

Entities

Employee: “Strong entity contains 9 attributes”

- **FName** “Single/Simple”
- **Lname** “Single/Simple”
- **username** “Derived - unique”
- **Role** “Single/Simple”
- **Phone** “Multivalued - unique”
- **id** “Key - unique”
- **Email** “Single/Simple - unique”
- **Password** “Single/Simple”
- **NationalID** “Key - unique”

Patients: “Strong entity contains 9 attributes”

- **FName** “Single/Simple”
- **Lname** “Single/Simple”
- **History** “Single/Simple”
- **Age** “Single/Simple”
- **Phone** “Multivalued - unique”
- **id** “Key - unique”
- **Email** “Single/Simple - unique”
- **Admission Date** “Single/Simple”
- **NationalID** “Key - unique”

Diagnosing: “Strong entity contains 3 attributes”

- **id** “Single/Simple”
- **Date** “Single/Simple - unique”
- **Type** “Single/Simple”

Departments: “Strong entity contains 3 attributes”

- **id** “Key - unique”
- **Name** “Single/Simple”
- **Description** “Single/Simple”

Relations

Work:

- **Description:**
Does **Employee** work in **Department**?
- **Degree:**
Binary relation.
- **Ratio:**
Many employees can work in **One** department.
- **Participation:**
Employee **Must** be in a department.
Department **May** be empty.

Manage:

- **Description:**

Does **Employee** manage the **Department**?

- **Degree:**

Binary relation.

- **Ratio:**

One employees can work in **One** department.

- **Participation:**

Employee **May** be in a department.

Department **Must** be managed.

Make:

- **Description:**

Does **Employee** make a **Diagnosis**?

- **Degree:**

Binary relation.

- **Ratio:**

Many employees can make **Many** diagnosis.

- **Participation:**

Employee **May** make a diagnosis.

Diagnosis **Must** be done by an employee.

Supervise:

- **Description:**

Does **Employee** Supervise any **Employees**?

- **Degree:**

Unary relation.

- **Ratio:**

One employee can Supervise **Many** employees.

- **Participation:**

Employee **May** Supervise.

Employee **May** Be Supervised.

Treat:

- **Description:**

Does **Employee** treat **Patient**?

- **Degree:**

Binary relation.

- **Ratio:**

Many employees can treat **Many** patients.

- **Participation:**

Employee **May** treat patients.

Patient **Must** be treated by an employee.

Assign:

- **Description:**

Employee assigns **Diagnosis** to **Patient**?

- **Degree:**

3 Binary relations (out of ternary relation).

- **Ratio:**

One employee can assign **Many** diagnoses to **One** patient.

- **Participation:**

This operation **May** be done.

Entity Relation Diagram

