CS-640

ADVANCED DATABASE SYSTEM

Project Phase-2

BY,

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**Data Base Requirements:**

* When **patient** approaches the hospital when he reaches emergency care the patient gives the admin details like P\_name, P\_ssn, Gender, Age, Phone, Address,City, Zipcode, health problem.
* When Admin gets the details from patient now admin give oppointment to meet **doctor,** now patient receivesdoctor details like D\_name, D\_ssn, Doctor\_office, Gender, Age, Phone, Address , City, Zipcode, patient\_health problems, Doctor\_Comments, Doc\_prescription and doctor receives patient details.
* Now **Nurse** receives details of patient from doctor and patient receives nurse details like Nurse\_name, Nurse\_id, Gender, Patient\_health problem. Age, Phone, Nurse\_Comments.
* After consulting doctor patient receives **payment** details like invoice\_num, payment trans\_num, payment\_method, payment\_date, payment\_status.
* If patient have **insurance** to cover his medical expenses then admin gets following details from patient like insurance\_id, insurance\_ Companyname, insurance\_Categore, Phone\_n.o, Address, City, Zip\_code.
* Patient will receive the **prescription** details like prescription\_id, doctor\_comments, Medicines\_list.
* Now **admin** will have all the details of patient. which doctor did patient meet, payment details and transaction history like P\_name, D\_name, Payment\_details, Invoice\_n.o

**Database schema design based on requirements:**

**Patient:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| P\_Name | P\_SSN | Gender | Age | Phone | Address | Patient\_health\_prb | City | Zip\_Code |

**Doctor:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| D\_Name | D\_SSN | Gender | Age | Phone | Address  Zipcode | City | Doctor office | Patient health problem | Doctor comms | Doc\_Pres |

**Nurse:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Nurse\_Name | Nurse\_ID | Gender | Patient\_health  Problem | Age | Phone | Nurse\_Comments |

**Payment:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Invoice\_Num | Payment\_trans\_num | Pay\_Method | Payment\_date | Payment\_status |

**Insurance:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Insurance\_Id | Insurance\_Name | Insurance\_category | Phone\_n.o | Address | City | Zip\_Code |

**Prescription:**

|  |  |  |
| --- | --- | --- |
| Prescription\_ID | Doctor\_Comments | Medicine\_list |

**Admin:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| P\_Name | D\_Name | Payment | Details | Invoice\_N.o |

**Identifying entities and their attributes:**

|  |  |
| --- | --- |
| **Entity** | **Attribute** |
| Patient | P\_Name, P\_SSN, Gender, Age, Phase, Address, Patient\_health\_prb City, Zip\_Code, |
| Doctor | D\_name, D\_SSN, Gender, Age, Phone, Address, Office, City, Zip\_Code, doctor\_comm, patient\_health prb |
| Nurse | Nurse\_name, Nurse\_id, Gender, patient health\_problem, Age, Phone, Nurse Comments |
| Payment | Invoice\_N.o, Payment trans\_number, pay\_method, payment\_date, payment\_status |
| Insurance | Insurance\_id, insurance\_name, insurance\_categorey, Phone\_n.o, Address, city, Zipcode |
| Prescription | Prescripytion\_Id, Doctor\_comments, medicine\_list |
| Admin | P\_name, D\_name, Payment, Details, Invoice |

**Database with imaginary values for testing:**

**Patient:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **P\_Name** | **P\_SSN** | **Gender** | **Age** | **Patient\_health\_prb** | **Phone** | **Address** | **City** | **Zipcode** |
| Kishore | 6781234567 | M | 23 | Cough | 9867231431 | 3 ron street | STL | 78912 |
| Ram | 8981230981 | M | 30 | Fever | 0923789012 | 5 pacific  Street | MA | 90812 |
| Prasad | 6789041234 | M | 25 | Jaundice | 9012378678 | 6 Lisan  Street | PL | 97123 |
| Katte | 9012789823 | F | 27 | Appendix | 9801678923 | 9 Rolie  Street | STL | 78912 |
| Laura | 7856239123 | F | 32 | Vomiting | 7814593467 | 7 Ralley  Street | NYA | 87912 |

**Doctor:**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **D\_Name** | **D\_SSN** | **Gender** | **P\_name** | **Age** | **Phone** | **Address** | **office** | **City&zip\_code** | **Doctor\_comments** | **Health\_prb** |
| Thomin | 5623457890 | M | Katte | 45 | 7892341004 | 3 Raksin street | 5 Pronix  Street | STL & 78912 | Visit after one week | Appendix |
| Lorance | 9012367891 | M | Kishore | 50 | 8901234567 | 5 Palin  Street | 5 Pronix  Street | STL & 78912 | Follow the medicine | Cough |
| Rovan | 7892561902 | M | Prasad | 43 | 9285671903 | 6 Losis  Street | 6 Vandiver  Street | PL & 97123 | Revisit after 10 days | Jaundice |
| Leni | 8926781062 | F | Ram | 30 | 7891234789 | 8 Sprig Street | 6 Vandiver  Street | PL & 97123 | Follow the medicine | Fever |
| Pinky | 9037138902 | F | Laura | 35 | 8901236789 | 9 Lorris Street | 6 Vandiver  Street | PL & 97123 | Revisit | Vomiting |

**Nurse:**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **P\_name** | **Nurse\_Name** | **Nurse\_Id** | **Gender** | **Patient\_healthprb** | **Age** | **Phone** | **Nurse\_comm** |
| Kishore | Koliri | 345 | F | Cough | 24 | 46433574 | Normal |
| Ram | Pothri | 347 | F | Fever | 27 | 47534444 | High BP |
| Prasad | Jacks | 349 | M | Jaundice | 29 | 97867564 | High Sugar |
| Katte | Ron | 412 | M | Appendix | 31 | 86754656 | Normal |
| Laura | Philia | 415 | F | Vomiting | 43 | 77564535 | Low Thyroid |

**Payment:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Invoice\_n.o** | **Paytran\_N.o** | **Pay\_Method** | **P\_name** | **Payment\_date** | **P\_ssn** | **Payment\_Status** |
| 78635 | 129 | Cash | Kishore | 09-12-2018 | 6781234567 | Success |
| 78645 | 131 | Card | Ram | 11-23-2018 | 8981230981 | Success |
| 78647 | 133 | Paypal | Prasad | 12-13-2018 | 6789041234 | Success |
| 78657 | 138 | Cash | Katte | 01-20-2019 | 9012789823 | Success |
| 78673 | 143 | Card | Laura | 04-20-2019 | 7856239123 | Hold |

**Insurance:**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Insurance\_n.o** | **P\_name** | **P\_ssn** | **Insurance\_name** | **Insurance\_categorey** | **Phone\_n.o** | **Address** | **City** | **Zipcode** |
| 67512 | Kishore | 6781234567 | Fonti | Family | 6467764576 | 3 Vici St | CA | 67577 |
| 67514 | Ram | 8981230981 | Klien | Job | 656453686 | 6 Rosi St | BO | 345656 |
| 67516 | Prasad | 6789041234 | Soci | University | 345678675 | 7 Loni St | NYA | 545666 |
| 67518 | Katte | 9012789823 | Lorran | Single | 345677676 | 1 Ronis St | CGI | 345667 |
| 67520 | Laura | 7856239123 | Deli | Family | 434567766 | 5 Soris St | STL | 543566 |

**Prescription:**

|  |  |  |
| --- | --- | --- |
| **Prescription\_id** | **Doctor\_Comments** | **Medicine\_list** |
| 23 | Visit after one week | * Paris * Dolin |
| 24 | Follow the medicine | * Cilatrol * Pansis |
| 31 | Revisit after 10 days | * Pharamatical * Cetrine |
| 35 | Follow the medicine | * Ascoril * Cinaol |
| 39 | Revisit | * Arol * Dolo |

**Hospital Admin:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **P\_name** | **D\_name** | **Payment** | **Health\_Details** | **Invoice\_n.o** |
| Kishore | Thomin | Cash | Appendix | 78635 |
| Ram | Lorance | Card | Cough | 78645 |
| Prasad | Rovan | Paypal | Jaundice | 78647 |
| Katte | Leni | Cash | Fever | 78657 |
| Laura | Pinky | Card | Vomiting | 78673 |

**Initial Design of Entity Types:**

**Patient:**

Patient

**Doctor:**

Docter

**Nurse:**

Nurse

**Payment:**

Payment

**Insurance:**

Insurance

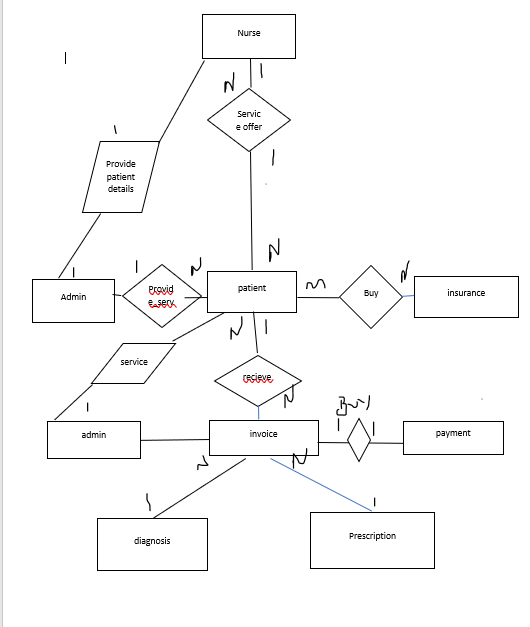
**Prescription:**

Prescription

**Admin:**

Admin

**ER DIAGRAM**



**Class Diagram:**

**Class Diagram:**

D\_name City Address Age Gender Doctor comments Patient\_health\_prb

+provideservice()

+retrivespatient()

+providesprescription()

Doctor

Patient

P\_name P\_ssn Gender Age Phone Address City Zipcode Health problem

+providedetails()

+obtainservice()

+paybill()

P\_name P\_ssn payment\_status payment\_date Paymenttrans\_num Pay\_num

+retrivesinsurance()

+payment()

Pname

doc\_prescription

Medicines

+Displaymedicine()

+addbill()

Admin

Insurance

Prescription

Payment

Nurse

P\_name D\_name Payment Invoice\_no

+Addpatient()

+displaydoctorlist()

+add\_payment()

P\_name P\_ssn Insurance\_id Address Insurance\_no insurance category

+Add\_patient()

+displayinsurance()

N\_name Address Nurse\_id Age Nurse\_commments gender

+providescomments()

+retrivepatientdetails()

**Database State:**

The database state for our relational database schema is **EMERGENCY** state because only the hospital admin will have the access to do any kind of operations for any database schema and also they have the right to grant the access to any one of the database schema when needed. All other database schemas like patient, doctor, nurse etc will only have read access. It also helpful to restore the data in database when it’s repaired it provides SINGLE\_USER mode which is very necessary in our relational database schema.

**Referential Integrity:**

Referential Integrity constraints that holds on our schema:

HOSPITALADMIN.(P\_name) -> PATIENT.(P\_name)

HOSPITALADMIN.(D\_name) -> DOCTOR.(D\_name)

HOSPITALADMIN.(INVOICE\_NUM) -> PATIENT.(INVOICE\_NUM)

DOCTOR.(P\_name) -> PATIENT.(P\_name)

NURSE.(P\_name) -> PATIENT.(P\_name)

PAYMENT.(P\_name, P\_ssn) -> PATIENT.(P\_name)

INSURANCE.(P\_name, P\_ssn) -> PATIENT.(P\_name)

PRESCRIPTION.(P\_name) -> PATIENT.(P\_name)

**Foreign Key:**

* The attribute P\_name in HOSPITAL ADMIN relation is a foreign key that references the PATIENT.
* The attribute P\_name in DOCTOR relation is a foreign key that references the PATIENT.
* The attribute P\_name in NURSE relation is a foreign key that references the PATIENT.
* The attribute P\_ssn, P\_name in PAYMENT relation is a foreign key that references the PATIENT.
* The attribute P\_ssn, P\_name in INSURANCE relation is a foreign key that references the PATIENT.
* The attribute P\_name in PRESCRIPTION relation is a foreign key that references the PATIENT.
* The attribute D\_name in HOSPITAL ADMIN relation is a foreign key that references the DOCTOR.
* The attribute Invoice\_num in HOSPITAL ADMIN relation is a foreign key that references the PAYMENT.