Tutorial on ER to Relational Mapping

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When an entity is weak??

- An entity A is weak when these 2 conditions hold:
  1. Conceptually, entity A cannot exist without the existence of another entity B
  2. Entity A does not have a unique attribute that can be used to uniquely identify its every instance

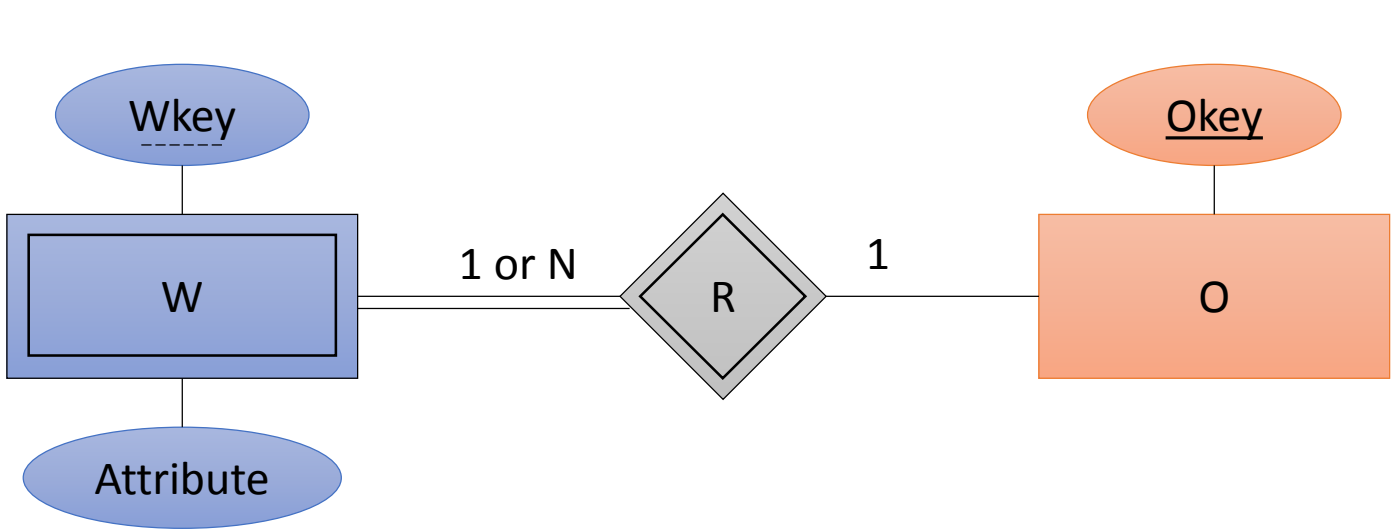
➢ If both conditions hold => Entity A is weak

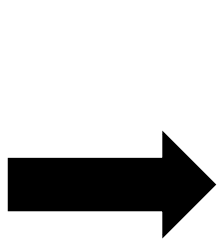
➢ Condition 1 holds but condition 2 doesn't => Entity A has a unique attribute and can be modelled as a strong entity. Entity A can also be modelled as a weak entity! The only difference is that the key of A will be the combination of A's key and B's key

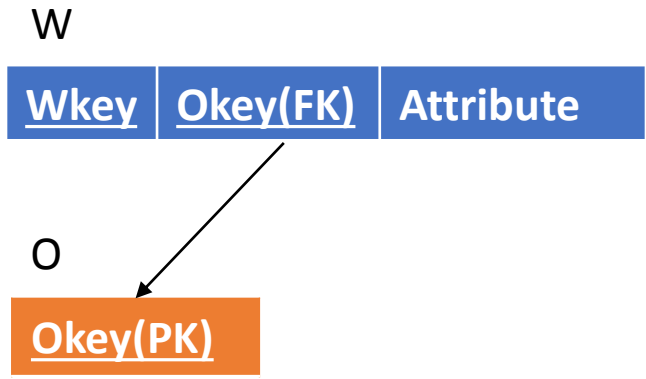
➢ Condition 2 holds but condition 1 doesn't. Use a partial key for A and make A weak. The combination of B's key and A's partial key can be used to uniquely identify every instance of A

ER-to-Relational Mapping

Mapping of Weak Entities

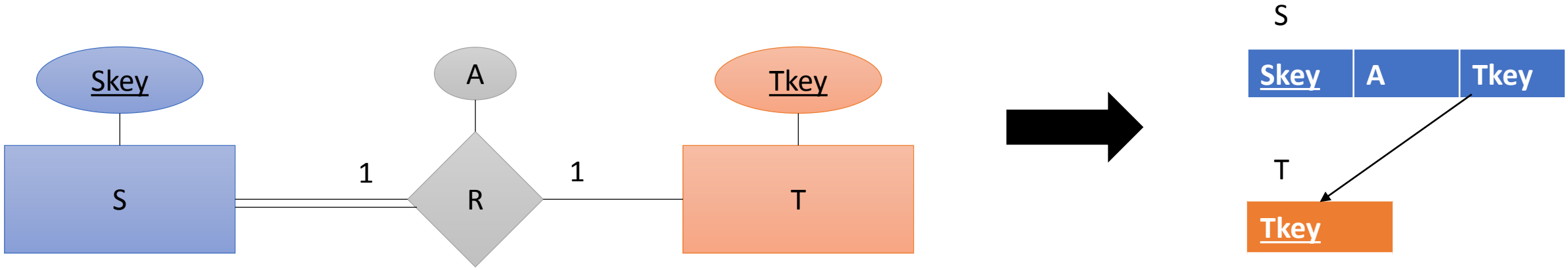






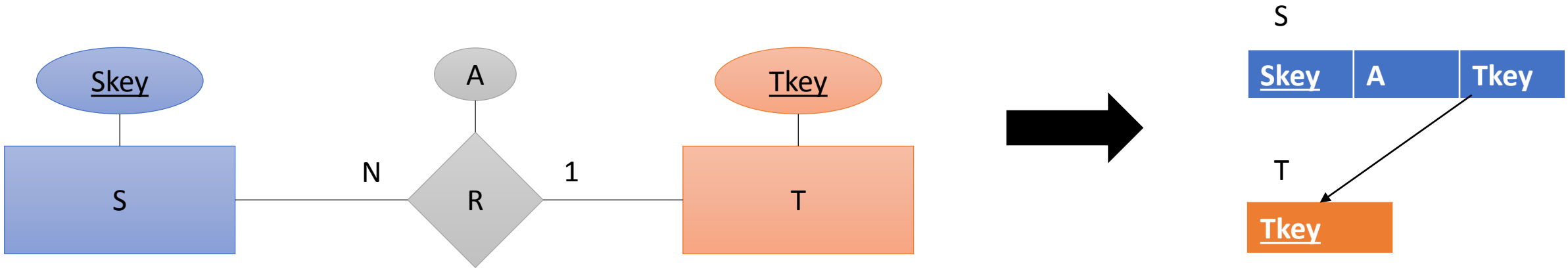
ER-to-Relational Mapping

Mapping of Binary 1:1 Relationship Types



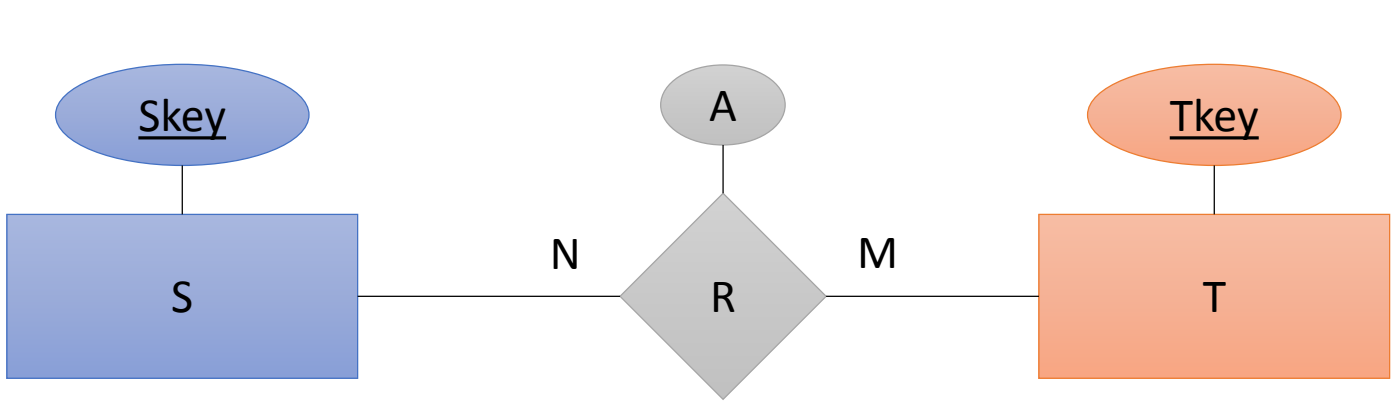
ER-to-Relational Mapping

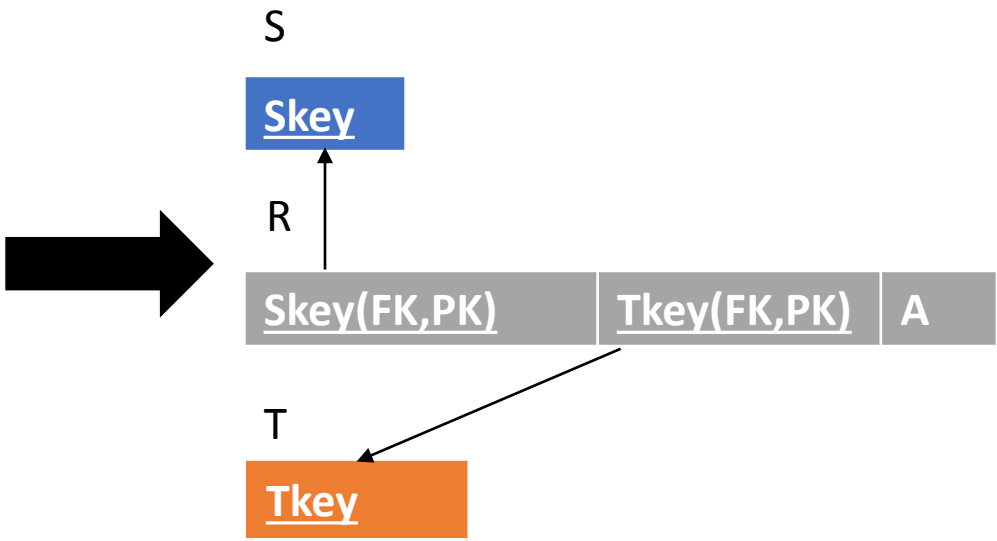
Mapping of Binary 1:N Relationship Types



ER-to-Relational Mapping

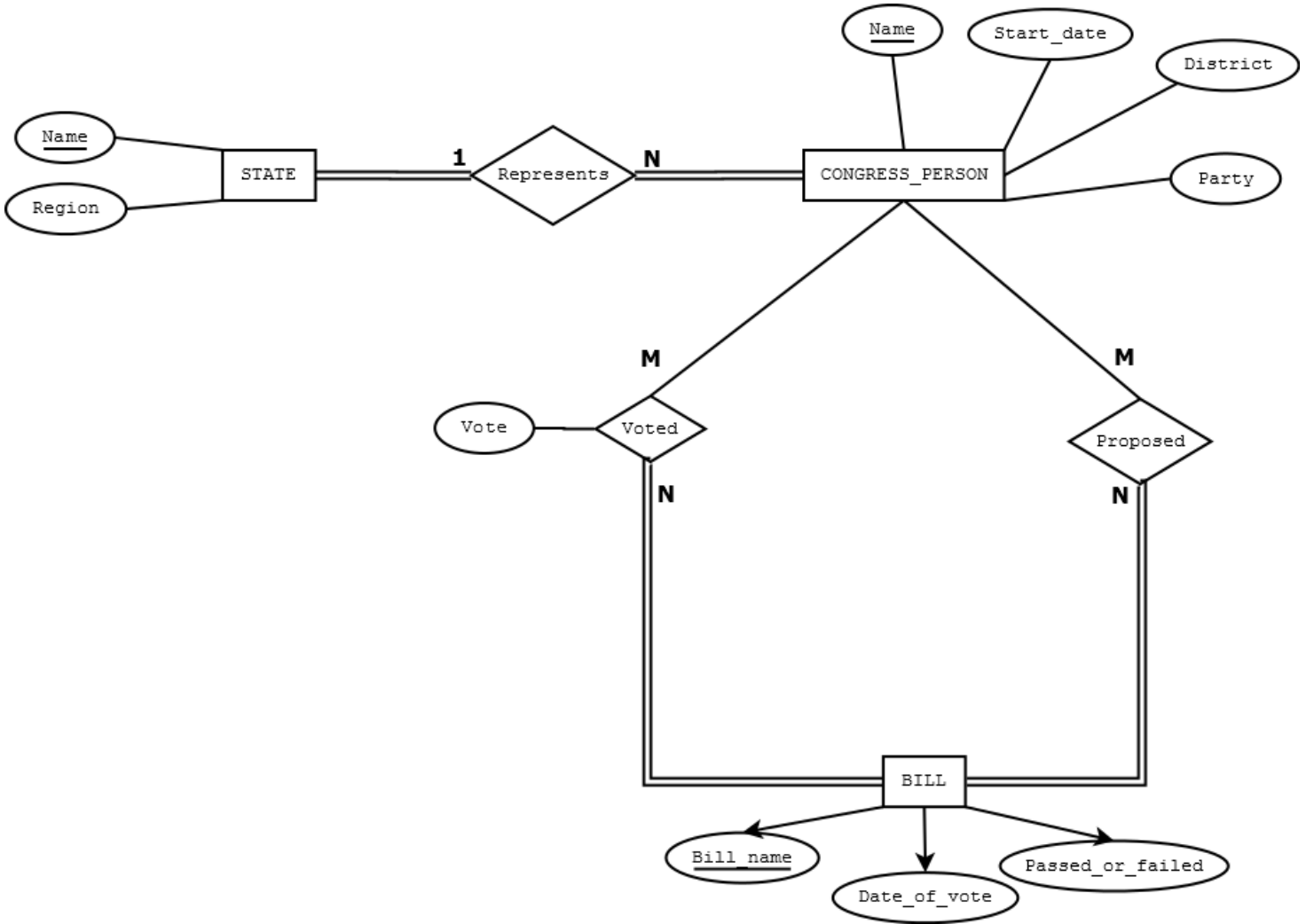
Mapping of Binary M:N Relationship Types

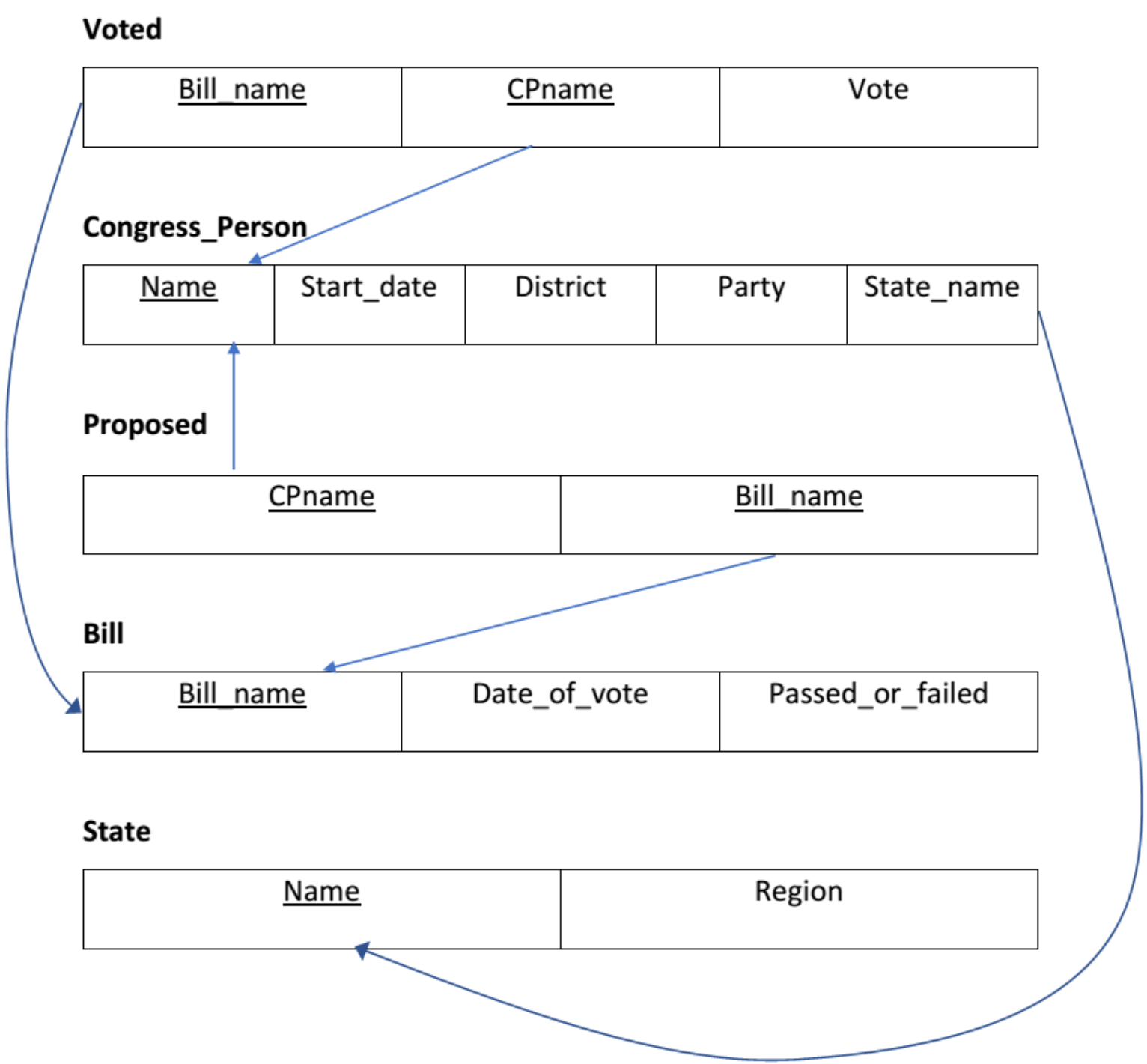




Problem 1

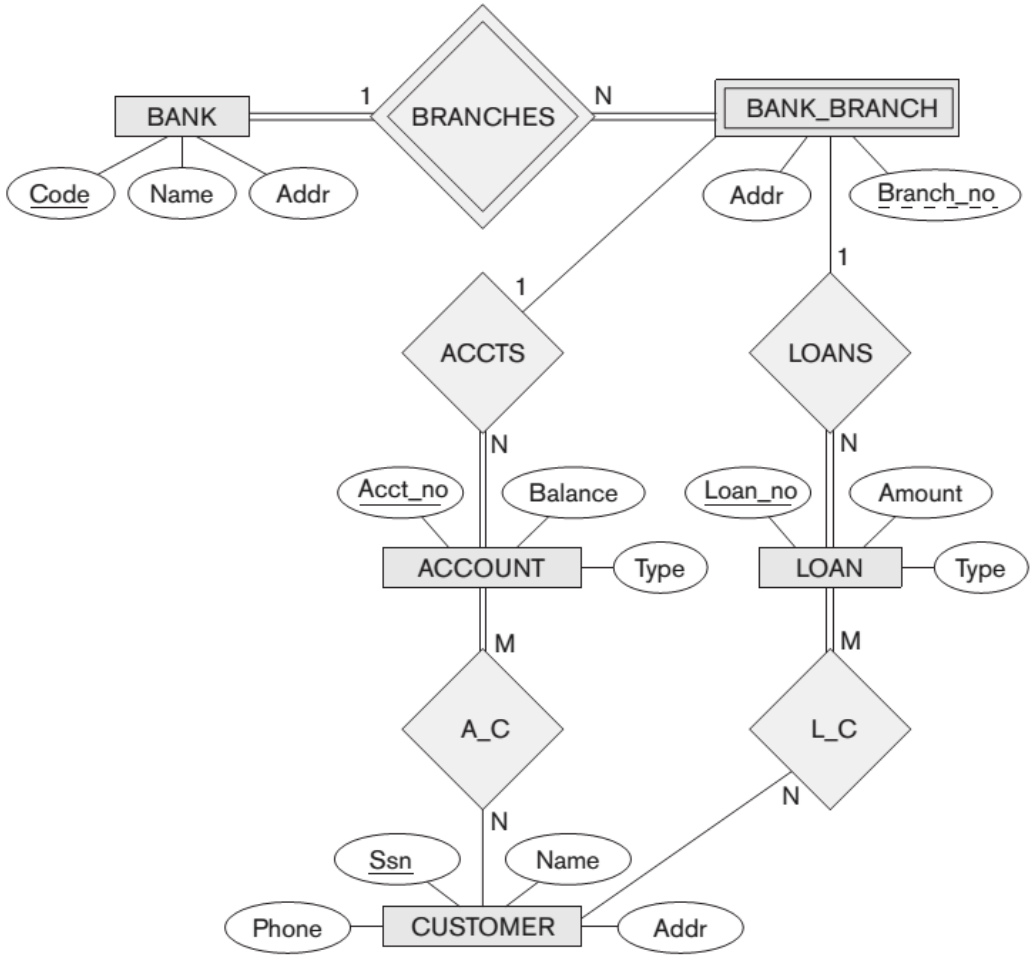
Map this ER diagram to a relational database schema.

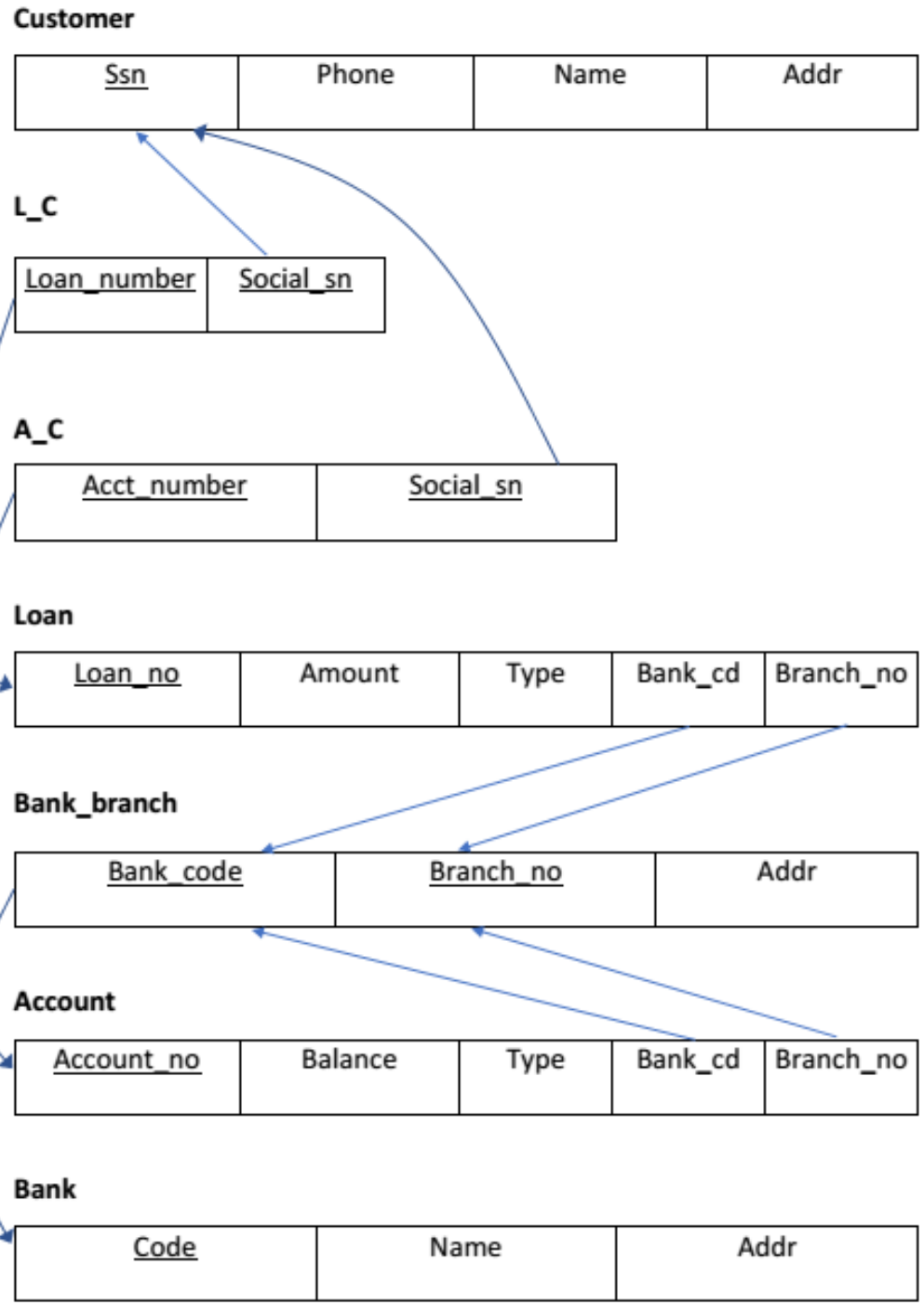



Voted
Bill_name
CPname
Vote
Congress_Person
Name
Start_date
District
Party
State_name
Proposed
CPname
Bill_name
Bill
Bill_name
Date_of_vote
Passed_or_failed
State
Name
Region

Problem 2

- Convert the following ER-model to a relational database schema




Customer
Ssn
Phone
Name
Addr
L_C
Loan_number
Social_sn
A_C
Acct_number
Social_sn
Loan
Loan_no
Amount
Type
Bank_cd
Branch_no
Bank_branch
Bank_code
Branch_no
Addr
Account
Account_no
Balance
Type
Bank_cd
Branch_no
Bank
Code
Name
Addr

References

- Ramez Elmasri and Shamkant Navathe. 2010. *Fundamentals of Database Systems* (6th ed.). Addison-Wesley Publishing Company, , USA.