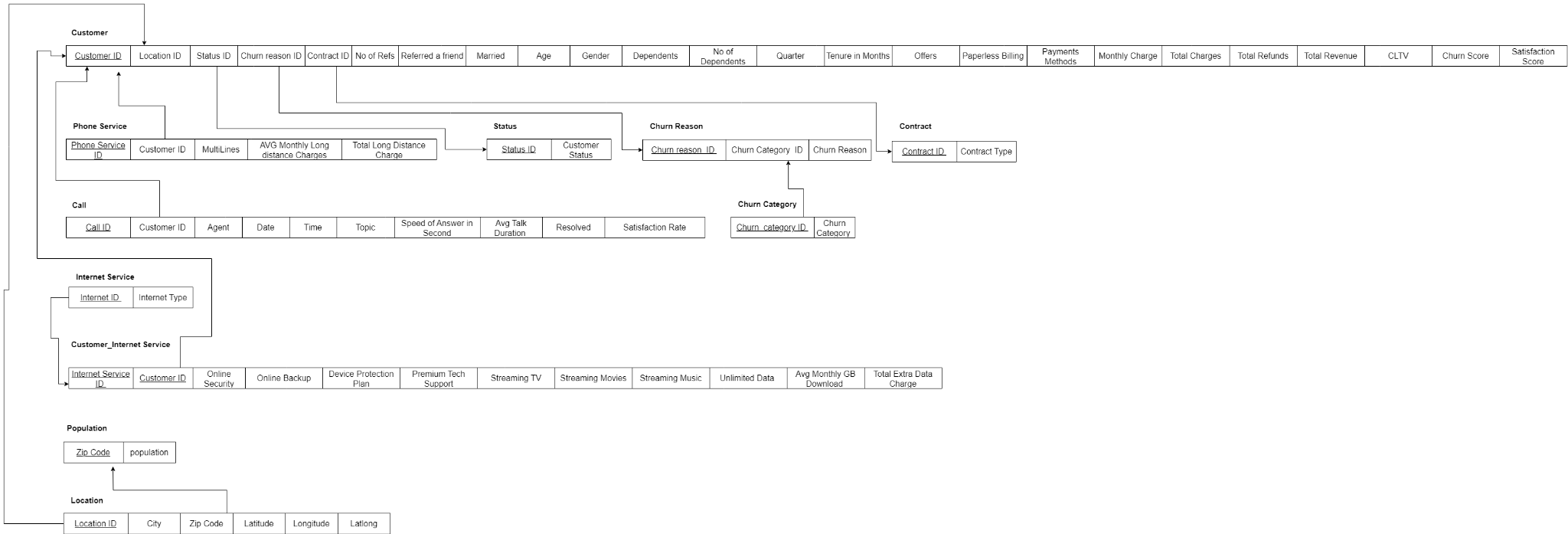
## Mapping



**Contract**

Contract ID PK, Contract type.

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Contract\_ID | INT | PRIMARY KEY |
| 2 | Contract\_Type | VARCHAR(50) | CHECK Contract type is Month-to-Month, One Year, Two Year. |

**Status Table**

Status ID PK, Customer Status.

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Status ID | INT | PRIMARY KEY |
| 2 | Customer\_Status | VARCHAR(10) | CHECK Customer Status is Churned, Stayed, or Joined. |

**Customers**

Customer ID PK, Location ID FK, Status ID FK, Churn reason ID FK, Contract ID FK, Number of refs, Referred a friend, Gender, Age, Married, Dependents, Number of Dependents, Quarter, Tenure in Months, Offer, Paperless Billing, Payment Method, Monthly Charge, Total Charges, Total Refunds, Total Revenue, CLTV, Churn Score, Satisfaction Score, Join Date.

**Customers & Location**

Relation between Customers and Locations is many to one, must from both sides. A customer must have one location, and the location must belong to one or many customers. So, the primary key of the “one” table Locations will be added as a foreign key in the “many” Table Customers.

**Customers & Status**

The relation between Customers and Status is one to many, must from the Customers side and may from the Status side. A customer must have one status, and the status may belong to one or many customers. So, the primary key of the “one” table Status will be added as a foreign key in the “many” Table Customers. Also, the relation attributes will go to the “many” Table Customers. Relation attributes are:

CLTV, Churn Score, and Satisfaction Score.

**Customers & Churn Reasons**

The relation between Customers and Churn Reasons is one to many, may from both sides. A customer may be churned so in this case he/she will have one churn reason, and the Churn Reasons may belong to one or many customers. So, the primary key of the “one” table Churn Reasons will be added as a foreign key in the “many” Table Customers.

**Customers & Contracts**

The relation between Customers and Contracts is one to many, must from the Customer's side and may from the Contracts side. A customer must have a contract, and the contract may belong to one or many customers. So, the primary key of the “one” table Contracts will be added as a foreign key in the “many” Table Customers.

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Customer\_ID | Int | PRIMARY KEY |
| 2 | Location\_ID | Int | FOREIGN KEY |
| 3 | Status\_ID | Int | FOREIGN KEY |
| 4 | Churn\_Reason\_ID | Int | FOREIGN KEY |
| 5 | Contract\_ID | Int | FOREIGN KEY |
| 6 | Number\_Of\_ Referrals | Int | DEFAULT will be 0 |
| 7 | Referred\_A\_Friend | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 8 | Gender | Varchar(10) | CHECK it is Male or Female  DEFAULT will be Male |
| 9 | Married | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 10 | Age |  | CHECK Age between 18 & 120. |
| 11 | Dependents | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 12 | Number\_Of\_Dependents | Int | DEFAULT will be 0 |
| 13 | Offer | Varchar(10) | CHECK it is A,B,C,D,E, or None.  Default None |
| 14 | Paperless\_Billing | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 15 | Payment\_Method | Varchar(50) | CHECK it is Bank Withdrawal, Credit Card, Mailed Check. |
| 16 | Churn\_Score | Int | CHECK Churn Score between 0 and 100 |
| 17 | Satisfaction\_Score | Int | CHECK Satisfaction Score between 1 and 5 |
| 18 | Quarter | Varchar(10) |  |
| 19 | CLTV | Int |  |
| 20 | Tunure\_In\_Month | Int |  |
| 21 | Monthly\_Charge | Float |  |
| 22 | Total\_Charges | Float |  |
| 23 | Total\_Refunds | Float |  |
| 24 | Total\_Revenue | Float |  |
| 25 | Join\_Date | Date |  |

**Internet Service**

Internet Service ID PK, Internet Type.

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Internet\_Service\_ID | INT | PRIMARY KEY |
| 2 | Internet\_Type | VARCHAR(50) | CHECK Internet Type is DSL, or Fiber optic, or Cable. |

**Customer Internet Service**

(Internet Service ID FK, Customer ID FK) PK, Online Security, Online Backup, Device Protection Plan, Premium Tech Support, Streaming TV, Streaming Movies, Streaming Music, Unlimited Data, Avg Monthly GB Download, Total Extra Data Charges.

**Customers & Internet Service**

The relation between Customers and Internet Service is many to many, may from both sides. A customer may have one or more Internet Services, and the Internet Service may belong to one or many customers. So, we will create a new table Customer Internet Service that contains Customers & Internet Service primary keys as a composite key (Internet Service ID FK, Customer ID FK) PK. Also, the relation attributes will be added to the new table. The relation attributes are:

Online Security, Online Backup, Device Protection Plan, Premium Tech Support, Streaming TV, Streaming Movies, Streaming Music, Unlimited Data, Avg Monthly GB Download, Total Extra Data Charges.

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Internet Service ID | INT | FOREIGN KEY |
| 2 | Customer ID | INT | FOREIGN KEY |
| 3 | (Internet Service ID, Customer ID) |  | PRIMARY KEY |
| 4 | Online Security | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 5 | Online Backup | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 6 | Device Protection Plan | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 7 | Premium Tech Support | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 8 | Streaming TV | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 9 | Streaming Movies | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 10 | Streaming Music | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 11 | Unlimited Data | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |

**Phone Service**

The relation between Customer & Phone Service is one to one .The customer May have Phone service and the phone service Must have Customer so get primary key from Customer and put it in Phone service as Foreign key.

Phone Service ID PK, Customer ID FK, Multiple Lines, average monthly Long-Distance Charges, Total Long-Distance Charges.

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Phone\_Service\_ID | Int | PRIMARY KEY |
| 2 | Customer\_Id | Int | FOREIGN KEY |
| 3 | Multiple\_Lines | Bit | CHECK it is 0, or 1  DEFAULT will be 0 |
| 4 | Avg\_Monthly\_Long\_Distance\_Charges | decimal(10,3) | CHECK it is greater or equal than 0 |
| 5 | Total\_Long\_Distance\_Charges | decimal(10,3) | CHECK it is greater than or equal 0 |

**Location**

The relation between Location and Population is one from Population side to many from Location side, So the Primary of Population will be Foreign key in Location. Location Must have Zip Code and Population Must Zip Code in Location.

(Location ID PK, Zip code FK, Latitude, Longitude, Latlong, City).

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Location\_ID | Integer | PRIMARY KEY |
| 2 | City | Varchar(15) |  |
| 3 | ZipCode | Integer | FOREIGN KEY |
| 4 | Latitude | FLOAT |  |
| 5 | Longitude | FLOAT |  |

**Population**

Zip code PK, Population

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Zipcode\_ID | Integer | PRIMARY KEY |
| 2 | Population\_Num | Integer | CHECK it be greater than 0 |

**Call**

The relation between Customer and Call is one to many. The customer has many calls, but there is one Customer for one call. The Customer may have Call but Call Must have Customer.

(Call ID PK, Customer ID FK, Date, Time, Topic, Agent, Resolved, Speed of answer, Duration, Answered,Avg\_Talk\_Duration, Satisfaction rate)

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Call\_ID | INT | PRIMARY KEY |
| 2 | Customer\_ID | INT | FOREIGN KEY |
| 3 | Agent | Varchar(50) |  |
| 4 | Date\_Of\_Call | Date |  |
| 5 | Time\_Of\_Call | Time |  |
| 6 | Resolved | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 7 | Answered | BIT | CHECK it is 0, or 1  DEFAULT will be 0 |
| 8 | Topic | Varchar(50) | CHECK Topic is Contract related,Technical Support, Payment related, Admin Support, Streaming. |
| 9 | Speed\_Of\_Answer\_In\_Seconds | INT | CHECK it is greater than 0. |
| 10 | Duration | TIME |  |
| 11 | Satisfaction\_Rating | INT | CHECK between 1 and 5 |

**Churn Category**

(Churn Category ID PK, Churn Category)

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Churn\_Category\_ID | INT | PRIMARY KEY |
| 2 | Churn\_Category | VARCHAR(50) | CHECK Churn Category is Competitor, Dissatisfaction, Price, Attitude, Other. |

**Churn Reason**

The relation between Churn Category and Churn Reason is one to many. The Churn Category has many reasons but one reason has one Churn Category. The reason must has Category and Category must has Reason, so the primary key of Churn Category in Churn Reason as foreign key

(Churn reason ID PK, Churn Category ID FK, Churn Reason).

| **No** | **Column** | **Data Type** | **Constraint** |
| --- | --- | --- | --- |
| 1 | Churn\_reason\_ID | INT | PRIMARY KEY |
| 2 | Churn\_Category | VARCHAR(50) | FOREIGN KEY |
| 3 | Churn\_Reason | VARCHAR(50) | CHECK Churn Reason is Competitor offered more data, Competitor made better offer, Limited range of services, Extra data charges, Competitor had better devices, Don't know, Service dissatisfaction, Lack of affordable download/upload, speed, Product dissatisfaction, Long distance charges, Poor expertise of online support, Attitude of support person, Network reliability, Competitor offered higher download, speeds, Moved, Price too high, Attitude of service provider, Poor expertise of phone support, Deceased, Lack of self-service on Website. |