DATABASES SYSTEM

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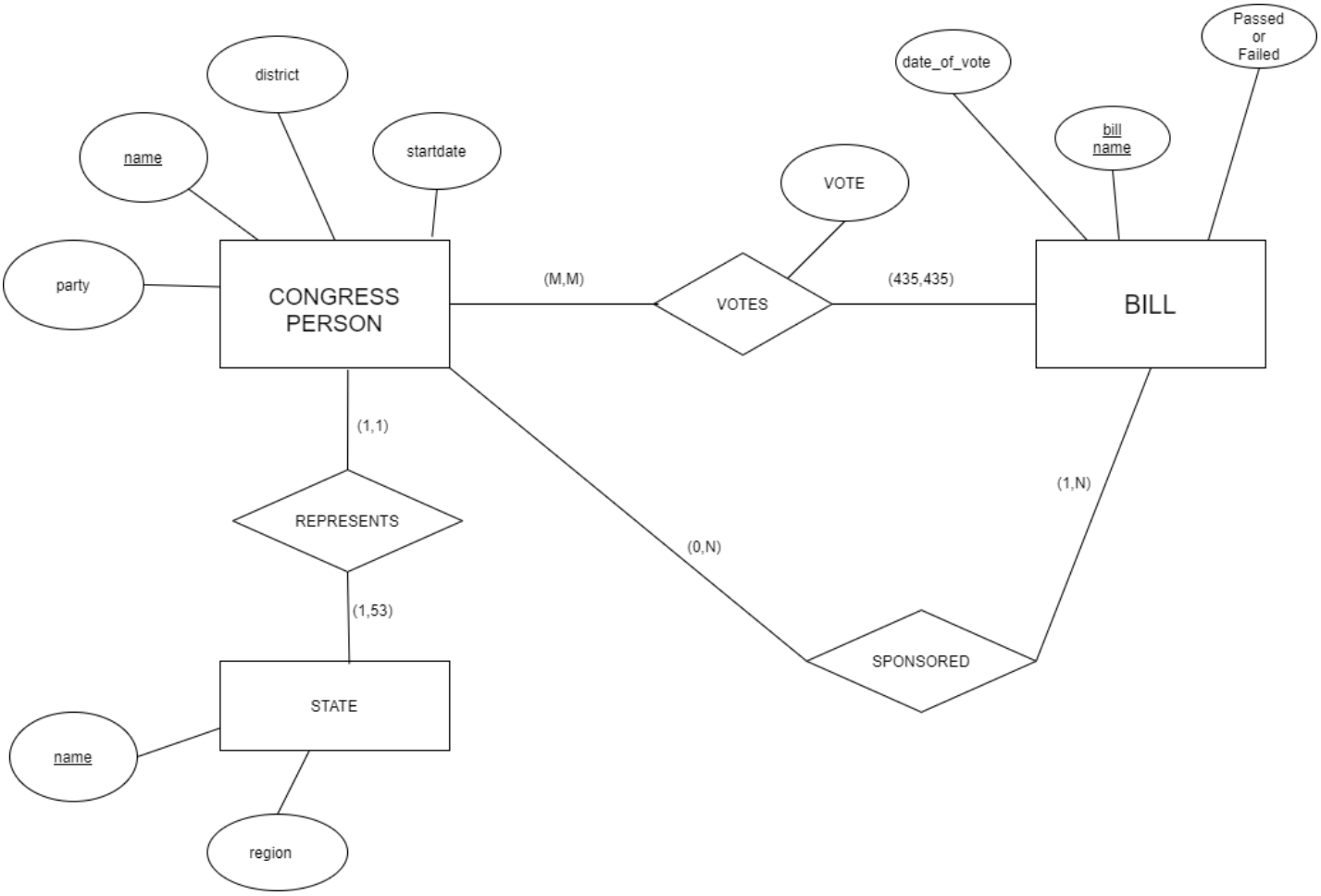
ASSIGNMENT-3

3.21

Following are assumptions (as stated in question):

- There are 435 congresspersons in the U.S. House of Representatives.
- States have between one (AK, DE, MT, ND, SD, VT, and WY) and 53 (CA) representatives.
- M represents number of bills during the 2-year session.

ER DIAGRAM:



3.23

1. Strong Entity types:

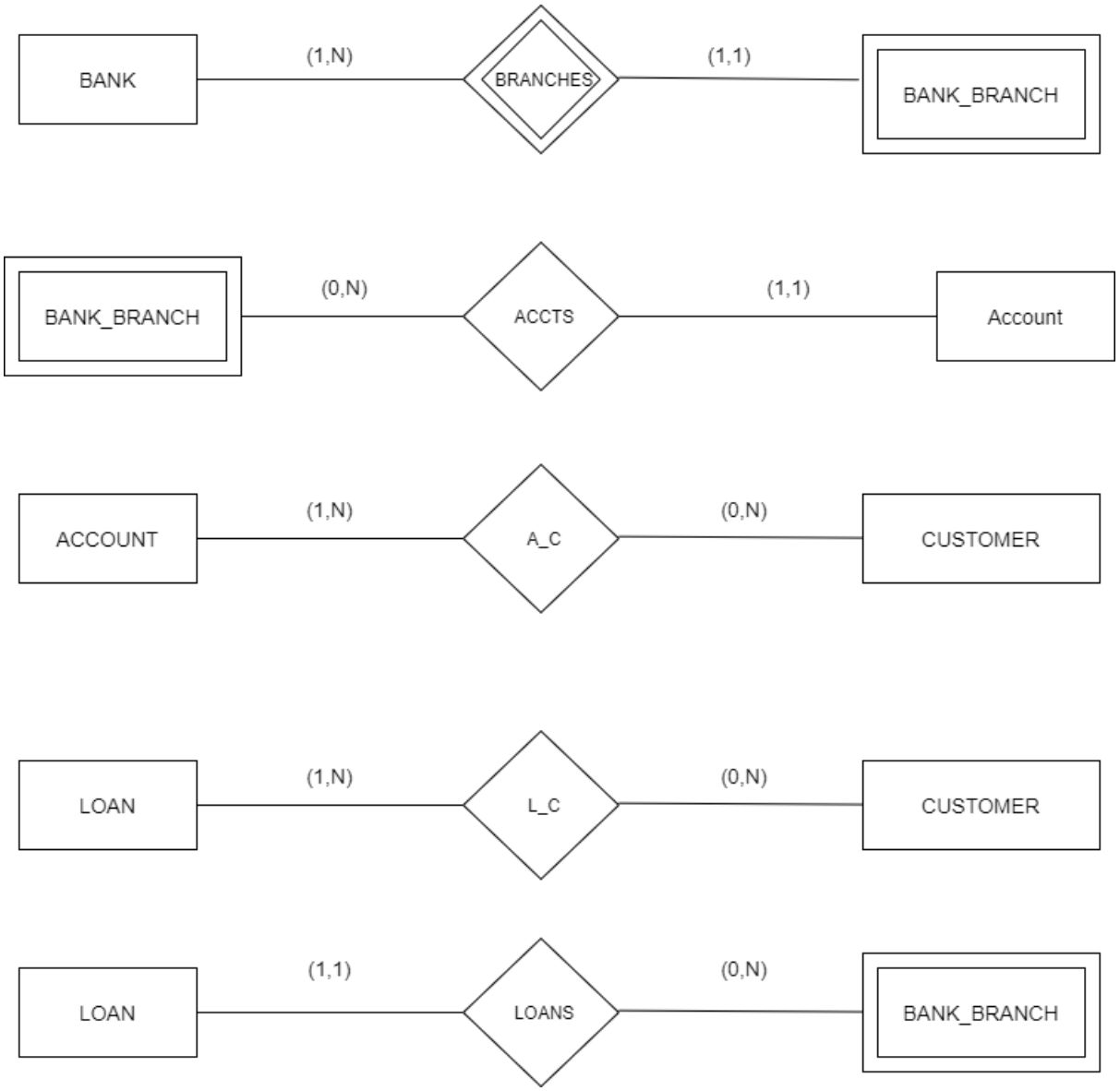
- BANK
- ACCOUNT
- CUSTOMER
- LOAN

2.

- Weak entity type: Bank Branch.
- Partial key: Branch No.
- Identifying relationship: Branches.

3. BranchNo in Bank-Branch states that the same Branch No value may occur under different Banks. The identifying relationship Branches specifies that Branch No values are unique for Bank-Branch entities those are related to the same Bank entity. Hence, the combination of Bank Code and Branch No together constitute a full identifier for a Bank-Branch

4.

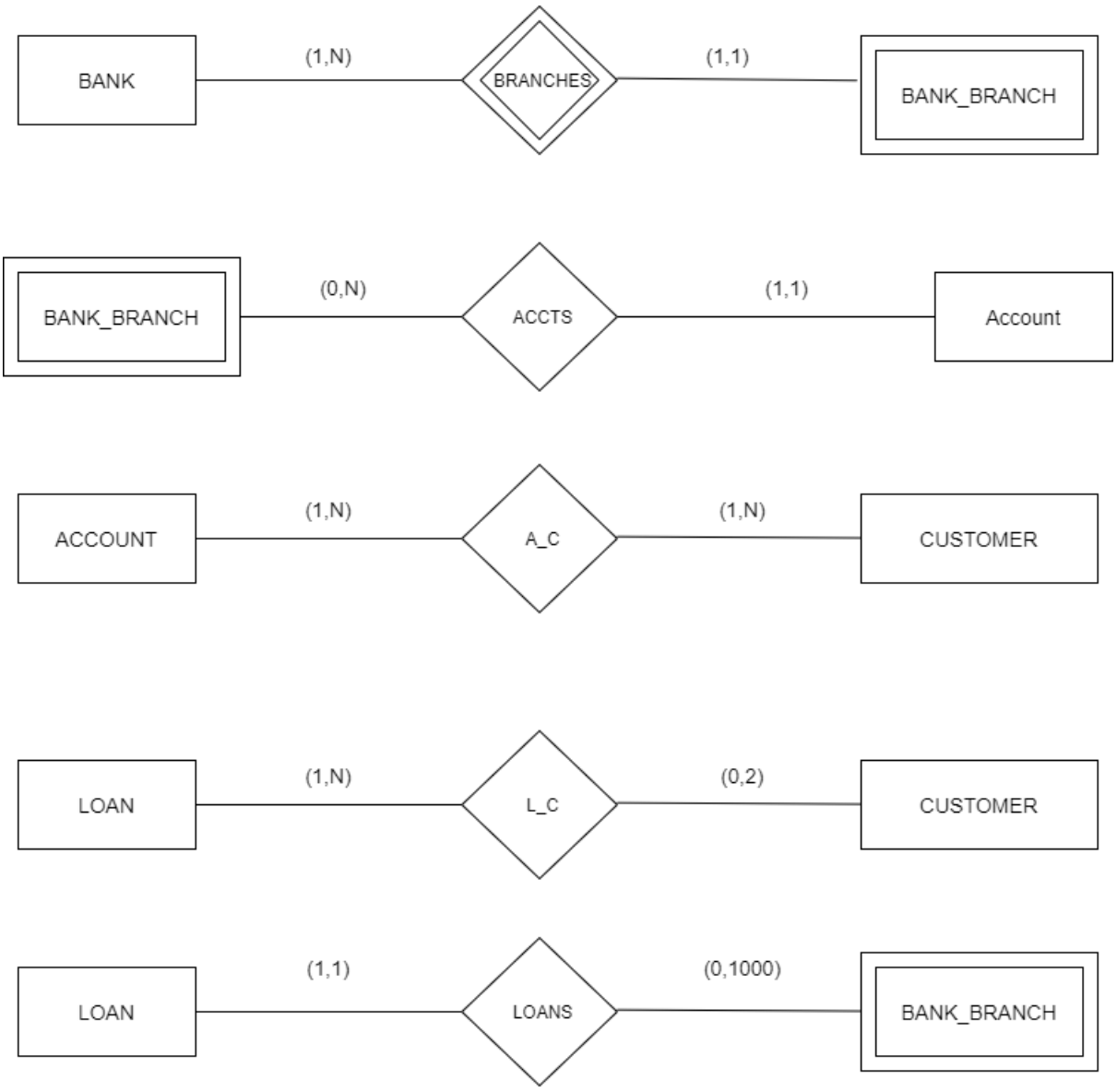


5.

The requirements are stated as follows:

- Bank has a unique Code, Name and Address.
- Each Bank branches to N Bank-Branches,
- Bank-Branches have unique Branch No and Address
- Bank-Branches can have 0 or more Loans and 0 or more ACCTS.
- Each Account has unique AcctNo, Balance, and Type
- Each Account is at one Bank-Branch and is related to atleast one CUSTOMER
- LOAN has unique LoanNo , Amount, and Type
- LOAN is taken from one BANK-BRANCH and by atleast one CUSTOMER.
- Each CUSTOMER has unique SSN , Name, Phone, and Address
- Customer can have 0 or more ACCOUNTs and 0 or more LOANs.

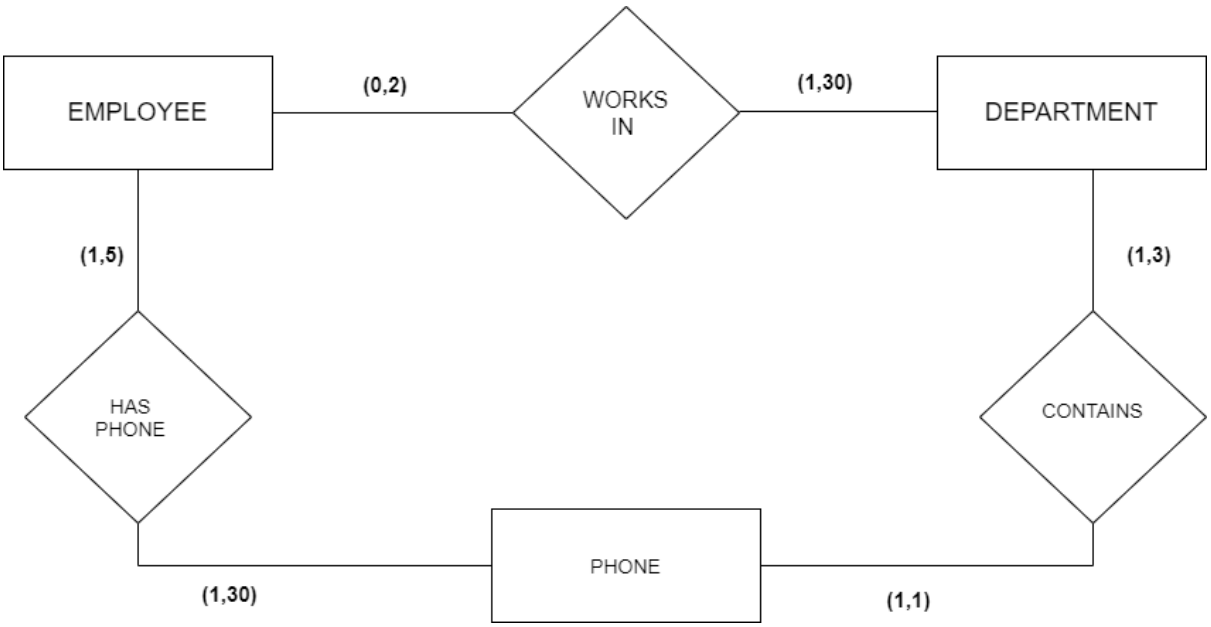
6.



3.24

Following are assumptions (as stated in question):

- Each department can have anywhere between 1 and 30 employees.
- Each phone is used by one, and only one, department.
- Each phone is assigned to at least one and may be assigned to up to 30 employees.
- Each employee is assigned at least one, but no more than 5 phones

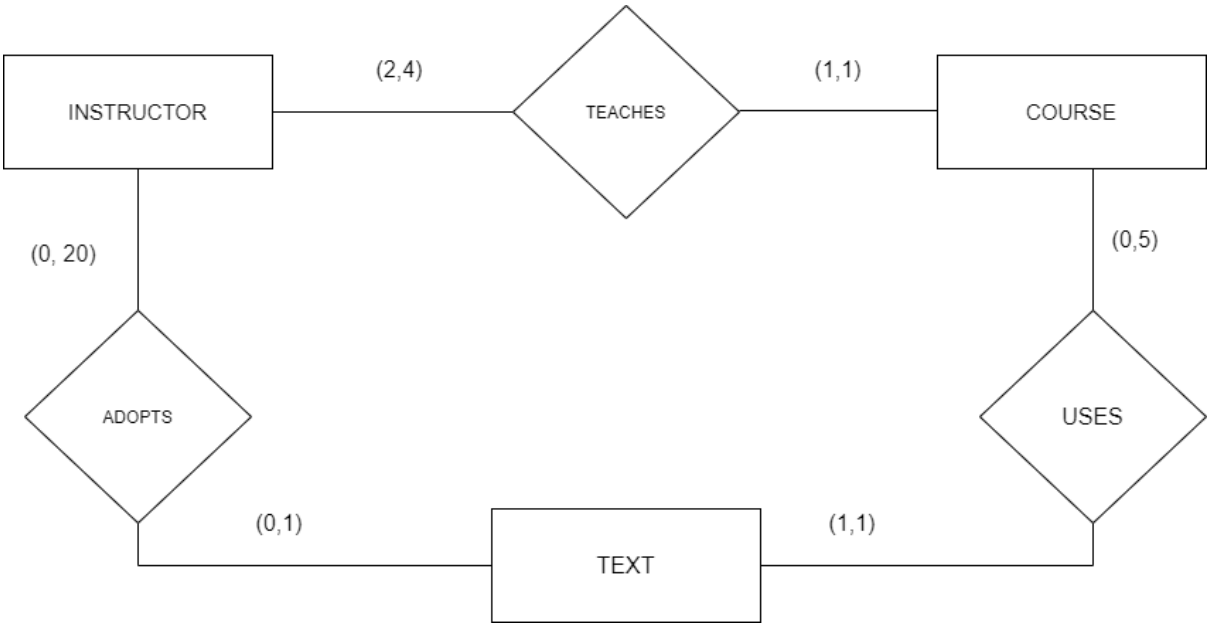


'Has phone' relationship will be redundant when every employee is assigned all phones of each department that person works in or any employee cannot have any other phones other than his/her department.

3.25

Following are assumptions (as stated in question):

- Each course is taught by exactly one instructor.
- Each textbook is used by one and only one course.
- An instructor does not have to adopt a textbook for all his/her courses.
- If a text in this database exists: it is used in some course, hence it is adopted by some instructor who teaches that course.
- An instructor is considered to adopt a text if it is used in some course taught by that instructor



The 'ADOPTS' relation is a binary relation. If a instructor teaches a course that uses text then instructor is adopting that text and vice versa.

Q5

Music Database

User Requirements:

- User has access to any number of albums.
- User can create any number of playlist.
- User profile contains username, age, email address, phone number and location.
- Artist may create one album.
- Artist has information like artist id, artist_name.
- Album have information like Album Title, Album Total Duration, Release Year, Copyright Company name.
- Album can be accessed by atleast one user
- Album contains atleast one song.
- Album is created by atleast one artist
- An album contains one or more songs
- Each song has its ID, Title, duration, genre.
- Each song is under one album.
- Playlist has attributes like playlist_name, total number of songs, creation_date, playlist_duration
- Playlist is created by atleast one user
- Playlist may contain individual songs.

ER DIAGRAM: