**B. Description**

1. In this diagram the entities are Albums, Musicians , Songs , Instruments , Addresses.
2. Albums contains songs so they are connected by the relationship ‘Contains’.
3. Musicians performs songs. They are connected by the relationship ‘Performs’.
4. Musicians produces album, so they are connected by the relationship ‘Produces’.
5. A musician lives in an addresses. So musician and addresses are connected by the relationship ‘Lives’.
6. Musician plays instruments, so musician and instruments is connected by the relationship ‘Plays’.

**C. Attributes**

Albums: {A\_Id, A\_Name, Format,Copyright\_Date}

Songs: {Title , Author}

Musicians: {Ssn, Name }

Instruments: {Ins\_Name ,MusicalKey}

Addresses: {Ph\_no, FullAddress}

**4.Relationships**

a. Musicians-Addresses (N:1) comprises.

b. Musicians-Instruments (N:M) comprises.

c. Musicians-Albums (1:N) comprises.

d. Musicians-Songs (N:M) comprises.

e. Albums-Songs (1:N) holds.

**5.Relational Schema**

**Albums:**

Albums

<A\_Id>

Album title: <A\_Name>

Date of copyright : <Copyright\_Date>

Album format : <Format>

Producer id : <Ssn> (Forgien key from ‘Musicians’ table)

**Songs:**

Songs

<Title>

Author name : <Author>

Album id : <A\_Id> (Forgien key from ‘Albums’ table)

**Musicians:**

Musicians

<Ssn>

Musician name : <Name>

Musician contact number : <Ph\_No>(Forgien key from ‘Addresses’ table)

**Instruments:**

Instruments

<Ins\_Name>

Musical key type : <Musicalkey>

**Addresses:**

Addresses

<Ph\_No>

Musician address : <FullAddress>

**Plays:**

Plays

Instrument name : <Ins\_name> (Forgien key from ‘Instruments’ table)

Musician id : <Ssn> (Forgien key from ‘Musicians’ table)

**Performs:**

Performs

Musician id : <Ssn> (Forgien key from ‘Musicians’ table)

Song title : <Title> (Forgien key from ‘Songs’ table)

**6. Normalization of Relational Schema**

**I)Musicians {Ssn, Name,** **Ph\_No }**

Ssn -> { Name,Ph\_No }

Ssn is the candidate key.

There is no multi valued attribute so the table is in 1NF.

Ssn is the primary key and there is no partial dependency, so the relation is in 2NF.

The table is in 3NF as there is no transitive dependency.

**II)Songs { Title, Author, A\_Id }**

Title -> { **Author, A\_Id** }

Title is the candidate key.

There is no multi valued attribute so the table is in 1NF.

Title is the primary key and there is no partial dependency, so the relation is in 2NF.

The table is in 3NF as there is no transitive dependency.

**III)Albums{A\_id, A\_Name, Format, Copyright\_Date, Ssn}**

A\_Id -> { A\_name, Format, Copyright\_Date ,Ssn}

A\_Id is the candidate key.

There is no multi valued attribute so the table is in 1NF.

A\_Id is the primary key and there is no partial dependency, so the relation is in 2NF.

The table is in 3NF as there is no transitive dependency.

**IV)Instruments { Ins\_Name, Musicalkey}**

(Ins\_Name, MusicalKey} is the composite primary key.

There is no multi valued attribute so the table is in 1NF.

There is no partial dependency, so the relation is in 2NF.

The table is in 3NF as there is no transitive dependency.

**V)Addresses {Ph\_No, FullAddress}**

Ph\_No -> { FullAddress }

Ph\_No is the candidate key.

There is no multi valued attribute so the table is in 1NF.

Ph\_No is the primary key and there is no partial dependency, so the relation is in 2NF.

The table is in 3NF as there is no transitive dependency.

**VI)Performs{Ssn,Title}**

{Ssn,title} is a composite primary key.

There is no multi valued attribute so the table is in 1NF.

There is no partial dependency, so the relation is in 2NF.

The table is in 3NF as there is no transitive dependency.

**VII)Plays{Ssn,Ins\_Name}**

{Ssn,Ins\_Name} is a composite primary key.

There is no multi valued attribute so the table is in 1NF.

There is no partial dependency, so the relation is in 2NF.

The table is in 3NF as there is no transitive dependency.