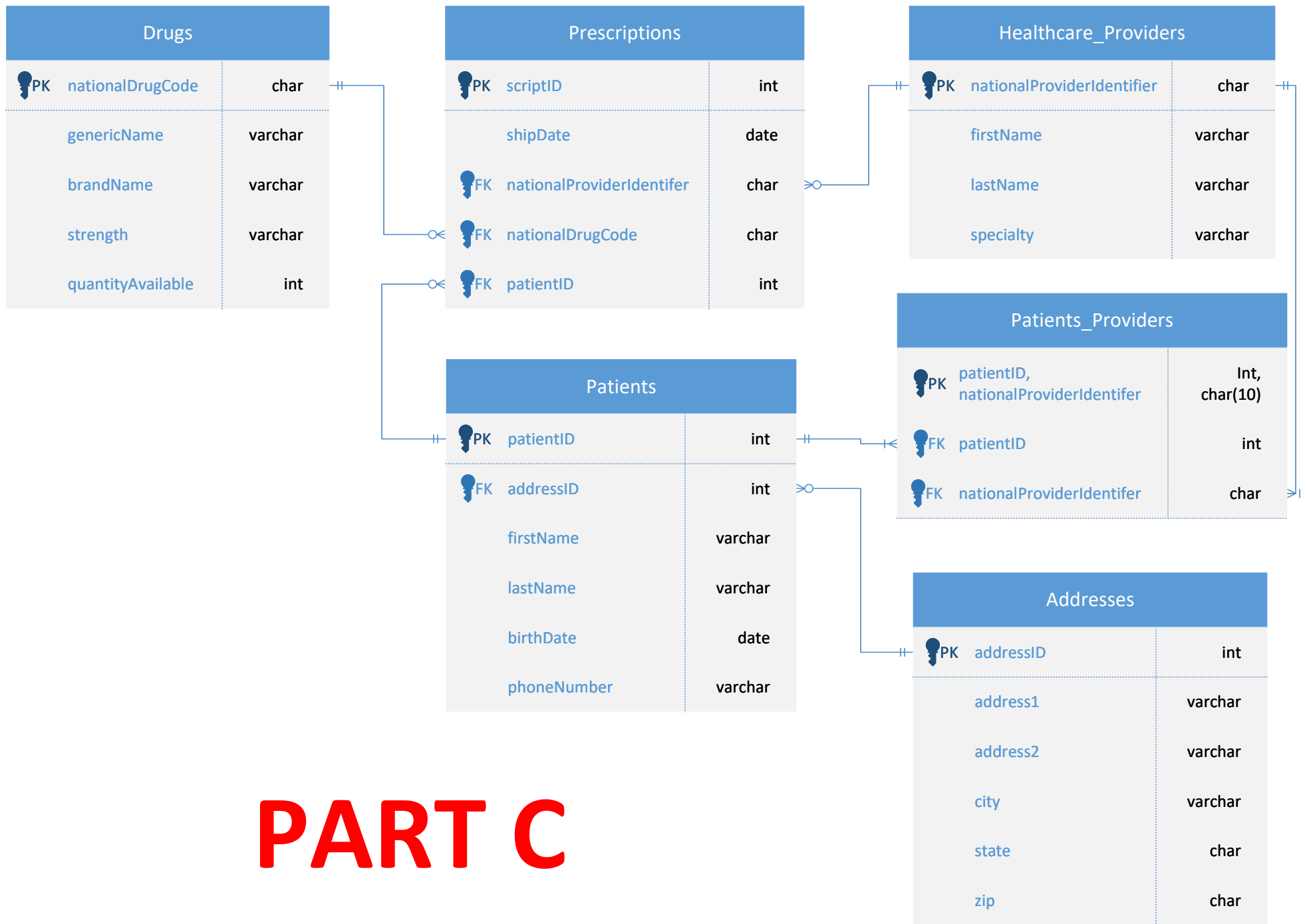
- **Patients: Entity** Records the details of the patients visiting the specialty pharmacy
  - **Implemented by Team Member: Chris**
  - patientID: int, auto-increment, unique, not NULL
    - Primary Key
  - firstName: varchar, not NULL
  - lastName: varchar, not NULL

- birthDate: date, not NULL
  - phoneNumber: varchar
  - addressID: int
    - Foreign Key
  - Relationships:
    - **Patients** has a M:1 (Participation required) with **Addresses**
      - This is implemented as an FK (addressID) within the **Patients** table
    - **Patients** has a 1:M (Participation not required) relationship with **Prescriptions**
      - This is implemented as an FK (patientID) within the **Prescriptions** table
    - **Patients** has a M:M (Participation required) relationship with **Healthcare Providers**
      - **Patients** has a 1:M relationship with **Patients\_Providers**
        - This is implemented as a FK (patientID) in the **Patients\_Providers** table
- **Addresses: Entity** Records patients shipping addresses within the US
    - **Implemented by Team Member: Pavan**
    - addressID: int, auto-increment, unique, not NULL
      - Primary Key
    - address1: first line of address, varchar, not NULL
    - address2: optional second line of address, varchar
    - city: char, not NULL
    - state: varchar, not NULL
    - zip: char, not NULL
    - Relationships:
      - **Addresses** has a 1:M (Participation required) with **Patients**
        - This is implemented as an FK (addressID) within the **Patients** table
- **Healthcare\_Providers: Entity** Records the healthcare provider prescribing the medication for the patient -
    - **Implemented by Team Member: Chris**
    - nationalProviderIdentifier: char, unique, not NULL
      - Primary Key
    - firstName: varchar, not NULL
    - lastName: varchar, not NULL
    - specialty: varchar, not NULL
    - Relationships
      - **Healthcare\_Providers** has a 1:M (participation required) relationship with **Prescriptions**
        - This is implemented as a FK (nationalProviderIdentifier) in the table **Prescriptions**
      - **Healthcare\_Providers** has a M:M (participation required) relationship with **Patients**
        - **Healthcare\_Providers** has a 1:M relationship with **Patients\_Providers**
          - This is implemented as a FK (nationalProviderIdentifier) in the **Patients\_Providers** table

- **Patients\_Providers: Composite** Records a relationship between patient and healthcare provider
  - **Implemented by Team Member: Chris**
  - nationalProviderIdentifier: char, unique, not NULL
    - Foreign Key
  - patientID: int, not NULL
    - Foreign Key
  - Primary Key: (patientID, nationalProviderIdentifier)
  - Relationships:
    - **Patients\_Providers** has a M:1 relationship with **Patients**
      - This is implemented as a FK (patientID) in the **Patients\_Providers** table
    - **Patients\_Providers** has a M:1 relationship with **Healthcare\_Providers**
      - This is implemented as a FK (nationalProviderIdentifier) in the **Patients\_Providers** table
- **Drugs: Entity** Records specialty medications available at the store
  - **Implemented by Team Member: Pavan**
  - nationalDrugCode: char, unique, not NULL
    - Primary Key
  - genericName: varchar, not NULL
  - brandName: varchar, not NULL
  - strength: varchar, not NULL
  - quantityAvailable: int, not NULL
  - Relationships:
    - **Drugs** has a 1:M (Participation not required) relationship with **Prescriptions**
      - This is implemented as a FK (nationalDrugCode) in the **Prescriptions** table
- **Prescriptions: Entity** Records prescriptions received for a patient
  - **Implemented by Team Member: Pavan**
  - scriptID: int, auto-increment, unique, not NULL
    - Primary Key
  - shipDate: date
  - patientID: int, not NULL
    - Foreign Key
  - nationalProviderIdentifier: char, not NULL
    - Foreign Key
  - nationalDrugCode: char, not NULL
    - Foreign Key
  - Relationships:
    - **Prescriptions** has a M:1 (Participation required) relationship with **Drugs**
      - This is implemented as a FK (nationalDrugCode) in the **Prescriptions** table
    - **Prescriptions** has a M:1 (Participation required) relationship with **Healthcare\_Providers**
      - This is implemented as a FK (nationalProviderIdentifier) in the **Prescriptions** table
    - **Prescriptions** has a M:1 (Participation required) relationship with **Patients**

Chris Wilkie  
Pavan Parimi

- This is implemented as a FK (patientID) in the **Prescriptions** table



# PART C

## Part D - Schema

**Prescriptions**(  
scriptID,  
shipDate,  
patientID, \_\_\_\_\_  
nationalProviderIdentifier, \_\_\_\_\_  
nationalDrugCode)

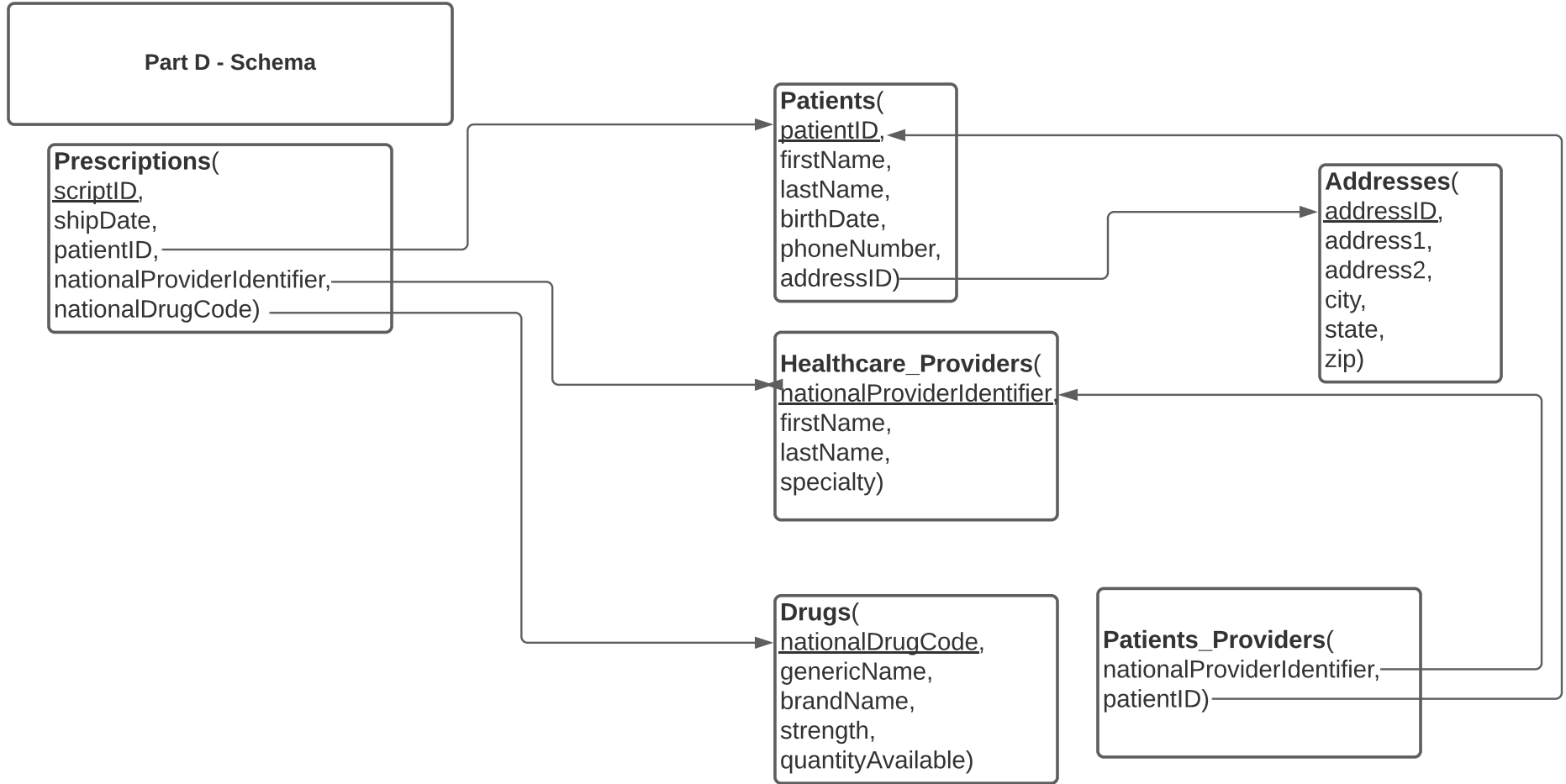
**Patients**(  
patientID,  
firstName,  
lastName,  
birthDate,  
phoneNumber,  
addressID)

**Addresses**(  
addressID,  
address1,  
address2,  
city,  
state,  
zip)

**Healthcare\_Providers**(  
nationalProviderIdentifier,  
firstName,  
lastName,  
specialty)

**Drugs**(  
nationalDrugCode,  
genericName,  
brandName,  
strength,  
quantityAvailable)

**Patients\_Providers**(  
nationalProviderIdentifier, \_\_\_\_\_  
patientID)



# Addresses

- This page is used to manage the Address Table
- The "Address Table" displays all the existing addresses
  - Pharmacy employees can use this to update, add, or devare an address
  - One address can be linked to multiple patients so please be careful!

Add Address: **CREATE**

Address

Address Continued

City

State (Abbreviation)

AL

Zip Code

Add

#	Address Line 1	Address Line 2	City	State	Zip	Action	
1	123 New City Lane		Redlands	CA	92374	Edit	Delete
2	456 Old Town Road	PO Box 24400	Lyons	CO	80540	Edit	Delete
3	98 Happy Valley Road		Jamesburg	NJ	08831	Edit	Delete

READ

UPDATE / DELETE

# Drugs

This page is used to manage the Drugs Table

- The "Drugs Table" displays all the existing drugs in the Pharmacy
- Pharmacy employees can use this to update, add, or delete a drug
- One drug can be linked to multiple prescriptions so please be careful!

Add Drug: **CREATE**

National Drug Code

Generic Name

Brand Name

Strength

Quantity Available

Add

NDC	Generic	Brand	Strength	Quantity	Action	
0074-0067-02	adalimumab	Humira	40mg/0.8ml	48	Edit	Delete
57894-060-02	ustekinumab	Stelara	45mg/0.5ml	100	Edit	Delete
58406-446-04	etanercept	Enbrel	50mg/ml	60	Edit	Delete

READ

UPDATE / DELETE



# Healthcare Providers

This page is used to manage the Healthcare Providers table

- The Healthcare Providers Table will display all providers and their information.
- The form can be used to add a new provider.
- The buttons on the right of the table on each row can be used to update or delete the provider in that row.
- NOTE: Deleting a provider from this table will also delete them in the Prescriptions and Provider Patient Tables.

Add Provider

CREATE

NPI

First Name

Last Name

Specialty

Add

NPI	First Name	Last Name	Specialty		
1235237355	Katy	Scan	Radiology	EDIT	DELETE
1659662732	Doctor	Hearts	Cardiology	EDIT	DELETE
1699299883	Doc	Cutz	Surgery	EDIT	DELETE

UPDATE / DELETE

READ

# Patient Provider Portal

- This page is used to manage the Patient Provider Relationships Table
- The "Patient Provider Table" displays all the existing patient provider relationships in the Pharmacy
  - Pharmacy employees can use this to add or delete a relationship

Add Relationship: **CREATE**

Patient ID

1

NPI

1235237355

Add

NPI	Provider Name	PatientID	Patient Name	
1659662732	Hearts, Doctor	1	Lady, Old	DELETE
1659662732	Hearts, Doctor	2	Claus, Young	DELETE
1699299883	Cutz, Doc	3	Adultman, Vincent	DELETE

READ

DELETE

# SciGuys SuperPharm

[Patients](#)   [Addresses](#) [Medications](#)  
[Prescriptions](#) [Providers](#)   [Patient Provider Portal](#)

# Patients

This page is used to manage the Patients Table

- The Patients Table will display all patients and their information.
- The form can be used to add a new patient.
- The buttons on the right of the table on each row can be used to update or delete the patient in that row.
- Search by filling the known fields and hitting the 'Search' button. Data submitted is case-sensitive.
- NOTE: Deleting a patient from this table will also delete them in the Prescriptions and Provider Patient Tables.

Add Patient: **CREATE**

First Name

Last Name

Phone Number

Address ID

1

DOB

mm/dd/yyyy

Add

Look Up Patient: **SEARCH**

Patient ID

First Name

Last Name

Phone Number

Address ID

DOB

mm/dd/yyyy

Search

## READ

Patient ID	First Name	Last Name	Phone Number	Address ID	DOB		
1	Old	Lady	15555555555	1	1945-01-06	EDIT	DELETE
2	Young	Claus	12345678910	2	2008-12-25	EDIT	DELETE
3	Mc	Smith	98765432101	3	1999-05-11	EDIT	DELETE

UPDATE / DELETE

# Prescriptions

This page is used to manage the Prescriptions Table

- The "Prescriptions Table" displays all the existing Prescriptions in the Pharmacy
- Pharmacy employees can use this to update, add, or delete a prescription

Add Prescription: **CREATE**

Patient ID

1

Ship Date

mm/dd/yyyy

NPI

1235237355

NDC

0074-0067-02

Add

Click Here to Show Expanded Table

**READ**

Script ID	Ship Date	Patient ID	NPI	NDC	Action
1	2021-07-25	1	1659662732	0074-0067-02	<div>EditDelete</div>
2	2021-07-26	2	1659662732	58406-446-04	<div>EditDelete</div>
3		3	1699299883	57894-060-02	<div>EditDelete</div>

**UPDATE / DELETE**