CPS510 Fall2021 Section 04

Group-11

Assignment 6

Normalization of the database
/ Functional
Dependencies

Functional Dependencies

Application Name: Online Job Bank System.

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-- Functional Dependences

We have completed our database design and the next step is to normalize our DBMS design. In order to normalize our design, we first outlined the functional dependencies in the system. We normalized each table with 1NF and 2NF procedure.

We take each table and apply the normalization technique:

1.

JB_Members		
PK	Member_id	Char
	Member_type	Char
	Address	Char
	Email	Char
	Date_created	Date
	Subscriptions	Char
FK	Login_id	Char

In the table JB_Members,

Member_id is dependent on Member_type, Address, Email, Date_created and Subscriptions for 1NF and for 2NF all the non key attributes are dependent on key.

So, Memebr_id--→ Member_type, Address,Email,Date_created, subscriptions.

But Login_id does not depend on Member_id as it's belonging to another table.

This table is of the form 1NF and 2NF.

JB_Users		
PK	Login_id	Char
	password	Char

In the table JB_Users,

Login_id depends on Passward.

So, key Login_id -→ password.

If we look at the relationship between these two tables, each JB_Member will have one Login_id, so Member_id and login_id will have one to one relationship and vice versa. Both tables are functionally dependent. This table is of the form 1NF and 2NF.

2.

Recruiters		
PK	recr_id	Char
	Company_name	Char
	Manager_name	Char
FK	Member_id	Char

In this table Recruiters recr_id is depends on all the other attributes such as company_name and Manager_name but Member_id does not depend on recr_id and that is okay as it belongs to another table and it is a primary key to that table.

Represented as Recr_id→company_name,Manager_name.

Recruiter Table has one to one relationship with JB_Members table and hold dependency relationship. Recr_id→Member_id and vice versa. This table is of the form 1NF and 2NF.

3.

Qualifications		
PK	Qualification_id	Char
	Edu_level	Char
	Experience	Number
	Cover_letter	Char
	Certi_License	Char
FK	JB_user_id	Char

In this table Qualification_id is a key on which all the other attributes depends.

Represented as Qulification_id→Edu_level,Expeience,Cover_leter and Certi_license.

Whereas Jb_user_id is a key to another table and acts as forign key her and does not depends on Qualification_id.

Having a foreign key makes the relationship between Qualifications table and JB_Users table and we can describe that as one to one relationship. As you see the each JB_user_id is associated with only one Qualification_id. In other words each JB_user will have one qualification to hold. This table is of the form 1NF and 2NF.

4.

HR_Department		
PK	Depart_id	Char
	Depart_name	Char
	HR_Manager	Number
FK	Org_id	Char

In the table Departments key Depart_id has attributes that directly depends on it.

We could represent by Depart_id→Depart_name,Hr_Manger

Whereas Org_id is a foreign key and doesn't depends on depart_id.

The table departments hold relation with Recruiters table as one to many relationships. That means Recruiter could have many departments but one department would have only one recruiter/company. Relationship between the two tables (Recruiter and Departments) will represent in term of functional dependencies as Depart_id depend on Recr_id (Depart_id→Depart_id). This table is of the form 1NF and 2NF.

5.

JB_Postings		
PK	Job_id	Char
	Company	Char
	Salary	Number
	Job_title	Char
	Job_location	Char
	Job_type	Char
	Effect_date	Date
	End_date	Date
FK	depart_id	Char

This Table holds functional dependency with HR_Department table as Job_id from JB_Postings table depends on Depart_id.

It holds many to one relationship with HR_department table as one HR will have many job postings.

If you look at the table JB_posings all the attributes depends on Job_id key of the table.

We can represent this as Job_id →company,Salary,Job_tile,Job_location,Job_type,Effect_date and End_date.

This table is of the form 1NF and 2NF.

6.

Connections		
PK	Conn_id	Char
	Date_made	Date
	Conn_details	Char
FK	Member_id	Char

This table holds the many-to-many relationship with JB_Memebrs table as each connection can have many members and one member can have many connections. It is clear that no functional dependencies hold for this relationship.

If we look at the conn_id key all the other attribute depends on Conn_id so → date_made and Conn_details. This table is of the form 1NF and 2NF.

Conclusion: All the tables in our DBMS are normalized to 1NF and 2NF form.