

(1)

Name: MD ABU AMMAR

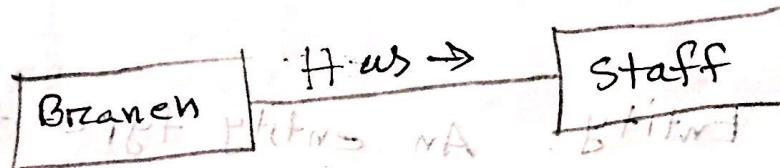
ID: 1821944642 ref: BFitm& projects (2)

Ans: 1

(a) Entity Relationship Types: Entity Relationship

Types represent a set of meaningful associations among entity types. For example 'Has' is a relationship type that exist

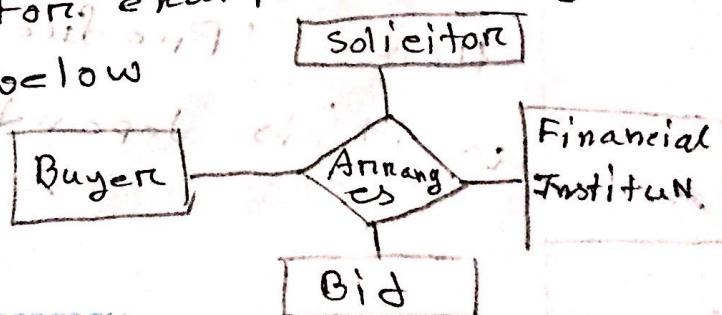
between Branch and Staff



(b) Degree of Relationships: It refers to the number of participating entity types

in a relationship.

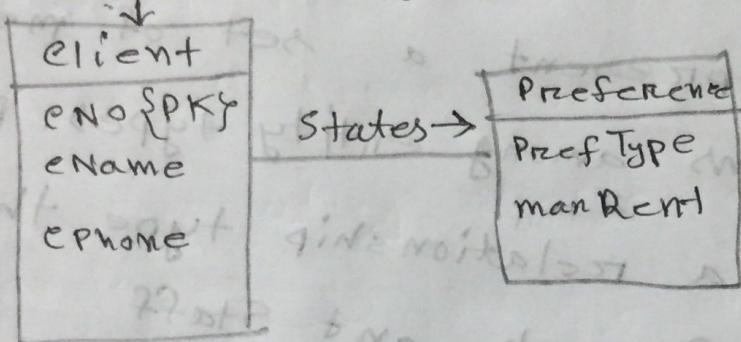
Such as a relationship of degree two is called binary, a relationship of degree three is called ternary. For example a ternary relationship is given below



(1)

ARIMA USA GM: omash

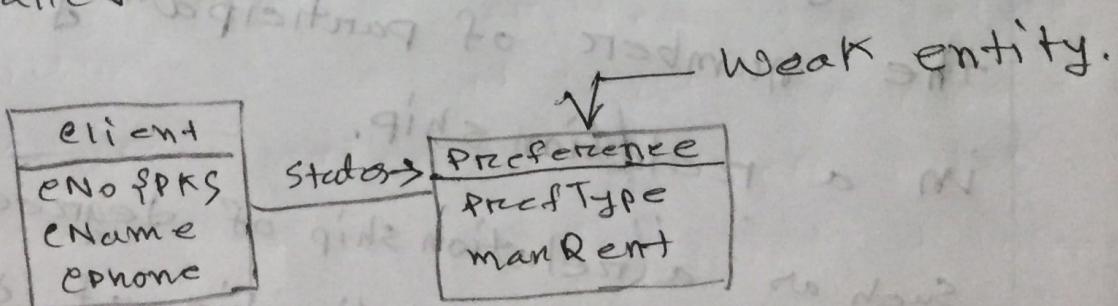
(c) Strong Entity: An entity type that is not instance-dependent on some other entity type is called strong Entity. For example



Hence 'client' is the strong entity.

(2)

(d) Weak Entity: An entity type that is instance-dependent on some other type is called weak Entity. For example



Here 'Preference' is weak entity as it is dependent on 'client'.

(1)

(3)

Ans : 2 parts

(a) The RDBMS is not suitable for the highly connected data because it does not store the relationship between data elements. RDBMS has a fixed schema, but it does not adapt well to the changes in the database. So there are several issues with RDBMS and some of those are:

- i. When several tables in a database utilize queries for joining, it creates chaos in the database. Moreover, it takes higher response times.
- ii. Scalability is very expensive in RDBMS and very difficult to handle.
- iii. While data does not fit in the SQL server there begins complexity.
- iv. Queries runtime is slower, that can impact data model and quality.

V. Frequent changes in the database are not supported as the schemas are fixed in RDBMS.

(b) When it comes to handle big data, real time, web applications and cloud computing there are many advantages of NoSQL database. Here are some of the advantages:

- i. cheap and easy to implement.
- ii. Data is replicated to multiple nodes and can be partitioned.  
When data is written the latest version is on at least one node and then replicated to other nodes.  
There for no single point of failure.
- iii. Easy to distribute.
- iv. Don't need schemas.
- v. It can serve as the primary data source for online applications.

(5)

Ans: 3

(a) 2<sup>nd</sup> Normal Form (2NF): A relation that is in 1<sup>st</sup> Normal form and every non-primary key attribute is fully functionally dependent on the primary key. We can achieve 2NF from 1NF

by removing non-primary attributes along with a copy of part of primary key on which they are fully functionally dependent. For example

1NF

Module	Dep	Lec	Text
M1	D1	L1	T1
M1	D1	L1	T2
M2	D1	L1	T1

2NF<sub>a</sub>

Module	Dep	Lec
M1	D1	L1
M2	D1	L1

2NF<sub>b</sub>

Module	Text
M1	T1
M1	T2
M2	T1

(6)

### Q (b) 3rd Normal Form: ~~Associated relationship~~

A relation which is in 1st and 2nd Normal form and in which no non-primary key attribute is transitively dependent on the primary key.

For example

2NF

Module	Dep	Loc
M <sub>1</sub>	D <sub>1</sub>	L <sub>1</sub>
M <sub>2</sub>	D <sub>1</sub>	L <sub>1</sub>
M <sub>3</sub>	D <sub>1</sub>	L <sub>2</sub>

3NFA

Loc	Dep
L <sub>1</sub>	D <sub>1</sub>
L <sub>2</sub>	D <sub>1</sub>
L <sub>3</sub>	D <sub>2</sub>

3NFb

Module	Loc
M <sub>1</sub>	L <sub>1</sub>
M <sub>2</sub>	L <sub>1</sub>
M <sub>3</sub>	L <sub>2</sub>

1	2	3	4
S <sub>1</sub>	1	10	19
S <sub>2</sub>	1	10	19
S <sub>3</sub>	1	10	19

(7)

Ans: 4

(a)

Food	
PK	FId
	FName
	FQuantity
	FPrice

customers	
PK	CId
	CName
Fk	Package-Id
Fk	FId
	Paid-amount

Offers	
PK	Package-Id
	PName
	Discount-PCT
Fk	FId

Staffs	
PK	SId
	SName
	Job-Position
	Salary-Amount

(B)

## Nisha

## Food

FId	FName	FQuantity	FPrice
1	Beef	100	50
2	Burger	80	100
3	Pizza	200	200

transcript

## Customers

CId	CName	PackageId	FId	Paid_Amount
1	Pavel	201	1	40
2	Tama	202	2	80
3	Mostak	Null	3	120

## Offers

PId	PName	Discount_Pct	FId
1	ABC	5	1
2	DEF	15	3
3	IJK	10	2

## Staffs

SId	SName	Job_Position	Salary_Amo
1	Rahim	Manager	10000
2	Karim	Chef	5000
3	Nasim	Sales_Person	5000

This database is in 2NF form or  
2nd Normal Form.

277073 60570 parameter boot

minimally denormalized no MC problems such  
as lost pointers and top level supervalues  
denormalized

6E7 6E-3647309 small 9E9

6E-3647309

6E-3647309 6E-3647309 6E-3647309 6E-3647309

6E7

6E-3647309 6E-3647309 6E-3647309 6E-3647309

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(b)

Main entities are

Food	Customers	Offers	Staffs
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Now applying 3NF on 3rd Normalization technique we get the following tables

Customers

CID	CName	Package-Id	FId
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Payment Log

Invoice-No	CId	FQuantity	Paid-Amount	Date
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Food

FId	FName	FPrice	FQuantity
-----	-------	--------	-----------

Offers

Package_Id	PName	Discount-PCT	FId
------------	-------	--------------	-----

Staffs

SId	SName	Job-Position	Salary-Id
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Staff-Salary

Job-Position	Salary-Amount
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Salary-Log

Outvoice-No	Salary-Id	SAmount	SDate
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