



5 Explanation

Note on Reading the model :-

- * at the end of name of attributes means that, that particular attribute is a part of primary key for that Relation.
- Bold attribute shows that they are uniquely valued and may work as primary key.

Relational model:-

Entities :-

- Employee -
contact number a multivalued so different relation with employee id as foreign key
supervisor key added because of supervise
- Dependant -
employee id (also a foreign key) + dependant Fname as primary key.
- Digital, Business, individual banking and insurance -
account number as foreign key
- account -
Branch id as foreign key
Account type attribute for ISA relation.
- transaction & payment -
Account_no as foreign key and account_no + datetime as derived primary key attribute.
- loan -
customer id (also a foreign key) + account_no(also a foreign key) + Date as derived primary key attribute
- Rest all are Normal

n-ary relations :-

- offers, employs, got, has, do contains all attributes as foreign keys and if cardinality ratio is not 1 then, that foreign key is also included in primary key of that relation.

Sub-classes :-

- cards (debit and credit)

1st Normal Form :-

- For address attribute who is composite attribute in relation(EMPLOYEE, customer, Branch, Bank) have to divide into sub-attribute which are not composite.
- Since ATM location is also a composite attribute so it is also divided into parts.

2nd_Normal_Form :-

- 1st_Natural_Form is also in 2nd_Normal_Form because there does not exist any non prime attribute which is dependent on subset of primary key.
- Main reason for this is that most of the tables have a unique and atomic primary key.

3rd_Normal_Form :-

- 2nd_Natural_Form is also in 3rd_Normal_Form because there is no non prime attribute that can be derived from another non prime attribute.