Project
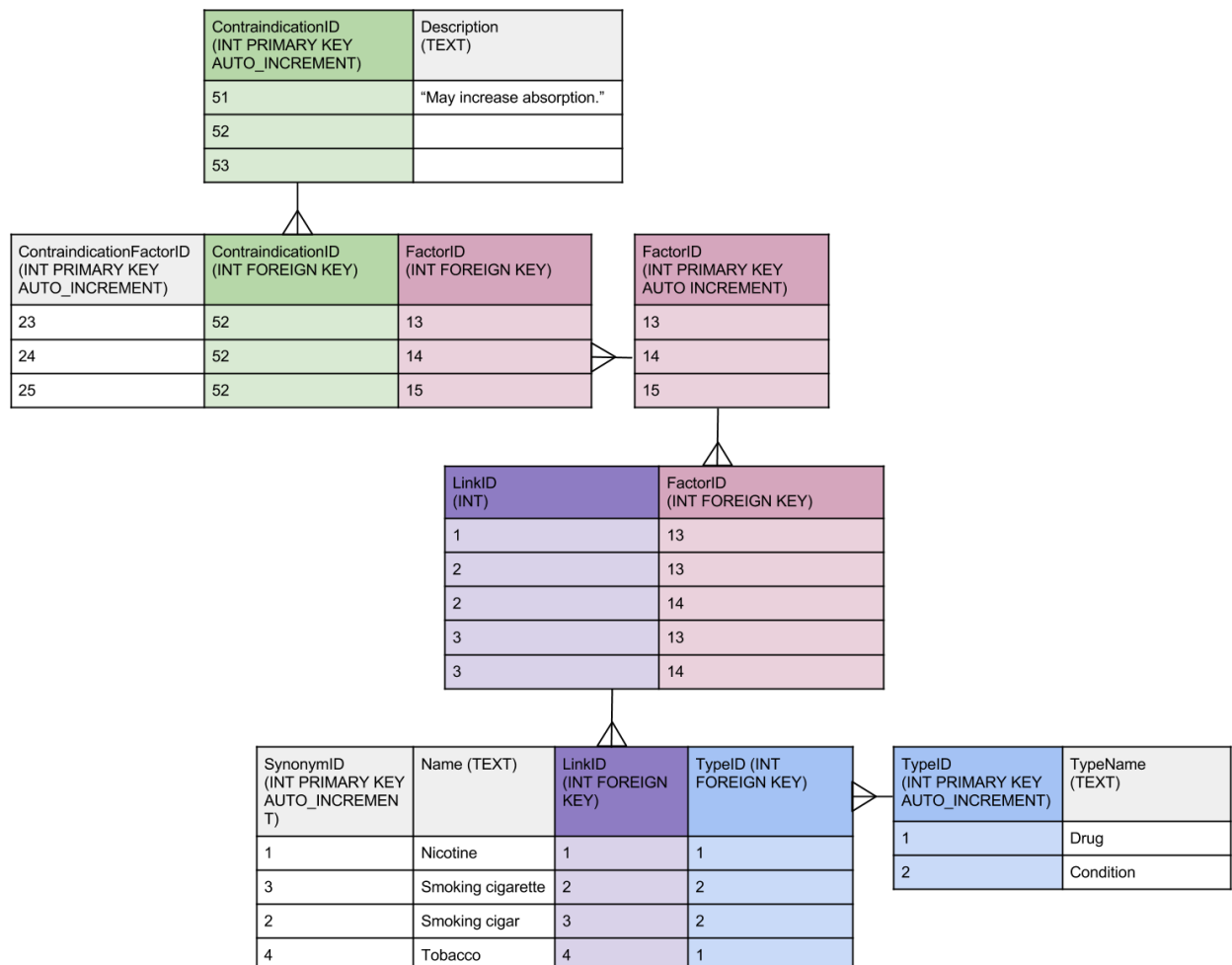
Our project is a contraindication checker site. It is a site that allows you to check for *contraindications* in your medication. A contraindication is defined by merriam-webster as something (such as a symptom or condition) that makes a particular treatment or procedure inadvisable. Contraindications suggest that while taking your current medications, or under your current conditions, there may be complications.

Data Models Used

Here is an illustration of the tables in our SQL database.

ContraindicationID (INT PRIMARY KEY AUTO_INCREMENT)	Description (TEXT)
51	"May increase absorption."
52	
53	

ContraindicationFactorID (INT PRIMARY KEY AUTO_INCREMENT)	ContraindicationID (INT FOREIGN KEY)	FactorID (INT FOREIGN KEY)
23	52	13
24	52	14
25	52	15

FactorID (INT PRIMARY KEY AUTO INCREMENT)
13
14
15

LinkID (INT)	FactorID (INT FOREIGN KEY)
1	13
2	13
2	14
3	13
3	14

SynonymID (INT PRIMARY KEY AUTO_INCREMENT)	Name (TEXT)	LinkID (INT FOREIGN KEY)	TypeID (INT FOREIGN KEY)
1	Nicotine	1	1
3	Smoking cigarette	2	2
2	Smoking cigar	3	2
4	Tobacco	4	1

TypeID (INT PRIMARY KEY AUTO_INCREMENT)	TypeName (TEXT)
1	Drug
2	Condition

- The Factors table holds all medications and conditions in our database.

- The Synonyms table holds all of the names for all of the medications and conditions in our database (most medications have at least 2 names, we included an average of names for each).
- The Types table holds the possible types for each factor (drug or condition).
- The Links table links the synonyms to their factors, for example Acetaminophen and Tylenol are two synonyms for the same factor. Also, "Smoking cigarettes or cigars" is a synonym that links to multiple factors. This is because cigarettes and cigars contain multiple drugs/chemicals.
- The ContraFactors table links factors to their contraindications, for example it links Asthma and Aspirin to the same ContraindicationID.
- Finally, the Contraindications table holds all contraindications.

Goals

Goals achieved: We have a user interface where patients may choose drugs and conditions from a list (provided by our database). Our system will list any contraindications present within the group of medications and/or conditions chosen. Each contraindication comes with a short message explaining the complications.

Contraindication Checker

This site allows you to check for *contraindications* in your medication. Contraindications suggest that while taking your current medications or under your current conditions there may be complications. If you have contraindications consult your trusted medical professional. Information source: [website here]

| Search for medication... ▼ | Search for condition... ▼ |

Your Medications:

- Aspirin
- Levothyroxine
- Luminal

Your Conditions:

- Asthma
- Hypothyroidism

Contraindications:

- Aspirin and Asthma
  - Risk(s): This medication may trigger an asthma attack. You do not need to avoid these medications unless you know they are asthma triggers for you. If these medications have never triggered your asthma, it is still best to take the medications with caution because a reaction can occur at any time. Products with acetaminophen such as Tylenol are considered a safer alternative.
- Hypothyroidism, Levothyroxine, and Luminal
  - Risk(s): Results in increased levothyroxine metabolism, lowering blood levels

Goals not achieved: We achieved our practical, short-term goals, but had some farther-reaching goals we did not meet. These include having a complete database and giving the system the ability to make suggestions for alternative treatments when a contraindication is present.

Future Work

Our database contains only a small percentage of the medications, conditions, and possible contraindications that are in existence, and does not consider procedures at all. Furthermore, we are not medical professionals and cannot guarantee the reliability

of the information in our database that we took from the internet. If this project were to grow, next steps would be to perfect the database through gathering more data and consulting medical professionals.

Suggestions of alternative treatments could be added to the system as well. For example, if the system tells you that you should not be taking Aspirin if you have Asthma, it could suggest that you use Tylenol instead.

Overall Reaction

Our overall reaction for our final project is positive. Our system has all of the functionality we hoped to add in the timeframe and it works well. We're happy with the project we chose because it allowed us to focus on the back end and the database rather than being front-end heavy. Working with the medication contraindication problem was interesting and it was challenging to create a good database system.