CSC343 Worksheet 12 Solution

June 30, 2020

1.
   - Keys
     - {id of molecule}
     - {x position, y position, z position}
   - Functional Dependencies
     1. id of molecule → x position, y position, z position, x velocity, y velocity, z velocity
     2. x position, y position, z position → id of molecule, x velocity, y velocity, z velocity

   Notes:

   - Function Dependencies
     - *Functional Dependency* is a relationship between two attributes typically between the key and other non-key attributes within a table.

       Example:

       SIN → Name, Address, Birthdate

       Example 2:

       ISBN → Title
   - Key of Relations
     - One or more attributes $\{A_1, A_2, ..., A_n\}$ is a key for a relation R if
       1. Those attributes functionally determine all other attributes of the relation
       2. No proper subset of $\{A_1, A_2, ...A_n\}$ functionally determines all other attributes of R

       Example:

       Given relation

       R = Movies1(title, year, length, genre, studioName, starName)

       i. {title, year, starName } form a key for the relation **Movies1**

ii. { year, starName } is not a key. Same star can be in multiple movies per year

- Superkeys
  - Means a a set of attributes that contains a key
  - Don't need to be minimal

Example:
Given relation

R = Movies1(title, year, length, genre, studioName, starName)

- { title, year, starName } is a key and superkey
- { title, year, starName, title, year, length} is a superkey

References:

1) OpenTextBC, Chapter 11 Functional Dependencies, link