

HEALTH INSURANCE DATABASE

TEAM-PATS DB



1) Mayur

2) Tejas



Objective

- To create a Healthcare company database using SQL server which holds exhaustive yet essential data for managing monetary transactions .
- To create meaningful relationships between multiple entities and extract data with ease.
- To create front end using R-Shiny for visualization & interaction with Database system
- To perform operations such as INSERT, UPDATE ,DELETE

Main Entities

Member



Provider/Doctor



Facility/Hospital Claims



Plans



Claims



Health Insurance Provider/Carrier





Basic Terminology

- A health insurance- A **Health insurance** is a type of **insurance** coverage that pays for medical and surgical expenses incurred by the insured.
- Member- A person who is enrolled into Health plan & the only eligible beneficiary of insurance.
- Subscriber- A parent/guardian/member/company who is responsible for all the payments related to insurance of a member.
- Group – Group insurance is used generally for corporate companies for group of people.
- Health history - The major details of all diagnosed health conditions of the member. For example, the nature of condition being diagnosed is classified under different categories such as Nervous, Respiratory, Muscular, etc.



Basic Terminology

- Provider- A health care provider is a professional (an individual practitioner/ doctor/ nurse) that provides diagnosis to a member.
- Facility- A medical care facility is a Health organization/ clinic/ hospital that provides health services to a member through a provider
- Services- A service is the diagnosis or treatment provided to a member on account of a health complaint
- Plans- A plan is an outline of detailed information about coverage & policy provided to member. The types of plans are
 - PLATINUM
 - GOLD
 - SILVER



Basic Terminology

- Policy- It's a detailed & tailored information of plans provided to member for add on options in plans
- Claim- It is the formal request provided by member for payment according to plan. It contains information from member as well as services
- Co-payment : One of the ways the member shares medical costs. For example, a flat fee for certain medical expenses (e.g., \$10 for every visit to the doctor), while your insurance company pays the rest
- Deductible: The amount of eligible expenses a member must pay each calendar year (or contract year) before the insurance company will make a payment for eligible benefits. Usually applies to the out-of-network services, but may apply to in-network services for certain products



MEMBER

- Member table consist of personal , contact etc information about member.
- Each member has a unique Member_ID
- A member may have multiple health records with separate table for history
- A member has a single subscriber & it can be a guardian/parent/company
- A member becomes his own subscriber if he is a primary holder
 - In this case Member_ID = Subscriber_Id



Provider

- Provider includes the contact information of doctor/practitioner which is officially registered with NPI (National Provider Identifier).
- NPI is primary key for provider
- A provider can have multiple Specializations
- After checking the authentication provider will check the scope of treatment,
- He will provide diagnosis to the member



Facility

- Facilities are hospitals uniquely identified by Facility_id responsible to provide all the services requested from provider for member
- The facilities incorporates with many departments & labs with respected services provided by them
- It will decide the scope of service for 'in scope' or 'out of scope'
- The nature of a service is defined by an ICD_10 code
- International Classification of Diseases is a set of codes that identify each health condition. The codes here are used to describe the nature of health condition of the member being serviced
- Facility will track records on Treatment_Start_Date and Treatment_End_Date.



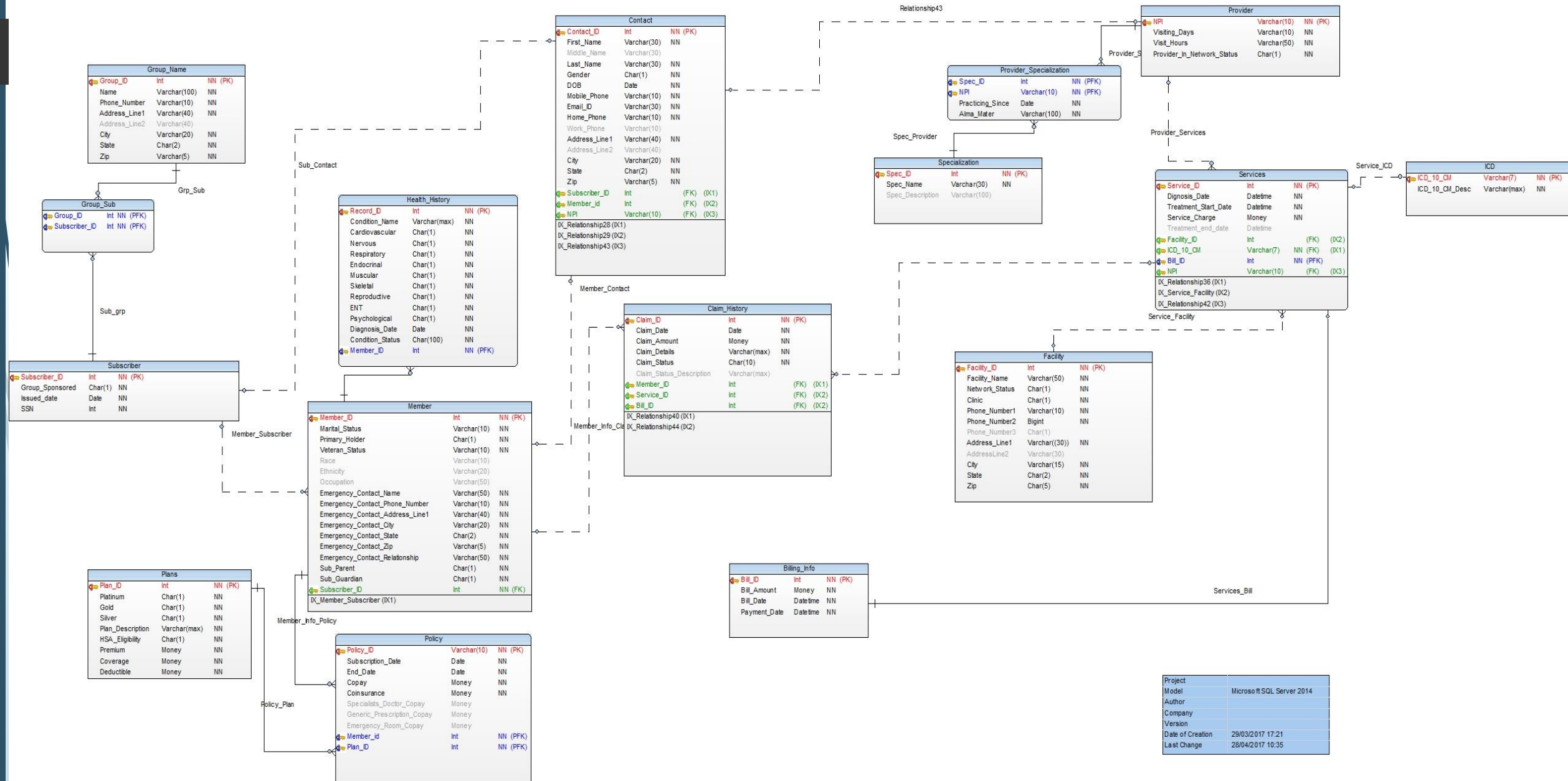
PLANS & CLAIMS

- We have used 3 different plans
- Duration required by the member to file the claim
- Claim_Status_Description explains whether a claim has been accepted or rejected by the insurance provider
- The plans are basically classified on the amount of premium & coverage
 - PLATINUM PLAN
 - GOLD PLAN
 - SILVER PLAN

Relationship Table

<u>Relationship between</u>	<u>Type</u>	<u>Is this an identifying relationship?</u>
Member - Health_History	1:M	YES
Member - Claim_History	1:M	NO
Member - Policy	1:M	YES
Subscriber - Group_Sub	1:M	YES
Subscriber - Member	1:M	NO
Group_Name - Group_Sub	1:M	YES
Provider - Provider_Specialisation	1:M	YES
Provider - Services	1:M	YES
Contact - Member	1:1	NO
Contact - Subscriber	1:1	NO
Contact - Provider	1:1	NO
Plan - Policy	1:M	YES
Specialisation - Provider_Specialisation	1:M	YES
Services - ICD	1:M	NO
Services - Billing_Info	1:1	YES
Services - Claim_History	1:M	NO
Facility - Services	1:M	YES

STAGE 1- TOAD MODEL OF DATABASE



Project	
Model	Microsoft SQL Server 2014
Author	
Company	
Version	
Date of Creation	29/03/2017 17:21
Last Change	28/04/2017 10:35



FRONT END

- We have designed the front end by using R shiny
- Login page created as per desired User for
 - Data entry
 - Visualization
- Operations are designed to
 - Select
 - Create
 - Update
 - Delete

PROCEDURE

Stored procedure is created to perform operations in the database directly, here we determined if the member qualifies to the general category or minor.

```
1  drop procedure proc_1
2
3  create procedure proc_1
4      @Member_ID int,
5      @Maritial_Status Varchar(10),
6      @Primary_Holder Char(1),
7      @Veteran_Status Varchar(10),
8      @Ethnicity Varchar(20),
9      @Occupation Varchar(50),
10     @Emergency_Contact_Name Varchar(50),
11     @Emergency_Contact_Phone_Number Varchar(10),
12     @Emergency_Contact_Address_Line1 Varchar(40),
13     @Emergency_Contact_City Varchar(20),
14     @Emergency_Contact_State Char(2),
15     @Emergency_Contact_Zip Varchar(5),
16     @Emergency_Contact_Relationship Varchar(50),
17     @Sub_Parent Char(1),
18     @Sub_Guardian Char(1),
19     @Subscriber_ID int
20 AS
21 BEGIN
22     DECLARE @age_bar int,
23             @Age date,
24             @Category varchar(7)
25     SELECT @Age = (select DOB from Contact where Contact.Member_id = @Member_ID)
26     SELECT @age_bar = DATEDIFF(MM,@Age,GETDATE())/12
27     --(select ( CONVERT ( int, CONVERT ( char(10),@Age,112)) - CONVERT( char(10),GETDATE(), 112)) / 10000)
```

```
IF (@age_bar < 18)
begin
    SET @Category = 'Minor'
end
else IF (@age_bar >= 18)
begin
    SET @Category = 'General'
end

update Member set Marital_Status = @Marital_Status ,Primary_Holder = @Primary_Holder ,Veteran_Status = @Veteran_Status
    ,Ethnicity = @Ethnicity ,Occupation = @Occupation ,Status_current = @Category
    ,Emergency_Contact_Name = @Emergency_Contact_Name ,Emergency_Contact_Phone_Number = @Emergency_Contact_Phone_Number
    ,Emergency_Contact_Address_Line1 = @Emergency_Contact_Address_Line1
    ,Emergency_Contact_City = @Emergency_Contact_City ,Emergency_Contact_State = @Emergency_Contact_State
    ,Emergency_Contact_Zip = @Emergency_Contact_Zip ,Emergency_Contact_Relationship = @Emergency_Contact_Relationship
    ,Sub_Parent = @Sub_Parent ,Sub_Guardian = @Sub_Guardian
    ,Subscriber_ID = @Subscriber_ID where Member_ID = @Member_ID

end

execute proc_1 @Member_ID = 1, @Marital_Status = 'Married' ,@Primary_Holder = 'Y' ,@Veteran_Status = 'Protected'
    ,@Ethnicity = 'Hispanic' ,@Occupation = 'Football_Player'
    ,@Emergency_Contact_Name = 'Cristiano_Ronaldo' ,@Emergency_Contact_Phone_Number = 8579995340 ,@Emergency_Contact_Address_Line1 = '19 Sunset
    ,@Emergency_Contact_City = 'Boston' ,@Emergency_Contact_State = 'MA'
    ,@Emergency_Contact_Zip = '02120' ,@Emergency_Contact_Relationship = 'Friend' ,@Sub_Parent = 'N' ,@Sub_Guardian = 'N'
    ,@Subscriber_ID = 1;
```

RESULT OF PROCEDURE

Results		Messages		
	Member_id	First_Name	DOB	Status_current
1	1	Luis	1987-09-08	General
2	2	Sachin	1973-04-24	General
3	3	Rahul	1973-01-11	General
4	4	Leo	1974-11-11	General
5	5	Ashay	2005-09-09	Minor

✓ Query executed successfully.