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CS 340 Final Project

Basic Outline:

This is a database for cocktail recipes, that the user can filter based on flavor profiles like “sweet” or “spicy”, alcohol ingredient, or country of origin. The focal point of the database is the recipes themselves, but the user can also look up the profile of types of alcohol from a complete spirit list in the addSpirits page. Users can also add to every table, build new recipes, edit and delete recipes, and update the country of origin for spirits. With more entries, this database would serve as a sort of “Drinks of the World” showcase where users can explore relationships between spirits and cocktails, between spirits and where they came from, and what sort of cocktails different countries dream up.

Database Outline:

Entities:

Drinks.
These are the actual mixed drinks, and have the attributes id, name, flavor, directions, inventor name, and invention country. Names must be unique. Flavors are organized in their own table, even though they are not an entity themselves. This is done to keep the database consistent and easy to search. The flavor attribute of a drink is recorded in a foreign key that references the flavor_id of the flavor name selected. Inventor name is recorded as a varchar. I had originally considered having inventor be its own entity, but I decided against this because it added no additional functionality to my database (almost every drink would have a unique inventor and there didn’t seem to be any point in trying to let people search by inventor) and also would have made it awkward to store long names or names with titles unless I only had one varchar field anyway. Drinks are from countries, the best guess as to where it originated. This is stored as a foreign key and can be null. Everything in the database is partial participation, with the objective being to have a large storehouse of countries, mixers, spirits, etc. that the user can choose from to build new drinks, but may not necessarily be in a drink yet. The recipe of the drink is constructed based on the drink’s relationships with spirits and mixers, so I”ll go more into detail about that in the next section.

Spirits.
These are the different types of alcohol, like rum or vodka. Their attributes are id, name, average proof (double the percentage of alcohol), and country of origin. Similar to a drink’s country of origin, spirits and countries have a many-to-one relationship, which is stored as a foreign key in the spirits table referencing the country’s id.

Mixers.
These are similar to spirits in terms of the database operations used, but they are the nonalcoholic ingredients in mixed drinks, like soda or juice. Their attributes are only id and name. The names must be unique.

Countries.
These are the countries of the world, with attributes of id and name. I have attempted to include every country in my countries table, so that the user can choose anywhere when building a drink, but for

many of the select operations, like the front page search filter, only the countries that already have drinks associated with them will be shown in the list. New countries may be added, but they must have unique names.

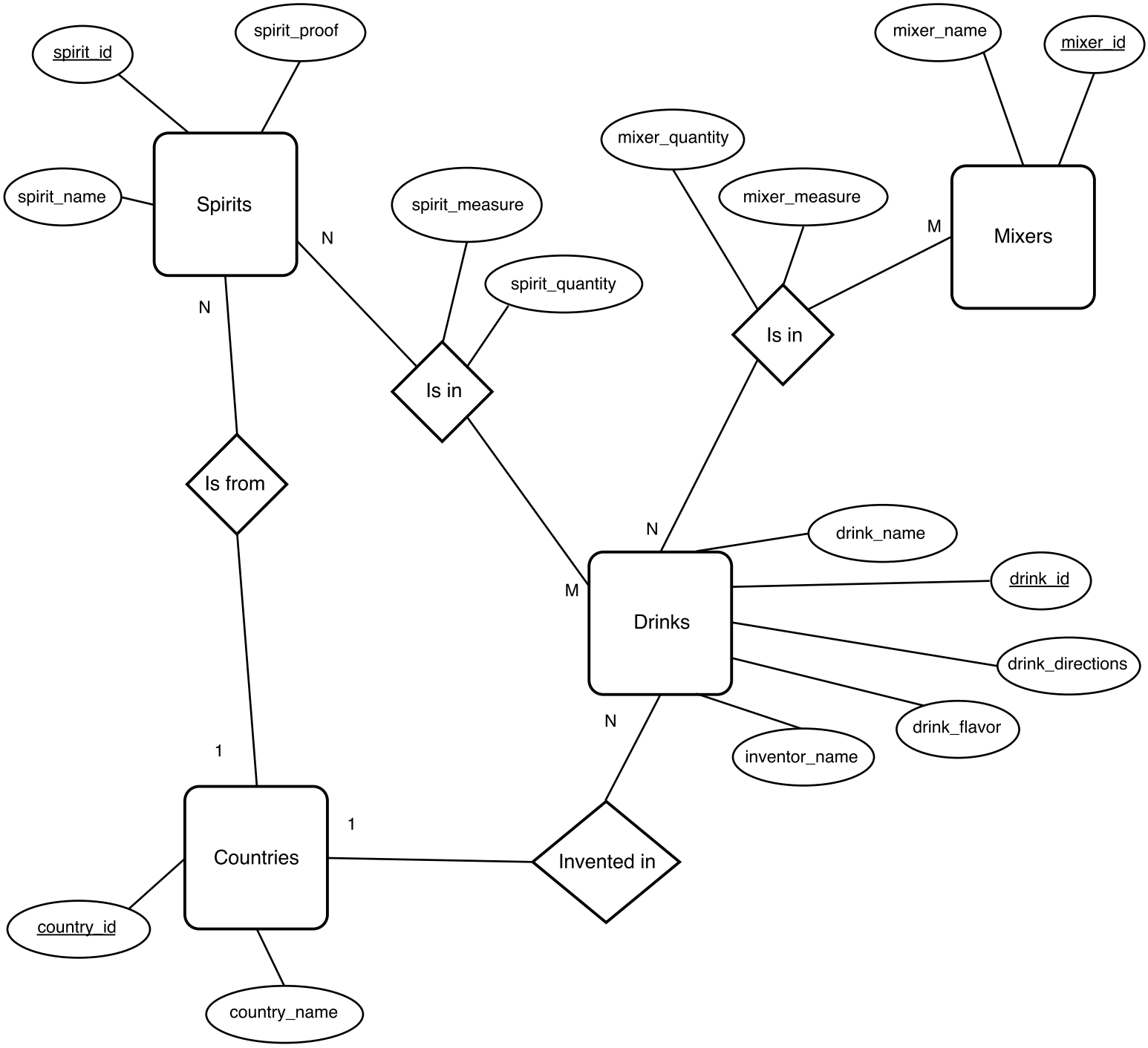
Relationships:

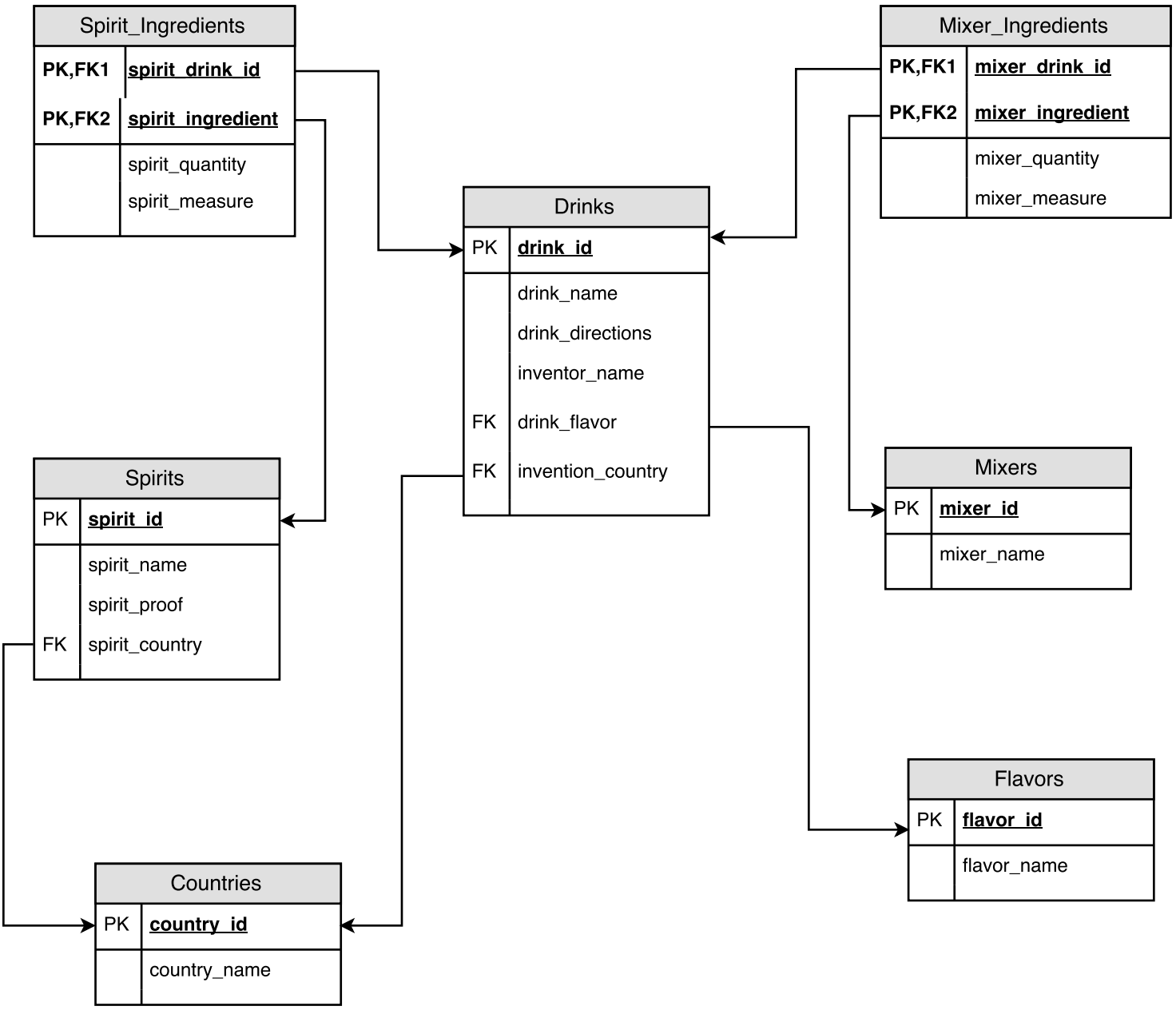
Drinks and countries have a many-to-one relationship – a country may have many drinks, but a drink was invented in just one country. Accordingly, this relationship is recorded in the drinks table via a foreign key of the country's id. Through the drink edit page, the country relationship may be set to null or updated. Choosing a country in the filter dropdown will show all drinks and spirits that have been set as being from that country.

Spirits and countries also have a similar many-to-one relationship – a country may have been the birthplace of many spirits, but a spirit is, for the purposes of this database, only from one country. The relationship is recorded with a foreign key in the spirits table that references the country's id. Looking up a spirit in the spirits page filter allows a user to remove or update this relationship.

Drinks and spirits have a many-to-many relationship. A drink may have many spirits, and a spirit may be a constituent of many drinks. This is the basis of each drink's recipe list. Therefore, these relationships are recorded in a separate table, called spirit_ingredients, where each row records one alcoholic ingredient in one recipe, by two primary foreign keys referencing the drink id and the spirit id. On the recipe edit page, the user is given the opportunity to delete these relationships or add new ones.

Drinks and mixers have a many-to-many relationship very similar to the one described above. The mixers in each recipe are recorded in the table mixer_ingredients with a composite primary key made up of two foreign keys referencing the drink and the mixer id's. These two many-to-many relationships in my database also each have two relationship attributes: quantity and measure, like "1" and "shot", for example. I had originally thought I'd made quantity a double, but I decided to make it a varchar so that it would have the flexibility to allow the user to enter numbers and decimals, but also words like "several" if necessary. Neither of these relationship attributes are required.


spirit_id
spirit_proof
spirit_name
Spirits
N
N
spirit_measure
spirit_quantity
Is in
Is from
1
Countries
country_id
country_name
1
Invented in
N
M
Drinks
N
drink_name
drink_id
drink_directions
drink_flavor
inventor_name
mixer_quantity
mixer_measure
Is in
M
Mixers
mixer_name
mixer_id


Spirit_Ingredients
PK,FK1
spirit_drink_id
PK,FK2
spirit_ingredient
spirit_quantity
spirit_measure
Mixer_Ingredients
PK,FK1
mixer_drink_id
PK,FK2
mixer_ingredient
mixer_quantity
mixer_measure
Drinks
PK
drink_id
drink_name
drink_directions
inventor_name
FK
drink_flavor
FK
invention_country
Spirits
PK
spirit_id
spirit_name
spirit_proof
FK
spirit_country
Mixers
PK
mixer_id
mixer_name
Flavors
PK
flavor_id
flavor_name
Countries
PK
country_id
country_name

Data definition queries:

```
CREATE TABLE `drinks` (
   `drink_id` int(11) AUTO_INCREMENT NOT NULL,
   `drink_name` varchar(200) NOT NULL,
   `drink_flavor` int(11) DEFAULT NULL,
   `drink_directions` varchar(300) DEFAULT NULL,
   `inventor_name` varchar(50) DEFAULT NULL,
   `invention_country` int(11) DEFAULT NULL,
   PRIMARY KEY (`drink_id`),
   UNIQUE KEY (`drink_name`),
   FOREIGN KEY (`drink_flavor`) REFERENCES `flavors` (`flavor_id`),
   FOREIGN KEY (`invention_country`) REFERENCES `countries` (`country_id`)
) ENGINE=InnoDB;


CREATE TABLE `spirits` (
   `spirit_id` int(11) AUTO_INCREMENT NOT NULL,
   `spirit_name` varchar(50) NOT NULL,
   `spirit_proof` int(3) DEFAULT NULL,
   `spirit_country` int(11) DEFAULT NULL,
   PRIMARY KEY (`spirit_id`),
   UNIQUE KEY (`spirit_name`),
   FOREIGN KEY (`spirit_country`) REFERENCES `countries` (`country_id`)
) ENGINE=InnoDB;


CREATE TABLE `mixers` (
   `mixer_id` int(11) AUTO_INCREMENT NOT NULL,
   `mixer_name` varchar(50) NOT NULL,
   PRIMARY KEY (`mixer_id`),
   UNIQUE KEY (`mixer_name`)
) ENGINE=InnoDB;


CREATE TABLE `spirit_ingredients` (
   `spirit_drink_id` int(11) NOT NULL,
   `spirit_ingredient` int(11) NOT NULL,
   `spirit_quantity` varchar(11) DEFAULT NULL,
   `spirit_measure` varchar(11) DEFAULT NULL,
   PRIMARY KEY (`spirit_drink_id`, `spirit_ingredient`),
   FOREIGN KEY (`spirit_drink_id`) REFERENCES `drinks` (`drink_id`) ON DELETE CASCADE,
   FOREIGN KEY (`spirit_ingredient`) REFERENCES `spirits` (`spirit_id`)
) ENGINE=InnoDB;


CREATE TABLE `mixer_ingredients` (
   `mixer_drink_id` int(11) NOT NULL,
```

```
    `mixer_ingredient` int(11) NOT NULL,
    `mixer_quantity` varchar(11) DEFAULT NULL,
    `mixer_measure` varchar(11) DEFAULT NULL,
    PRIMARY KEY (`mixer_drink_id`, `mixer_ingredient`),
    FOREIGN KEY (`mixer_drink_id`) REFERENCES `drinks` (`drink_id`) ON DELETE CASCADE,
    FOREIGN KEY (`mixer_ingredient`) REFERENCES `mixers` (`mixer_id`)
) ENGINE=InnoDB;


CREATE TABLE `flavors` (
    `flavor_id` int(11) AUTO_INCREMENT NOT NULL,
    `flavor_name` varchar(50) NOT NULL,
    PRIMARY KEY (`flavor_id`),
    UNIQUE KEY (`flavor_name`)
) ENGINE=InnoDB;


CREATE TABLE `countries` (
    `country_id` int(11) AUTO_INCREMENT NOT NULL,
    `country_name` varchar(50) NOT NULL,
    PRIMARY KEY (`country_id`),
    UNIQUE KEY (`country_name`)
) ENGINE=InnoDB;
```

Data Manipulation Queries

```
/* get all flavors that have associated drinks */
'SELECT DISTINCT flavor_name FROM flavors JOIN drinks ON drinks.drink_flavor =
flavors.flavor_id';


/* get all countries that have associated drinks */
'SELECT DISTINCT country_name FROM countries JOIN drinks ON drinks.invention_country =
countries.country_id';


/* get all spirits that have associated drinks */
'SELECT DISTINCT spirit_name FROM spirits JOIN spirit_ingredients ON spirit_id =
spirit_ingredient';
```

/* get drinks that have a specific flavor */
'SELECT drink_name, drink_id FROM flavors RIGHT JOIN drinks ON drinks.drink_flavor = flavors.flavor_id WHERE flavor_name =[userFlavor]';

/* get all drinks (in flavor menu, user selected “all flavors”) */
'SELECT drink_name, drink_id FROM flavors RIGHT JOIN drinks ON drinks.drink_flavor = flavors.flavor_id';

/* get drinks associated with a certain country */
'SELECT drink_name, drink_id FROM drinks JOIN countries ON drinks.invention_country = countries.country_id WHERE country_name =[userCountry]';

/* get drinks by spirit ID */
'SELECT drink_name, drink_id FROM drinks JOIN spirit_ingredients ON drinks.drink_id = spirit_ingredients.spirit_drink_id WHERE spirit_ingredient=[SpiritID]';

/* get spirits from a certain country */
'SELECT spirit_name, spirit_id FROM spirits JOIN countries ON spirits.spirit_country = countries.country_id WHERE country_name =[userCountry]';

/* get all countries */
'SELECT country_name FROM countries';

/* get all spirits */
'SELECT spirit_name, spirit_id FROM spirits';

/* get all mixers */
'SELECT mixer_name FROM mixers';

/* get all flavors */
'SELECT flavor_name FROM flavors';

/* get all drinks */
'SELECT drink_name, drink_id FROM drinks';

/* get spirit info by ID */
'SELECT spirit_name, spirit_proof, country_name FROM spirits LEFT JOIN countries ON spirits.spirit_country = countries.country_id WHERE spirit_id=[SpiritID]';

/* get spirit ID by spirit name */
'SELECT spirit_id FROM spirits WHERE spirit_name=[userSpirit]';

/* get drink info by drink ID */
'SELECT drink_name, drink_directions, inventor_name, country_name, flavor_name from drinks LEFT JOIN countries ON drinks.invention_country = countries.country_id LEFT JOIN flavors on drinks.drink_flavor = flavors.flavor_id WHERE drinks.drink_id =[DrinkID]';

/* look up spirit ingredients in a recipe by drink ID */
'SELECT spirit_id, spirit_name, spirit_quantity, spirit_measure FROM drinks JOIN spirit_ingredients ON drinks.drink_id = spirit_ingredients.spirit_drink_id JOIN spirits ON spirit_ingredients.spirit_ingredient = spirits.spirit_id WHERE drink_id =[DrinkID]';

/* look up mixer ingredients in a recipe by drink ID */
'SELECT mixer_id, mixer_name, mixer_quantity, mixer_measure FROM drinks JOIN mixer_ingredients ON drinks.drink_id = mixer_ingredients.mixer_drink_id JOIN mixers ON mixer_ingredients.mixer_ingredient = mixers.mixer_id WHERE drink_id =[DrinkID]';

/* save a spirit ingredient into a drink recipe */
'INSERT INTO spirit_ingredients (spirit_drink_id, spirit_ingredient, spirit_quantity, spirit_measure) VALUES ([DrinkID], (SELECT spirit_id FROM spirits WHERE spirit_name = [userSpiritName]), [userSpiritAmount], [userSpiritMeasurement])';

/* save a mixer ingredient into a drink recipe */
'INSERT INTO mixer_ingredients (mixer_drink_id, mixer_ingredient, mixer_quantity, mixer_measure) VALUES ([DrinkID], (SELECT mixer_id FROM mixers WHERE mixer_name = [userMixerName]), [userMixerAmount], [userMixerMeasurement])';

/* update drink info */
'UPDATE drinks SET drink_name=[userDrinkName], drink_directions=[userDirections], inventor_name=[userInventorName], invention_country=(SELECT country_id from countries WHERE country_name =[userCountryName]), drink_flavor=(SELECT flavor_id from flavors WHERE flavor_name =[userFlavorName]) WHERE drink_id=[DrinkID]';

/* delete specific drink *
'DELETE FROM drinks WHERE drink_id =[DrinkID]';

/* delete a spirit ingredient from a recipe */
'DELETE FROM spirit_ingredients WHERE spirit_drink_id =[DrinkID] AND spirit_ingredient =[userSpirit]';

/* delete a mixer ingredient from a recipe */
'DELETE FROM mixer_ingredients WHERE mixer_drink_id =[DrinkID] AND mixer_ingredient =[userMixer]';

/* add new country */
'INSERT INTO countries (country_name) VALUES ([userCountry])';

/* add new spirit */
'INSERT INTO spirits (spirit_name) VALUES ([userSpirit])';

/* add new mixer */
'INSERT INTO mixers (mixer_name) VALUES ([userMixer])';

/* add new flavor */
'INSERT INTO flavors (flavor_name) VALUES ([userFlavor])';

/* update spirit's country relationship */
'UPDATE spirits SET spirit_country=(SELECT country_id FROM countries WHERE country_name=[userCountry]) WHERE spirit_id=[SpiritID]';

/* insert new drink entry */
'INSERT INTO drinks (drink_name, drink_directions, inventor_name, drink_flavor, invention_country) VALUES ([userDrinkName], [userDirections], [userInventorName], (SELECT flavor_id FROM flavors WHERE flavor_name = [userFlavor]), (SELECT country_id FROM countries WHERE country_name = [userCountry]))';

/* get drink ID from drink name */
'SELECT drink_id FROM drinks WHERE drink_name =[userDrink]';