**Formal Specification**

**Schema**

Employee ( eID: integer, ename: string, sin : string, loginID : string, password : string)

Doctor ( eID: integer, ename: string, sin : string, loginID : string, password : string,

licence: string, quaflication: string)

Appointment ( eID: integer, time: string, date: string, fee: real)

Patient( pID: integer, pname: string, address: string, phonenumber: string, email: string, carecardnum: string)

Insurance( type: string, cname: string)

Covered\_by( type: string, cname: string, pID: integer, cost: integer)

Diagnose ( eID: integer, pID: integer, prescription: string)

Payment (eID: integer, time: string, date: string, pID: integer, type: string)

Schedule( e.eID: integer, a.eID: integer, pID: integer, time: string, date: string)

have\_fHistory(pID: integer, pname: string, fname: string, condition: string, relation: string)

contains\_pHistory(pID : integer, pname : string, date: string, condition: string, medication : string)

has\_MedicalRecords(pID: integer, pname: string, allergies: string, emerContacts: string)

**SQL DDL for tables**

CREATE TABLE Employee (

eID int,

eName char(50),

sin char(9),

loginID char(20),

password char(50),

PRIMARY KEY (eID));

CREATE TABLE Doctor (

eID int,

eName char(50),

sin char(9),

loginID char(20),

password char(50),

qualification char(30),

license char(6),

PRIMARY KEY (eID));

CREATE TABLE Patient(

pID: integer,

pName char(50),

address char(40),

phone char(10),

email char(30),

carecard char(10),

PRIMARY KEY (pID));

CREATE TABLE Appointment (

eID int,

aDate date,

time timestamp,

fee int,

PRIMARY KEY (eID, aDate, time),

FOREIGN KEY (eID) REFERENCES Doctor);

CREATE TABLE Appointment(

eID int,

time timestamp(0),

fee int,

PRIMARY KEY (eID, time),

FOREIGN KEY (eID) REFERENCES Doctor);

)

CREATE TABLE Appointment (

eID int,

aDate date,

time timestamp,

fee int,

pID int,

PRIMARY KEY (eID, aDate, time),

FOREIGN KEY (eID) REFERENCES Doctor)

FOREIGN KEY (pID) REFERENCES Patient;

CREATE TABLE Insurance (

type char(10),

cName char(20),

PRIMARY KEY (type, cname));

CREATE TABLE CoveredBy (

pID int,

type char(10),

cName char(50),

cost integer,

PRIMARY KEY( pID, type, cName),

FOREIGN KEY (pID) REFERENCES Patient);

CREATE TABLE Diagnose (

eID int,

pID int,

prescription char(50),

PRIMARY KEY (eID, pID),

FOREIGN KEY (eID) REFERENCES Doctor,

FOREIGN KEY (pID) REFERENCES Patient);

CREATE TABLE Payment (

eID int,

time timestamp,

aDate date,

pID int,

type char(10),

PRIMARY KEY (eID, time, aDate, pID),

FOREIGN KEY (eID, aDate, time) REFERENCE Appointment,

FOREIGN KEY (pID) REFERENCE Patient);

CREATE TABLE Schedule (

e\_eID int,

a\_eID int,

pID int,

time timestamp,

sDate date,

PRIMARY KEY (e\_eID, a\_eID, pID, time, sDate),

FOREIGN KEY (e\_eID) REFERENCES Doctor,

FOREIGN KEY (a\_eID, sDate, time) REFERENCES Appointment,

FOREIGN KEY (pID) REFERENCES Patient);

CREATE TABLE Schedule(

rEId int,

dEID int,

pID int,

time timestamp(0),

primary key(dEDd, pId, time),

foreign key (rEId) references employee,

foreign key (pId) references patient,

foreign key (dEId, time) references appointment on delete cascade

);

CREATE TABLE has\_fHistory(

pID int,

pName char(50),

fName char(50),

relation char(10),

condition char(20),

PRIMARY KEY (pID, pName, fName, condition),

FORIEGN KEY (pID, pName) REFERENCES has\_MedicalRecords)

CREATE TABLE contains\_pHistory(

pID int,

pname char(50),

pDate date,

condition char(20),

medication char(50),

PRIMARY KEY (pID, pname, pDate, condition),

FORIEGN KEY (pID, pname) REFERENCES has\_MedicalRecords)

CREATE TABLE has\_MedicalRecords(

pID int,

pName char(50),

allergies char(30),

emerContacts char(50),

PRIMARY KEY (pID, pname),

FOREIGN KEY (pID) REFERENCES Patient)

**Tuples**

Employee

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eID | ename | sin | loginID | password |
| 2283 | Sam Simon | 212 998 768 | jsmith | 5f4dcc3b5aa765d61d8327deb882cf99 |
| 6122 | Julie Kavner | 151 280 582 | jkavner | 25a1669723f671c8254ca1760313b2b5 |
| 1121 | Hank Azaria | 110 238 914 | hazaria | b5884fb8c8785eae504f2816f0451e42 |
| 8862 | Nancy Cartwright | 976 229 178 | ncartwright | 5b13b76226599ce87037f9b4ca32be22 |
| 4605 | Danny Elfman | 197 287 889 | delfman | 5d907853a9617cfd55fb62eae803595b |

Doctor

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| eID | ename | sin | loginID | password | qualification | licence |
| 8923 | Bryan Cranston | 186 719 990 | bcranston | fed1f37d40a3e8a0103bf5e95875a82f | Doctor of Medicine | 228192 |
| 1345 | Aaron Paul | 972 163 229 | apaul | 316928e0d260556eaccb6627f2ed657b | Doctor of Osteopathic Medicine | 550971 |
| 7074 | RJ Mitte | 585 228 090 | rmitte | 0fd73b3614ede6a8536f1a3fb191abf2 | Bachelor of Medicine | 518762 |
| 5515 | Dean Norris | 558 859 100 | dnorris | 99754106633f94d350db34d548d6091a | Bachelor of Surgery | 119271 |
| 4528 | Vince Gilligan | 111 097 889 | vgilligan | 90434ae19345b6fd7a2e96b25186bd28 | Bachelor of Neurology | 529663 |

Appointment

|  |  |  |  |
| --- | --- | --- | --- |
| eID | time | date | fee |
| 8923 | 3:00 PM | Sep. 30th, 2013 | 135 |
| 1345 | 11:00 AM | Oct. 14th, 2013 | 150 |
| 7074 | 9:00 AM | Oct. 25th, 2013 | 85 |
| 5515 | 4:00 PM | Nov. 7th, 2013 | 60 |
| 1345 | 2:00 PM | Nov. 23th, 2013 | 150 |

Patient

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| pID | pname | address | phone  number | email | carecardnum |
| 5113 | Olene Kay | 34251 Abbott St. | 604 435 4565 | okay@gmail.com | 6748 086 656 |
| 1239 | Hans Difalco | 5122 McRae Ave. | 604 959 3048 | hans33@hotmail.com | 6087 456 254 |
| 5543 | Terrie Pittsley | 8221 Oak St. | 778 034 5943 | tpittsley@live.ca | 2913 393 323 |
| 6357 | Inez Hollis | 1677 Park Dr. | 778 495 2031 | inezhollis@hotmail.com | 4101 243 637 |
| 3543 | Wilfred Iorio | 1264 Dunbar St. | 778 192 4825 | willioro@gmail.com | 8365 926 321 |

Insurance

|  |  |
| --- | --- |
| type | cname |
| full | Manulife |
| half | Manulife |
| full | Blue Cross |
| full | Standard Life |
| half | Standard Life |

Covered\_by

|  |  |  |  |
| --- | --- | --- | --- |
| type | cname | pID | cost |
| full | Manulife | 5113 | 135 |
| half | Manulife | 1239 | 75 |
| full | Blue Cross | 5543 | 85 |
| full | Standard Life | 6357 | 60 |
| half | Standard Life | 3543 | 75 |

Diagnose

|  |  |  |
| --- | --- | --- |
| eID | pID | prescription |
| 8923 | 5113 | Amoxicillin 250mg x 7 tablets |
| 1345 | 1239 | Acetaminophin 300mg x 30 tablets |
| 7074 | 5543 | Vitamin D 500mg x 30 tablets |
| 5515 | 6357 | Iron 10mg x 30 tablets |
| 1345 | 3543 | Vicodin 25mg x 10 tablets |

Payment

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| eID | time | date | pID | type |
| 8923 | 3:00 PM | Sep. 30th, 2013 | 5113 | CreditCard |
| 1345 | 11:00 AM | Oct. 14th, 2013 | 1239 | DebitCard |
| 7074 | 9:30 AM | Oct. 25th, 2013 | 5543 | DebitCard |
| 5515 | 4:00 PM | Nov. 7th, 2013 | 6357 | Cash |
| 1345 | 2:00 PM | Nov. 23th, 2013 | 3543 | CreditCard |

Schedule

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| e.eID | a.eID | pID | time | date |
| 8923 | 2283 | 5113 | 3:00 PM | Sep. 30th, 2013 |
| 1345 | 6122 | 1239 | 11:00 AM | Oct. 14th, 2013 |
| 7074 | 1121 | 5543 | 9:30 AM | Oct. 25th, 2013 |
| 5515 | 8862 | 6357 | 4:00 PM | Nov. 7th, 2013 |
| 1345 | 4605 | 3543 | 2:00 PM | Nov. 23th, 2013 |

have\_fHistory

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| pID | pname | fname | relation | condition |
| 1239 | Hans Difalco | Joseph Difalco | Father | Color Blindness |
| 1239 | Hans Difalco | Mary Difalco | Mother | Cystic Fibrosis |
| 1239 | Hans Difalco | Alfred Difalco | Uncle | Color Blindness |
| 1239 | Hans Difalco | Tom Difalco | Brother | Color Blindness |
| 1239 | Hans Difalco | Sally Difalco | Sister | Haemophilia |

contains\_pHistory

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| pID | pname | date | condition | medication |
| 5133 | Olene Kay | Mar. 3, 2011 | Mono | Ibuprofen 200mg x 10 tablets,  Prednisone 40mg x 10 tablets |
| 5133 | Olene Kay | Sep. 20, 2012 | Flu | Acetaminophin 150mg x 10 tablets |
| 1239 | Hans Difalco | Feb. 13, 2013 | Carpal Tunnel | Ibuprofen 300mg x 30 tablets |
| 1239 | Hans Difalco | Mar. 24, 2013 | Flu | Acetaminophin 150mg x 10 tablets |
| 3543 | Wilfred Iorio | Dec 11, 2010 | Ankle Sprain | Acetaminophin 300mg x 30 tablets |

has\_MedicalRecords

|  |  |  |  |
| --- | --- | --- | --- |
| pID | pname | allergies | emer  Contacts |
| 5113 | Olene Kay | penicillin | Maggie Kay : 604-333-1234 |
| 1239 | Hans Difalco | N/A | Ben Difalco :  604-123-5678 |
| 5543 | Terrie Pittsley | avocado,mango | Jess Diagonal :  778-555-4312 |
| 6357 | Inez Hollis | penicillin | Mario Hollis :  604-676-8899 |
| 3543 | Wilfred Iorio | bee venom | Daisy Iorio :  778-321-4565 |