**CPS510 Fall2021 Section 04**

**Group-11**

**Assignment 7**

Normalization / 3NF

**3rd Normalize form**

**Application Name: Online Job Bank System.**

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**-- Normalization/ 3NF**

In order to normalize our design, we first outlined the functional dependencies in the system. We have normalized each table with 1NF and 2NF procedure and now we will apply the 3rd NF.

In our database no table use any transitive keys to make primary keys, so our database if of form 3NF.

We take each table and apply the 3NF normalization technique:

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

All the non key attributes in the table depends on the primary key Member\_id and all non-key attribute are non-transitively dependent on Member\_id that makes it to 3NF.

JB\_Members (Member\_id, Member\_type,Address,Email,Date\_created,Subscriptions).

So, Member\_id--🡪 { Member\_type, Address,Date\_created, subscriptions}.

This table has only one candidate key and that is the primary key (Member\_id) of the table.

But Login\_id does not depend on Member\_id as it’s belonging to another table. This table is of the form 3NF.

2.

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

In the table JB\_Users, all the non-key attributes depends on key attribute which is Login\_id depends on Password.

Also there is no transitive key in the table.

So, key Login\_id -🡪 password.

**Note:** 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 and all primary keys are non-transitive. This table is of the form satisfies all three form 1NF, 2NF and 3NF.

3.

|  |  |  |
| --- | --- | --- |
| **Recruiters** | | |
| PK  FK | recr\_id  Company\_name  Manager\_name  Member\_id | Char  Char  Char  Char |

In this table Recruiters (recr**\_id**, Company\_name, Manager\_name) all the non-key attributes depends on recr\_id and that is a primary key of the table. This table has no transitive keys as all keys are unique.

Represented as Recr\_id🡪company\_name,Manager\_name.

This table is of the form 3NF.

4.

|  |  |  |
| --- | --- | --- |
| **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 non-key attributes depends on and there is no key that is transitively dependent of any other table keys. All the keys of the table are unique.

Represented as Qualification\_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. This table is of the form 3NF.

5.

|  |  |  |
| --- | --- | --- |
| **HR\_Department** | | |
| PK  FK | Depart\_id  Depart\_name  HR\_Manager  Org\_id | Char  Char  Number  Char |

All the non key attributes in the table depends on the primary key Depart\_id and all non-key attribute is non-transitively dependent on Depart\_id that makes it to 3NF.

All the non-key attributes are unique.

We could represent by Depart\_id🡪Depart\_name,Hr\_Manger

Whereas Org\_id is a foreign key and doesn’t depends on depart\_id. This table is of the form 3NF.

6.

|  |  |  |
| --- | --- | --- |
| **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 |

If you look at the table JB\_posings all the non-key attributes depends on Job\_id key of the table. There are no transitive relations in 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 3NF.

7.

|  |  |  |
| --- | --- | --- |
| **Connections** | | |
| PK  FK | Conn\_id  Date\_made  Conn\_details  Member\_id | Char  Date  Char  Char |

If we look at the conn\_id key all the other non-key attribute depends on Conn\_id so 🡪 date\_made and Conn\_details. This table is of the form 3NF.

**Conclusion:** All the tables in our DBMS are normalized to 1NF, 2NF and 3NF form as all keys are unique.