**Identify Entities and Data Elements**

**ABC Walk-in Clinic**

**Entities:**

* Staffs – Staff roles: Nurses, Secretaries, Assistant, Manager (salary Null)
* Doctor – personal information
* Patient – personal information
* Emergency Contact – patient emergency contact
* Patient History – health related information
* Appointment – track check-in, and status (booked, cancelled, arrived, checked in, checked out, LWT, no show). Follow up appointment (column Null or appointment id).
* Patient Visit – Symptoms and medical issues (blood pressure, temperature, height, weight) and diagnoses.
* Billing Information – Fees charged (covered and not covered)
* Patient prescription – treatment
* Patient diagnostic tests - (blood work, XRAY, Ultrasound). Nurses enter reports and results.
* Patient Referral – refer patient to specialist
* Staff Schedule – shifts (start datetime, end datetime, staff)

**Data Blocks Entities**

* Patient Data
  + Patient
    - Has emergency contact person as foreign key. One and only one
    - Enrolled Patients may have a doctor but walking patients do not. Relation: zero or one.
  + Patient History
    - Has patient as foreign key.
      * Relation: One and only one.
  + Emergency Contact Person
    - As foreign key for patient.
      * Relation: One and only one.
      * Relation to patient: one or more assuming there is a family with the same emergency contact person.
  + Health Insurance
    - Has patient id as foreign key.
      * Relation: One or more.
  + Appointment
    - Has patient and doctor as foreign key.
      * Relation: One and only one.
* Patient Appointment data
  + Appointment
    - Common table between each data entities blocks.
  + Appointment followup
    - Has appointment as foreign key.
      * Relation: One and only one.
  + Patient visit
    - Has employee id and appointment id as foreign key.
      * Relation: One and only one.
  + Patient Prescription
    - Has patient visit id as foreign key.
      * Relation: Zero or one.
  + Patient Diagnostic Test
    - Has patient prescription id as foreign key.
      * Relation: Zero to many.
* Clinic Data
  + Appointment
    - Common table between each data entities blocks.
  + Doctor
    - * Relation for doctor side patient: Zero to many.
  + Employees
    - Is connected to schedule.
      * Relation: One to many.
        + Has a linking table.
  + Schedule
    - Has employee and Doctor as foreign key.
      * Relation: One to many.
* Billing Data
  + Appointment
    - Common table between each data entities blocks.
  + Billing
    - Has appointment id and insurance id as foreign key.
      * Relation for appointment: One and only one.
      * Relation for insurance: Zero to many.
      * Related to billing details: One to many.
  + Billing Payment History
    - Has billing id as foreign key.
      * Relation for billing: Many to one.
  + Billing details
    - Linking table in between billing and service.
    - Has Billing id and services id as foreign key.
  + Services
    - Is connect to billing through billing details table.
      * Relation to billing details: One to many.

**Relations Cardinalities and Assumptions**

Enrolled Patients may have a doctor but walking patients do not.

Doctor can have zero or more patient (assumption: a doctor could be enrolled on the clinic just for walking patients)

Patient has one or more emergency contact? Or just one?

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**Entities and Data Elements**

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| **Table Name: Doctors (10 doctors)** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| doctor\_id | Int (autoincrement) | PK(U,NN) | Primary key of the table |
| doctor\_first\_name | Varchar (100) | NN | Doctor Fist Name |
| doctor\_last\_name | Varchar (100) | NN | Doctor Last Name |
| doctor\_phone\_number | Varchar (12) | NN | Doctor Phone Number |
| doctor\_date\_of\_birth | Date | NN | Birth date |
| doctor\_email | Varchar (50) | NN | Doctor Email |

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| **Table Name: Patients** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| patient\_id | Int (autoinc.) | PK (U, NN) | Primary Key |
| patient\_ first\_name | Varchar (100) | NN | Patient First Name |
| patient\_ last\_name | Varchar (100) | NN | Patient Last Name |
| patient\_ date\_of\_birth | date | NN | Patient Birth date |
| patient\_address | Varchar (100) | NN | Patient Adress |
| city | Varchar (50) | NN | City |
| zipcode | Varchar (10) | NN | Zipcode |
| country | Varchar (100) | NN | Country |
| patient\_ phone\_number | Varchar (50) | NN | Patient phone number |
| patient\_email | Varchar (100) | NN | Patient email |
| patient\_type | Enum (walk-in, enrolled) | NN | Walk-in patient or enrolled patient |
| emergency\_contact\_person\_id | Int (autoinc.) | FK(NN) | Emergency Contact Person Foreign Key |
| doctor\_id | int | FK (N) | Null for walk-in patient or doctor Primary key as Foreign key. |

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| **Table Name: Emergency Contact Person** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| emergency\_contact\_person\_id | Int (autoinc.) | PK (U, NN) | Primary Key |
| contact\_first\_name | Varchar (100) | NN | Contact Person First Name |
| contact\_last\_name | Varchar (100) | NN | Contact Person Last Name |
| contact\_phone\_number | Varchar (50) | NN | Contact Person phone number |
| relationship | Varchar (50) | NN | Relation with patient |

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| **Table Name: Patient Visit** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| patient\_visit\_id | Int (autoinc) | PK (U, NN) | Primary Key |
| purpose\_of\_visit | Varchar (500) | NN | Just check up or any illness |
| patient\_symptoms | Varchar (100) |  | Patient symptoms for each visit and additional information |
| blood\_pressure | Varchar (10) | NN |  |
| temperature\_measurement | Int |  | Can be null |
| patient\_height | float |  | Can be null |
| patient\_weight | float |  | Can be nulls |
| visit\_notes | Varchar (1000) |  | Additional notes about the patient visit |
| employee\_id | int | FK (NN) | Nurse enters the patient information |
| appoimtent\_id | int | FK (NN) | Date come from appointment id |

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| **Table Name: Patient History** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| patient\_history\_id | Int (autoinc.) | PK (U, NN) | Primary Key |
| allergies\_history | Varchar (250) |  | Any allergy condition |
| history\_date | date |  | Date when patient ... |
| patient\_condition | Varchar (250) |  | Any previous health conditions |
| additional\_information | Varchar (250) |  | Any previous surgery or other important information to mention |
| patient\_id | int | FK | Patient id as foreign key on the patient history table |

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| **Table Name: Patient Prescription** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| patient\_prescription\_id | Int (autoinc.) | PK (U, NN) | Primary key on patient prescription table |
| patient\_treatment | Varchar (250) |  | Example of treatment: Medication, referral, diagnostic test |
| patient\_visit\_id | int | FK | Patient visit if as foreign key on patient prescription table |

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| **Table Name: Patient Diagnostic Test** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| patient\_diagnostic\_test\_id | Int (autoinc.) | PK (U, NN) | Primary key on patient diagnostic test table |
| diagnostic\_test\_date | date | NN | ? |
| diagnostic\_test\_type | Varchar (250) | NN | Specific diagnostic test (example: blood work, XRAY, Ultrasound) |
| diagnostic\_test\_result | Varchar (100) |  |  |
| patient\_prescription\_id | int | FK (NN) | Patient prescription id as foreign key on patient diagnostic test |

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| **Table Name: Appointments** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| appointment\_id | Int (autoinc.) | PK (U, NN) | Primary Key on appointment table |
| appointment\_date | date | NN | Date of appointment |
| appointment\_time | time | NN | Time of appointment |
| appointment\_status | Enum (Booked, cancelled, checked in, checked out, left without treatment) | NN | Booked, Cancelled, checked in, checked out, left without treatment |
| patient\_id | int | FK (NN) | Patient primary key as foreign key on appointment table |
| doctor\_id | int | FK (NN) | Doctor id as foreign key on appointment table |

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| **Table Name: appointment\_followup** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| appointment\_followup\_id | int | PK (U, NN) | Primary key on appointment followup table |
| appointment\_id | int | FK | Appointment id as foreign key on appointment table |

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| **Table Name: employees (has linking table to schedule)** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| employee\_id | Int (autoinc.) | PK (U, NN) | Primary Key of employee table |
| employee\_first\_name | Varchar (100) | NN | Employee fist name |
| employee\_last\_name | Varchar (100) | NN | Employee last name |
| employee\_position | Varchar (50) | NN | Role: 6 nurses, 5 office secretaries, 2 administrative assistants, one manager |
| employee\_date\_of\_birth | date |  | Employee date of birth |
| employee\_phone\_number | Varchar (20) | NN | Employee phone number information |
| employee\_email | Varchar (100) | NN | Employee email information |
| hourly\_salary | Decimal (10) | NN | Salary per hour for each employee, considering the position they work in. |

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| **Linking table between employees and schedule entities (will be generated when connect the two main entities)** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| employees\_id |  |  |  |
| shedule\_id |  |  |  |
| employee\_role |  |  |  |

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| **Table Name: schedule (has linking table to employees and another linking table to doctors entity)** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| schedule\_id | Int (autoinc.) | PK (U, NN) | Primary key of schedule table |
| date | date | NN | Schedule specific date |
| start\_time | Time (hh:mm:ss) | NN | Scheduled shift start time |
| end\_time | Time (hh:mm:ss) | NN | Scheduled shift end time |
| employee\_id | int | FK | Employee id as foreign key on schedule table |
| doctor\_id | int | FK | Doctor id foreign key on schedule table |

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| **Table Name: health\_insurance** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| health\_insurance\_id | Int (autoinc.) | PK (U, NN) | Primary Key on health insurance table |
| company | Varchar (100) | NN | Company name |
| health\_insurance\_number | Varchar (100) | NN | Health insurance number |
| patient\_id | int | FK | Patient primary key as foreign key on the health insurance table |

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| **Table Name: billing** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| billing\_id | Int (autoinc.) | PK (U, NN) | Primary key of billing table |
| amount | decimal (10) | NN | Total amount on the billing |
| payment\_date | date |  | Billing payment date |
| insurance\_payable | decimal (9,2) |  | Total payable by the insurance company |
| patient\_payable | decimal (9,2) |  | Total payable by the patient (if applicable) |
| appointment\_id | int | FK | Appointment id as foreign key on billing table |
| health\_insurance\_id | int | FK | Health insurance id as foreign key on billing table |

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| **Table Name: billing\_details (maybe linking table from billing to service)** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| billing\_details\_id | Int (autoinc.) | PK (U, NN) | Primary key of billing details |
| quantity | Int | NN | Quantity of item/service |
| total\_service\_price | Decimal (10) | NN | Total price for services |
| billing\_id | int | FK | Billing id as foreign key on billing details table. |
| services\_id | int | FK | Service id as foreign key on billing details table. |

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| **Table Name: services** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| services\_id | Int (autoinc.) | PK (U, NN) | Primary key of services table |
| service\_name | Varchar (50) | NN | Service type offered on the clinic, and no show or any additional service/item specification and price |
| current\_price | decimal (9, 2) | NN | Services offered at the clinic and respective price. |

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| **Table Name: bill\_payment\_history** | | | |
| **Column Name** | **Data Type** | **Constraints** | **Description** |
| bill\_payment\_history | int | PK (U, NN) | Primary key of bill payment history |
| ammount\_paid | decimal (9, 2) | NN | Total ammount paid |
| payer | Enum (patient, insurance) | NN | Who paid the bill, patient or insurance company. |
| note | Varchar (500) |  | Any additional information provided by secretary |
| billing\_id | int | FK (NN) | Billing id as foreign key on bill payment history |