**NAMRATA PANDEY**

**ASSIGNMENT 10**

**Q.1 What is BCNF?**

**Ans:** BCNF (Boyce-Codd Normal Form) is a normal form used in database normalization. It is the slightly stronger version of third normal form (3NF). It deals with certain types of anomalies that are not dealt by 3NF as originally defined.

A table is in BCNF if every functional dependency X-Y, X should be the super key of the table. For BCNF the table should in in 3NF.

Suppose there is an organization where employees work in more than 1 department. Their data is represented as:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Emp\_ID** | **Emp-nationality** | **Emp\_dept** | **Dept\_type** | **Dept\_no\_of\_emp** |
| 1001 | American | Production & planning | D001 | 200 |
| 1001 | American | Design and technical support | D001 | 250 |
| 1002 | Canadian | Finance | D134 | 150 |
| 1002 | Canadian | Purchasing department | D134 | 600 |

**Functional Dependencies:**

Emp\_ID -> Emp\_Nationality

Emp\_dept -> (Dept-type, Emp\_dept)

Candidate key -> (Emp\_ID, Emp\_dept)

This table is not in BCNF as neither Emp\_Debt nor Emp\_ID alone are keys.

If we want to make this table comply with BCNF we can break this table into three tables stated below.

**Emp\_nationality table:**

|  |  |
| --- | --- |
| **Emp\_ID** | **Emp\_nationality** |
| 1001 | American |
| 1002 | Canadian |

**Emp\_Dept Table:**

|  |  |  |
| --- | --- | --- |
| **Emp\_Dept** | **Dept\_type** | **Dept\_no\_of\_emp** |
| Production & planning | D001 | 200 |
| Design and technical support | D001 | 250 |
| Finance | D134 | 150 |
| Purchasing department | D134 | 600 |

**Emp\_Dept Mapping Table:**

|  |  |
| --- | --- |
| **Emp\_ID** | **Emp\_Dept** |
| **1001** | Production & planning |
| **1001** | Design and technical support |
| **1002** | Finance |
| **1002** | Purchasing department |

**Functional Dependencies:**

Emp\_ID -> Emp\_nationality

Emp\_Dept -> (Dept\_type, Dept\_No\_Of\_Emp)

**Candidate keys:**

**For first table:** Emp\_ID

**For Second Table:** Emp\_Dept

**For Third Table:** (Emp\_ID, Emp\_Dept)

This table now complies with BCNF as in both the functional dependencies left side part is a key.