

Project Work	Municipal Corporation	Functional Dependencies
IT214 Database Management System, Autumn-2019; Group : 3.15		

- **Functional Dependencies (Minimal Set):**

CitizenID  $\longrightarrow$  F\_Name  
 CitizenID  $\longrightarrow$  M\_Name  
 CitizenID  $\longrightarrow$  L\_Name  
 CitizenID  $\longrightarrow$  Gender  
 CitizenID  $\longrightarrow$  DoB  
 CitizenID  $\longrightarrow$  House\_No  
 CitizenID  $\longrightarrow$  Society  
 CitizenID  $\longrightarrow$  PINcode  
 CitizenID  $\longrightarrow$  Income  
 { CitizenA, CitizenB }  $\longrightarrow$  Relation  
 Penalty\_ID  $\longrightarrow$  Amount  
 Penalty\_ID  $\longrightarrow$  Pro\_ID  
 Penalty\_ID  $\longrightarrow$  Description  
 SchemeNo  $\longrightarrow$  SchemeName  
 SchemeNo  $\longrightarrow$  Family\_Income\_Limit  
 SchemeNo  $\longrightarrow$  lowerage  
 SchemeNo  $\longrightarrow$  upperage  
 SchemeNo  $\longrightarrow$  Description  
 Pro\_ID  $\longrightarrow$  Type  
 Pro\_ID  $\longrightarrow$  Owner  
 Pro\_ID  $\longrightarrow$  span  
 Pro\_ID  $\longrightarrow$  Tax  
 Pro\_ID  $\longrightarrow$  PaidStatus

Payment\_ID → pDate  
Payment\_ID → Method  
Payment\_ID → Amount  
Payment\_ID → PaidBy  
Payment\_ID → ForService  
Complaint\_ID → Service\_ID  
Complaint\_ID → Description  
Complaint\_ID → cDate  
Complaint\_ID → c\_status  
Service\_ID → Name  
Service\_ID → Service\_Charge  
Service\_ID → Description  
Service\_ID → DepartmentID  
{Pro\_ID, Service\_ID} → Unit  
Resource\_ID → Type/Name  
Resource\_ID → Description  
Resource\_ID → Quantity  
Construction\_ID → C\_Name  
Construction\_ID → S\_Date  
Construction\_ID → E\_Date  
Construction\_ID → Company\_Name  
Construction\_ID → DepartmentID  
Construction\_ID → PhaseNo  
{P\_ID, Year} → Cost  
PhaseNo → PhaseName  
{Resource\_ID, Year} → Cost  
{Construction\_ID, Year} → Cost  
Year → Amount  
SSN → Salary  
SSN → Joining\_Date  
SSN → Supervisor  
SSN → CitizenID  
SSN → D\_ID

{ESSN, Name}  $\longrightarrow$  Gender  
 {ESSN, Name}  $\longrightarrow$  Relation  
 {ESSN, Name}  $\longrightarrow$  DoB  
 {PName}  $\longrightarrow$  Description  
 PPID  $\longrightarrow$  PPName  
 PPID  $\longrightarrow$  Type  
 PPID  $\longrightarrow$  Street  
 PPID  $\longrightarrow$  Landmark  
 PPID  $\longrightarrow$  Pincode  
 PPID  $\longrightarrow$  Construction\_ID  
 D\_ID  $\longrightarrow$  D\_Name

- **Projection of functional Dependencies:**

- **Citizen :**

CitizenID  $\longrightarrow$  F\_Name  
 CitizenID  $\longrightarrow$  M\_Name  
 CitizenID  $\longrightarrow$  L\_Name  
 CitizenID  $\longrightarrow$  Gender  
 CitizenID  $\longrightarrow$  DoB  
 CitizenID  $\longrightarrow$  House\_No  
 CitizenID  $\longrightarrow$  Society  
 CitizenID  $\longrightarrow$  PINcode  
 CitizenID  $\longrightarrow$  Income

Key is {**CitizenID**}, BCNF

- **RelatedTo :**

{CitizenA, CitizenB}  $\longrightarrow$  Relation

Key is {**CitizenA, CitizenB**}, BCNF

- **Contacts :**

Key is {**CitizenID, ContactNo**}, BCNF

- **Penalty :**

Penalty\_ID  Amount

Penalty\_ID  Pro\_ID

Penalty\_ID  CitizenID

Penalty\_ID  Description

Key is {**Penalty\_ID**}, BCNF

- **Welfare\_scheme :**

SchemeNo  SchemeName

SchemeNo  Family\_Income\_Limit

SchemeNo  lowerage

SchemeNo  upperage

SchemeNo  Description

Key is {**SchemeNo**}, BCNF

- **Taken :**

Key is {**Citizen\_ID, SchemeID**}, BCNF

- **Property :**

Pro\_ID  Type

Pro\_ID  Owner

Pro\_ID  span

Pro\_ID  Tax

Pro\_ID  PaidStatus

Key is {**PropertyID**}, BCNF

- **PeopleHaveComplain :**

Key is {**CitizenID, Complaint\_ID**}, BCNF

- **Payment :**

Payment\_ID  pDate

Payment\_ID  Method

Payment\_ID  Amount

Payment\_ID  PaidBy

Payment\_ID  ForService

Key is {**Payment\_ID**}, BCNF

- **Complain :**

Complaint\_ID  Service\_ID

Complaint\_ID  Description

Complaint\_ID  cDate

Complaint\_ID  c\_status

Key is {**Complaint\_ID**}, BCNF

- **Services :**

Service\_ID  Name


Service\_ID  Service\_Charge

Service\_ID  Description

Service\_ID  DepartmentID

Key is {**Service\_ID**}, BCNF

- **PropertyUSEsservices :**

{Pro\_ID, Service\_ID}  Unit

Key is {**Pro\_ID, Service\_ID**}, BCNF

- **Resources :**

Resource\_ID  $\longrightarrow$  Type/Name

Resource\_ID  $\longrightarrow$  Description

Resource\_ID  $\longrightarrow$  Quantity

Key is **{Resource\_ID}**, BCNF

- **ResourcesUSED :**

Key is **{Resource\_ID, Service\_ID}**, BCNF

- **Construction:**

Construction\_ID  $\longrightarrow$  C\_Name

Construction\_ID  $\longrightarrow$  S\_Date

Construction\_ID  $\longrightarrow$  E\_Date

Construction\_ID  $\longrightarrow$  Company\_Name

Construction\_ID  $\longrightarrow$  DepartmentID

Construction\_ID  $\longrightarrow$  PhaseNo

Key is **{Construction\_ID}**, BCNF

- **CostonProject :**

{P\_ID, Year}  $\longrightarrow$  Cost

Key is **{P\_ID, Year}**, BCNF

- **Phase :**

PhaseNo  $\longrightarrow$  PhaseName

Key is **{PhaseNo}**, BCNF

- **CostonResource :**

{Resource\_ID, Year}  $\longrightarrow$  Cost

Key is **{Resource\_ID, Year}**, BCNF

- **CostonConst :**

{ Construction\_ID, Year }  $\longrightarrow$  Cost

Key is { **Construction\_ID, Year** }, BCNF

- **Expenses :**

Year  $\longrightarrow$  Amount

Key is { **Year** }, BCNF

- **Employee :**

SSN  $\longrightarrow$  Salary

SSN  $\longrightarrow$  Joining\_Date

SSN  $\longrightarrow$  Supervisor

SSN  $\longrightarrow$  CitizenID

SSN  $\longrightarrow$  D\_ID

Key is { **SSN** }, BCNF

- **Dependents :**

{ ESSN, Name }  $\longrightarrow$  Gender

{ ESSN, Name }  $\longrightarrow$  Relation

{ ESSN, Name }  $\longrightarrow$  DoB

Key is { **ESSN, Name** }, BCNF

- **Privilege :**

{ PName }  $\longrightarrow$  Description

Key is { **PName** }, BCNF

- **DependentsHave :**

Key is {**ESSN, Name, PName**}, BCNF

- **PPmaintain :**

Key is {**PPID, D\_ID**}, BCNF

- **PublicProperty :**


PPID  PPName

PPID  Type

PPID  Street

PPID  Landmark

PPID  Pincode

PPID  Construction\_ID

Key is {**PropertyID**}, BCNF

- **Renovation/Rebuild :**

Key is {**PPID, ConstructionID**}, BCNF

- **Department :**

D\_ID  D\_Name

Key is {**D\_ID**}, BCNF

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