

Employee:

Let ID: A; Name: B; User_Dept: C; User_type: D.

We have FD: $\{A \rightarrow BC\}$, so A is key.

C is a foreign key referencing Department.Dept_ID.
It is already BCNF, $R \subseteq ABCD$.

Department:

Let Dept_ID: A; Dept_Name: B; Manager_ID: C.

We have FD: $\{A \rightarrow BC\}$, so A is key.

C is a foreign key referencing Employee.ID
It is in BCNF, $R \subseteq ABC$.

User:

Let ID: A; Name: B; Address: C;

We have FD: $\{A \rightarrow BC\}$, it is in BCNF, A is key.

Works_on : Relationship

Let Employ_ID: A; Product.Item_number: B; Due_date: C;

A & B are foreign keys.

We have FD: $\{AB \rightarrow C\}$, $\{A, B\}$ is key;
so, it is in BCNF.

Product:

Let: Item-number: A; Price: B; Quantity: C; Total-price D;

Dept1: Measurement: E₁; Unit of measurement E₂; Gross USD E₃; Material E₄.

Dept2: Payment term: F₁; Purchase price: F₂; Currency: F₃;

Dept3: Product code: G₁; Item type code: G₂;

D line Item category: G₃; Country of origin G₄;

Dept4: Manufacturing policy: H₁; Routing No: H₂;

Reordering Policy: H₃;

D is a derived attribute from B & C

we have FD: ↪ A → BCDE(Fn)Gn(Hn); BC → D ↪

A is the key; And we need to find the minimal cover:

BC → D is redundant, ↪ A → D;

so. FD: ↪ A → BC D E(Fn)Gn(Hn) ↪;

RCA BC D E(Fn)Gn(Hn)) is in BCNF.

*: In real database. 4 views will be created to show E, F, G, H.
Those information can be updated only by the employee from specific department.