

Data Base Systems

Name: Aoun-Haider

ID: FA21-BSE-133

Assignment: 02

Submitted to: Sir Abdul Qayyum

Date: 27-04-2023

Question: 01

Notown Records has decided to store information about musicians who perform on its albums (as well as other company data) in a database. The company has wisely chosen to hire you as a database designer.

☐ Each musician that records at Notown has an SSN, a name, an address, and a phone number.

Musicians often share the same address, and no address has more than one phone.

☐ Each instrument used in songs recorded at Notown has a name (e.g., guitar, synthesizer, flute) and a musical key (e.g., C, B-flat, E-flat).

☐ Each album recorded on the Notown label has a title, a copyright date, a format (e.g., CD or MC), and an album identifier.

☐ Each song recorded at Notown has a title and an author.

☐ Each musician may play several instruments, and a given instrument may be played by several musicians.

☐ Each album has a number of songs on it, but no song may appear on more than one album.

☐ Each song is performed by one or more musicians, and a musician may perform a number of songs.



☐ Each album has exactly one musician who acts as its producer. A musician may produce several albums, of course.

Draw an ER diagram to represent the data requirements as following:

- a) Identify the main entity types.
- b) Identify the main relationship types between the entity types.
- c) Identify attributes and associate them with entity or relationship types.
- d) Determine candidate and primary key attributes for each entity type.
- e) State any assumptions necessary to support your design.

Answer:

a) Entities:

- 1) Musician
- 2) Instrument
- 3) Album
- 4) Song

b) Identifying relationships:

- 1) Many musicians can play many instruments.
- 2) Every musician can have many albums.
- 3) Every album has only one musician.
- 4) Every album has many songs.
- 5) Each song is available in only one album only once.
- 6) Many songs can be produced by many musicians.

c) Associated attributes:

- 1) Musician: SSN(PK), name, address, phone Number
- 2) Instrument: name(PK), musical_type
- 3) Album: album_id(PK), title, copyright date, format
- 4) Song: title(PK), author

d) Associated candidate key and primary key:

- 1) Musician: SSN(PK), SSN(CK)
- 2) Instrument: Name(PK), Name(CK)
- 3) Album: album_id(PK), album_id(CK)
- 4) Song: title(PK), title(CK)

e) Assumptions:

- 1) A musician can perform on a song even if they did not play an instrument on that song.
- 2) An instrument can be used on a song even if the musician who played it is not credited as a performer on that song.
- 3) Each album has only one producer, and that producer must be a musician who performed on the album.
- 4) Each song has a unique name.
- 5) Each instrument has a unique name.
- 6) Each album has a unique id act as a identifier.

ER Diagram:

