**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:

|  |  |  |
| --- | --- | --- |
| **JB\_Users** | | |
| PK | Login\_id  password | Char  Char |

|  |  |  |
| --- | --- | --- |
| **JB\_Members** | | |
| PK  FK | Member\_id  Member\_type  Address  Email  Date\_created  Subscriptions  Login\_id | Char  Char  Char  Char  Date  Char  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.

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  FK | recr\_id  Company\_name  Manager\_name  Member\_id | Char  Char  Char  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  FK | Qualification\_id  Edu\_level  Experience  Cover\_letter  Certi\_License  JB\_user\_id | Char  Char  Number  Char  Char  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  FK | Depart\_id  Depart\_name  HR\_Manager  Org\_id | Char  Char  Number  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  FK | Job\_id  Company  Salary  Job\_title  Job\_location  Job\_type  Effect\_date  End\_date  depart\_id | Char  Char  Number  Char  Char  Char  Date  Date  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  FK | Conn\_id  Date\_made  Conn\_details  Member\_id | Char  Date  Char  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.