**Functional Dependencies**

S\_ID -> {Fname,Lname,Address1,Address2,City,State\_Name,Zipcode,Phone,Gender,DOB,Email\_ID,C\_ID,ID\_Type,Account\_ID,Credit\_Card,Card\_Issuer,Credit\_Score,SSN,Work\_Email,Salary,Type,MgrSID,Supervision\_Area\_Code,Primary\_Language}

Plan\_ID -> {Plan\_Name,Plan\_Type,Talktime,Data,Plan\_Period,Charge,Payment\_Type}

Account\_ID -> {Acc\_Password,Activated\_Date,Security\_Question,Security\_Answer,Billing\_Type,Payment\_Type,Billing\_Address,Outstanding\_Balance,Plan\_ID,Account\_Status}

Bill\_ID -> {Cycle\_Start\_Date,Cycle\_End\_DataCycle\_End\_Date,Total\_Charge,Payment\_Due\_Date,Payment\_Status,Fines,Original\_Charge,Account\_ID}

Service\_ID -> {Account\_ID,Service\_Complaint\_Description,Service\_Requested\_Date,Service\_Completion\_Date,Service\_Report,Service\_Status,Service\_Name,Monthly\_Charge}

{Service\_ID,S\_ID} -> {Call\_Date,Call\_Report,R\_S\_ID}

Mobile\_No -> {IMSI,PUK,Type,Activate\_By\_Date,Availablity,Account\_ID,M\_Service\_ID}

M\_Service\_ID -> {Service\_Name,Charge}

Transaction\_ID -> {Mobile\_No,MT\_Date,MT\_Time,MT\_Type,Destination,Call\_Number,Minutes,Text\_Number,Direction,Data\_Usage,ST\_Date,ST\_Time,Account\_ID,Service\_ID,ST\_Duration}

**Initial Relational Schema** (**Normalized)**

**Person** (S\_ID,Fname,Lname,Address1,Address2,City,State\_Name,Zipcode,Phone,Gender,DOB,Email\_ID)

**Customer** (S\_ID,C\_ID,ID\_Type,Account\_ID)

**Customer\_Credit** (S\_ID,Credit\_Card,Card\_Issuer,Credit\_Score)

**Employee** (S\_ID,SSN,Work\_Email,Salary,Type,MgrSID)

**Technician** (S\_ID,Supervision\_Area\_Code)

**Staff** (S\_ID,Primary\_Language)

**Mobile\_Plans** (Plan\_ID ,Plan\_Name,Plan\_Type,Talktime,Data,Plan\_Period,Charge,Payment\_Type)

**Account** (Account\_ID,Acc\_Password,Activated\_Date,Security\_Question,Security\_Answer,Billing\_Type,Payment\_Type,Billing\_Address,Outstanding\_Balance,Plan\_ID,Account\_Status)

**Bills** (Bill\_ID,Cycle\_Start\_Date,Cycle\_End\_DataCycle\_End\_Date,Total\_Charge,Payment\_Due\_Date,Payment\_Status,Fines,Original\_Charge,Account\_ID)

**Customer\_Service** (Service\_ID,Account\_ID,Service\_Complaint\_Description,Service\_Requested\_Date,Service\_Completion\_Date,Service\_Report,Service\_Status)

**Technician\_Service** (Service\_ID,S\_ID,Call\_Date,Call\_Report,R\_S\_ID)

**Staff\_Service** (Service\_ID,S\_ID,Call\_Date,Call\_Report)

**Mobile\_Nos** (Mobile\_No,IMSI,PUK,Type,Activate\_By\_Date)

**Mobile** (Mobile\_No,Account\_ID)

**Mobile\_Services** (Mobile\_No,M\_Service\_ID)

**M\_Service\_Plans** (M\_Service\_ID,Service\_Name,Charge)

**Mobile\_Transactions** (Transaction\_ID,Mobile\_No,MT\_Date,MT\_Time,MT\_Type)

**MT\_Call** (Transaction\_ID,Destination,Call\_Number,Minutes)

**MT\_Text** (Transaction\_ID,Destination,Text\_Number,Direction)

**MT\_Data** (Transaction\_ID,Data\_Usage)

**Services** (Service\_ID,Service\_Name,Monthly\_Charge)

**Account\_Services** (Service\_ID,Account\_ID)

**Service\_Transactions** (Transaction\_ID,ST\_Date,ST\_Time,Account\_ID,Service\_ID,ST\_Duration)