HOSPITAL MANAGEMENT

HOSPITAL MANAGEMENT SYSTEM

BY SHIVAM MISHRA

DESCRIPTION :

The below database is a schema designed to work as a backend database for a website of a hospital to manage its various forms of data and integrate it with very esily readable format for every steps within the Hospital.

By storing this relational type database every daily basis task can be performed very efficiently and maximum output can be gained.Hence managing a Hospital can be achieved with very feasible method through this online management system.
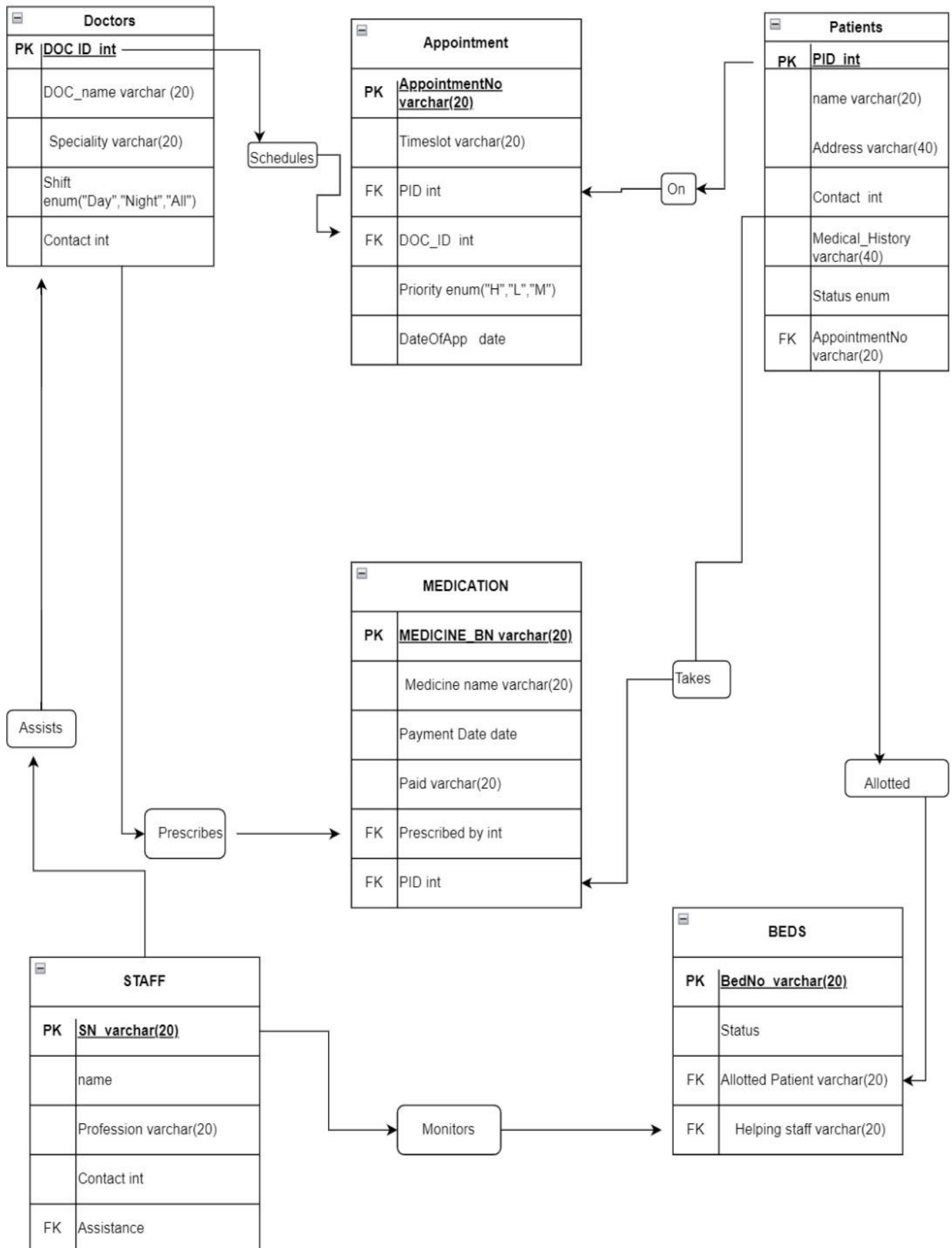
The following database contains mainly six tables:-

1. Patients(where records of every patients are to be store)

2. Doctors(where records of every doctors are stored with their availability)

3. Appointments(where details of appointments are stored on daily basis)

4. Medications(where details of medicines are stored on block basis)

5. Beds(where availability of beds can be checked)

6. Staff(where the details of other helping staff are stored)

All of the above database in tabular format are to be stored,checked and are to be updated on daily basis .A realtime relationships between the information tables are important , hence various type of keys are to be used to establish the relationships between the tables.Detailed information like name,address,contact of the person plays an important role to keep track and synchronization .

THE Following format can be referred for "MANAGEMENT " the Hospital system:-

E-R DIAGRAM

Doctors
PK	DOC ID_int
	DOC_name varchar (20)
	Speciality varchar(20)
	Shift enum("Day","Night","All")
	Contact int

Appointment
PK	AppointmentNo varchar(20)
	Timeslot varchar(20)
FK	PID int
FK	DOC_ID int
	Priority enum("H","L","M")
	DateOfApp date

Patients
PK	PID_int
	name varchar(20)
	Address varchar(40)
	Contact int
	Medical_History varchar(40)
	Status enum
FK	AppointmentNo varchar(20)

MEDICATION
PK	MEDICINE_BN varchar(20)
	Medicine name varchar(20)
	Payment Date date
	Paid varchar(20)
FK	Prescribed by int
FK	PID int

STAFF
PK	SN_varchar(20)
	name
	Profession varchar(20)
	Contact int
FK	Assistance

BEDS
PK	BedNo_varchar(20)
	Status
FK	Allotted Patient varchar(20)
FK	Helping staff varchar(20)

Schedules

On

Assists

Prescribes

Takes

Allotted

Monitors

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//CREATING TABLE "DOCTORS":-

Create table Doctors(Doc_id int primary key,

 DOC_name Varchar(20),

contact int(11), Speciality

 varchar(20),

shift enum("Day","Night","All")

);

insert into doctors

values

(1,"Dr.Dsouza",564522,"Pulmonologist","Day"),

(2,"Dr.Carter",5564547,"Surgeon","Day"),

(3,"Dr.Mike",465987,"Dermatolohist","Day"),

(4,"Dr.Stroke",3212203,"Cancer Specialist","ALL"),

(5,"Dr.Barber",4485232,"Cardiologist","Night"),

(6,"Dr.Light",2563210,"Padiatrist","ALL");

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⋮ Field	Type	Null	Key	Default	Extra
Doc_id	int(11)	NO	PRI	NULL	
DOC_name	varchar(20)	YES		NULL	
contact	int(11)	YES		NULL	
Speciality	varchar(20)	YES		NULL	
shift	enum('Day','Ni...	YES		NULL	

⋮ Doc_id	DOC_name	contact	Speciality	shift
1	Dr.Dsouza	564522	Pulmonologist	Day
2	Dr.Carter	5564547	Surgeon	Day
3	Dr.Mike	465987	Dermatolohist	Day
4	Dr.Stroke	3212203	Cancer Specialist	All
5	Dr.Barber	4485232	Cardiologist	Night
6	Dr.Light	2563210	Padiatrist	All

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//CREATING TABLE " PATIENTS"

create table Patients(Pid int primary key,

Patient_name varchar(20), Age int,

address varchar(50),

contact int(11),

Medical_History varchar(40),

 Current_status enum("Admitted","Discharged","on_medications"),

AppointmentNo varchar(20),

foreign key(AppointmentNo) references Appointment(AppointmentNo)

);

insert into patients values

(103,"John",39,"San Andreas",552104,"Diabetes","Discharged",null),

(202,"Jenny",20,"Florida",789457,"Acne issue","on_medications","AN442"),

(309,"Jack",41,"lyons",444548,"Back Surgery","Admitted","AN361"),

(441,"Jane",18,"San Martin",555632,"Skin Allergy","Discharged",null),

(502,"Alex",36,"San Diego",102216,"Lung Cancer","Admitted","AN221"),

(512,"Jade",28,"Carolina",9548712,"Accident","Admitted","AN323"),

(612,"Aria",48,"Arizona",0233234,"Breathing issue Asthma","Admitted","AN572"),

(622,"Duke",25,"San Martin",336214,"HairFall","on_medications","AN642"),

(712,"Max",36,"San Andreas",5541254,"Cancer","Admitted","AN224"),

(801,"Luke",56,"Queens",411124,"Cardiac Arrest","Admitted","AN412"),

(922,"Drake",12,"Brooklyn",2322542,"Finger cut","on_medications","AN281"),

(952,"Mike",64,"New York",5547121,"High Blood Pressure","Admitted","AN142");

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Table: patients

Columns:

Pid	int PK
Patient_name	varchar(20)
adress	varchar(50)
contact	int
Medical_History	varchar(40)
Current_status	enum('Admitted','Discharged','on_medications')
AppointmentNo	varchar(20)

Pid	Patient_name	adress	contact	Medical_History	Current_status	AppointmentNo
103	John	San Andress	552104	Diabetes	Discharged	NULL
202	Jenny	Florida	789457	Acne issue	on_medications	AN442
309	Jack	lyons	444548	Back Surgery	Admitted	AN361
441	Jane	San Martin	555632	Skin Allergy	Discharged	NULL
502	Alex	San Diego	102216	Lung Cancer	Admitted	AN221
512	Jade	Carolina	9548712	Accident	Admitted	AN323
612	Aria	Arizona	233234	Breathing issue Asthma	Admitted	AN572
622	Duke	San Martin	336214	HairFall	on_medications	AN642
712	Max	San Andreas	5541254	Cancer	Admitted	AN224
801	Luke	Queens	411124	Cardiac Arrest	Admitted	AN412
922	Drake	Brooklyn	2322542	Finger cut	on_medications	AN281
952	Mike	New York	5547121	High Blood Pressure	Admitted	AN142

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//CREATING A TABLE "APPOINTMENT" :-

create table Appointment

(AppointmentNo varchar(20) primary key,

Timeslot varchar(20),

Pid int,

Doc_id int,

Priority enum("H","L","M"),

foreign key (Doc_id) references Doctors(Doc_id),

foreign key (Pid) references Patients(Pid),

DateOfApp date);

insert into Appointment

values

("AN142","7pm to 12pm",952,5,"M","2023-09-09"),

("AN221","2pm to 5pm ",502,1,"H","2023-09-08"),

("AN224","8am to 11am",712,4,"H","2023-09-08"),

("AN281","2pm to 5pm",922,6,"L","2023-09-09"),

("AN361","8am to 11am",309,2,"H","2023-09-08"),

("AN412","8pm to 11pm",801,5,"H","2023-09-08"),

("AN442","2pm to 6pm",202,3,"L","2023-09-09"),

("AN572","8am to 11am",612,1,"H","2023-09-08"),

("AN642","2pm to 5pm",622,3,"l","2023-09-10");

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Table: appointment

Columns:
AppointmentNo	varchar(20) PK
Timeslot	varchar(20)
Pid	int
Doc_id	int
Priority	enum('H','L','M')
DateOfApp	date

AppointmentNo	Timeslot	Pid	Doc_id	Priority	DateOfApp
AN142	7pm to 12pm	952	5	M	2023-09-09
AN221	2pm to 5pm	502	1	H	2023-09-08
AN224	8am to 11am	712	4	H	2023-09-08
AN281	2pm to 5pm	922	6	L	2023-09-09
AN361	8am to 11am	309	2	H	2023-09-08
AN412	8pm to 11pm	801	5	H	2023-09-08
AN442	2pm to 6pm	202	3	L	2023-09-09
AN572	8am to 11am	612	1	H	2023-09-08
AN642	2pm to 5pm	622	3	L	2023-09-10

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//CREATING A TABLE FOR " STAFF"

create table Staff

(SN varchar(5) primary key,

name varchar(20),

Profession VARCHAR(20),

CONTACT INT,

Assistance int(20),

 foreign key(Assistance) references Doctors(Doc_id)

);

INSERT INTO STAFF

VALUES

("SN02","LENEE","NURSE",4568452,1),

("SN03","KELLY","NURSE",1236544,2),

("SN05","SUSAN","NURSE",0222178,3),

("SN08","BECKY","HELPER",9855574,4),

("SN16","SAM","CARETAKER",6545545,5),

("SN18","SHAWN","CARETAKER",1232655,6),

("SN20","TORI","RECEPTIONIST",7598865,NULL),

("SN25","ZACK","DRIVER",32544898,NULL);

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Table: staff

Columns:
SN	varchar(5) PK
name	varchar(20)
Profession	varchar(20)
CONTACT	int
Assistance	int

	SN	name	Profession	CONTACT	Assistance
▶	SN02	LENEE	NURSE	4568452	1
	SN03	KELLY	NURSE	1236544	2
	SN05	SUSAN	NURSE	222178	3
	SN08	BECKY	HELPER	9855574	4
	SN16	SAM	CARETAKER	6545545	5
	SN18	SHAWN	CARETAKER	1232655	6
	SN20	TORI	RECEPTIONIST	7598865	NULL
	SN25	ZACK	DRIVER	32544898	NULL
	SN26	SUZY	CARETAKER	4553682	4

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//CREATE A TABLE " BEDS":-

create table Beds

(BN varchar(5) primary key,

status enum("O","V","NA"),

Pid int,Staff varchar(5)

);

insert into beds

values

("BN01","O",309,"SN02"),

("BN02","O",502,"SN03"),

("BN03","V",NULL,"SN18"),

("BN04","NA",NULL,NULL),

("BN05","O",512,"SN16"),

("BN06","O",612,"SN05"),

("BN07","O",712,"SN08"),

("BN08","O",801,"SN02"),

("BN09","NA",NULL,NULL),

("BN10","O",952,"SN03");

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Table: **beds**

Columns:
- **BN**   varchar(5) PK
- status   enum('O','V','NA')
- Pid   int
- **Staff**   varchar(5)

BN	status	Pid	Staff
BN01	O	309	SN02
BN02	O	502	SN03
BN03	V	NULL	SN18
BN04	NA	NULL	NULL
BN05	O	512	SN16
BN06	O	612	SN05
BN07	O	712	SN08
BN08	O	801	SN02
BN09	NA	NULL	NULL
BN10	O	952	SN03

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//CREATE A TABLE "MEDICATIONS" :-

create table Medication

(Medicine_BN int primary key,

medicine_names varchar(40),

DATE DATE,

Paid varchar(20),

Prescribed_by int,

foreign key(Prescribed_by) references Doctors(Doc_id)

);

INSERT INTO MEDICATION

VALUES

(1081,"INSULIN, ISOPHANE 70/30","2023-09-04","4500",6),

(1082,"minocycline ,doxycycline","2023-09-05","1200",3),

(1084,"MOISTURIZER","2023-09-05","1000",3),

(1085,"PROPOFALL,MIDAZOLAN","2023-09-05","5600",2),

(1086,"Cetirizine,Desloratadine","2023-09-06","10000",3),

(1091,"Remeron, Wellbutrin, and Effexor","2023-09-06","5000",3),

(1092,"Aminolevulinic,Fluorouracil","2023-09-06","50% OF 85000",4),

(1093,"anti-arrhythmic","2023-09-06","250000",5),

(1096,"Acetaminophen,Petroleum jelly","2023-09-07","2000",6),

(1097,"lisinopril, perindopril and ramipril","2023-09-07","35000",5),

(1098,"Beclomethasone,Mometasone","2023-09-07","58000",1);

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Table: medication

Columns:

Medicine_BN	int PK
medicine_names	varchar(40)
DATE	date
Paid	varchar(20)
Prescribed_by	int
PID	int

Medicine_BN	medicine_names	DATE	Paid	Prescribed_by	PID
1081	INSULIN, ISOPHANE 70/30	2023-09-04	4500	6	103
1082	minocycline ,doxycycline	2023-09-05	1200	3	202
1084	MOISTURIZER	2023-09-05	1000	3	441
1085	PROPOFALL,MIDAZOLAN	2023-09-05	5600	2	309
1086	Cetirizine,Desloratadine	2023-09-06	not_updated	3	NULL
1091	Remeron, Wellbutrin, and Effexor	2023-09-06	5000	3	622
1092	Aminolevulinic,Fluorouracil	2023-09-06	50% OF 85000	4	712
1093	anti-arrhythmic	2023-09-06	250000	5	801
1096	Acetaminophen,Petroleum jelly	2023-09-07	2000	6	922
1097	lisinopril, perindopril and ramipril	2023-09-07	35000	5	952
1098	Beclomethasone,Mometasone	2023-09-07	58000	1	612

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//creating a database/ using/checking/deleting it

1. Create database Hospital_Management;
2. Use Hospital_management;
3. Show databases
4. Drop database Hospital_Management

//Adding a column/Deleting a column in table

1. Alter table doctors Add/Drop column email varchar(20);

//creating a table/deleting /display it

2. Ceate/drop table employee (id int,name varchar(20),contact int);
3. Show tables

//inserting data in table

Insert into employee(Eid,name,contact) Values(1,"jack",45668),(2,"jenny",78965);

//deleting data from table

Delete from employee where id=1;

//Modifying datatype of a column

Alter table doctors modify column email char(20);

//Updating a table

Update employee set address="lyons" where id =3;

//fetching/retrieving details of table

Select*from staff;

//adding constraint

Alter table staff add constraint id primary key;

//AND/OR operator

Select Patient_name from patients where adress=" lynes" or adress="florida";

Pid	Patient_name	adress	contact	Medical_History	Current_status	AppointmentNo
202	Jenny	Florida	789457	Acne issue	on_medications	AN442
309	Jack	lyons	444548	Back Surgery	Admitted	AN361

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// In operator

Select * from patients where Pid IN (103,212,612);

Pid	Patient_name	adress	contact	Medical_History	Current_status	AppointmentNo
612	Aria	Arizona	233234	Breathing issue Asthma	Admitted	AN572

//Between operator

Select * from appointment where PID between 202 to 441;

Pid	Patient_name	adress	contact	Medical_History	Current_status	AppointmentNo
202	Jenny	Florida	789457	Acne issue	on_medications	AN442
309	Jack	lyons	444548	Back Surgery	Admitted	AN361
441	Jane	San Martin	555632	Skin Allergy	Discharged	NULL

//Like operator

Select * from patients where patient_name like "j%";

Pid	Patient_name	adress	contact	Medical_History	Current_status	AppointmentNo
622	Duke	San Martin	336214	HairFall	on_medications	AN642
922	Drake	Brooklyn	2322542	Finger cut	on_medications	AN281

//LIMIT/OFFSET

Select * from doctors where Doc_id limit 1,3;

Doc_id	DOC_name	contact	Speciality	shift
2	Dr.Carter	5564547	Surgeon	Day
3	Dr.Mike	465987	Dermatolohist	Day
4	Dr.Stroke	3212203	Cancer Specialist	All

// Add foreign key

Alter table appointment

add constraint foreign key(Pid) references Patients(Pid);

//show index from table

Show indexes from beds;

Table	Non_unique	Key_name	Seq_in_index	Column_name	Collation	Cardinality	Sub_part	Packed	Null	Index_type
beds	0	PRIMARY	1	BN	A	10	NULL	NULL		BTREE

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//show information schema

SELECT * FROM INFORMATION_SCHEMA.TABLE_CONSTRAINTS

WHERE TABLE_NAME = "PATIENTS";

//Distinct

select distinct DateOfApp from appointment;

DateOfApp
2023-09-09
2023-09-08
2023-09-10

// Aliasing

Select * from Appointment as app;

Appointment_date
2023-09-09
2023-09-08
2023-09-08
2023-09-09
2023-09-08
2023-09-08
2023-09-09
2023-09-08
2023-09-10

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/=/Order by

//Ascending

Select * from patients order by Pid Asc;

//Descending

Select * from patients order by Pid desc;

Pid	Patient_name	adress	contact	Medical_History	Current_status	Appointmer
952	Mike	New York	5547121	High Blood Pressure	Admitted	AN142
922	Drake	Brooklyn	2322542	Finger cut	on_medications	AN281
801	Luke	Queens	411124	Cardiac Arrest	Admitted	AN412
712	Max	San Andreas	5541254	Cancer	Admitted	AN224
622	Duke	San Martin	336214	HairFall	on_medications	AN642
612	Aria	Arizona	233234	Breathing issue Asthma	Admitted	AN572
512	Jade	Carolina	9548712	Accident	Admitted	AN323
502	Alex	San Diego	102216	Lung Cancer	Admitted	AN221
441	Jane	San Martin	555632	Skin Allergy	Discharged	NULL
309	Jack	lyons	444548	Back Surgery	Admitted	AN361

/=/ Arithmetic Opereator

//(+) operator
Select Pid+10 from patients;

//(-) operator
Select Pid-5 from patients;

//(*) operator
Select Pid*2 from patients;

// (/) operator
Select Pid/2 from patients;

pid+5
207
314
446
507
517
617
627
717
806
927

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/=/Comparison operator

Select * from patients where age>15;

Select * from patients where age !=12;

Select * from patients where pid<500;

Pid
202
309
441
NULL

/=/ String functions

Select concat("john","florida") from

patients;Select lower(JENNY) from patients

Select upper(jack) from patients;

Select length("San diego") from patients;

Select reverse(becky) from staff;

SELECT substr("Discharged",2,4) from patients;

upper(Patient_name)
JENNY
JACK
JANE
ALEX
JADE
ARIA
DUKE
MAX
LUKE
DRAKE

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/=/Date function

Select DAYNAME(2023-08-09);

Select MONTHNAME(2023-08-09);

Select curdate();

	DAYNAME("2023-08-09")
▶	Wednesday

/=/Aggregate function

Select avg(Pid) from Patients;

Select sum(Pid) from Patients;

Select max(age) from Patients;

Select min(age) from Patients;

OUTPUT: minimum age= 18

/=/ Updating multiple columns

Update doctors

Set shift=

   Case:

       When Doc_id=1 then "Night"

       When Doc_id =2 then "ALL"

       When Doc_id =3 then "Night"

      End;

/=/GROUP BY HAVING

SELECT * FROM PATIENTS GROUP BY NAME HAVING age<30;

/=/ Null,Not Null

Select * from beds where Pid is null;

Select * from beds where Pid is not null;

	BN	status	Pid	Staff
▶	BN03	V	NULL	SN18
	BN04	NA	NULL	NULL
	BN09	NA	NULL	NULL

//=// JOINS :-

/=/Inner Join

//EQUI join

Select p.patient_name,A.Medical_History,A.timeslot,A.priority from patients as p

Inner join Appointment as A on patients.pid=appointment.pid;

	Patient_name	Medical_History	Timeslot	Priority
▶	Mike	High Blood Pressure	7pm to 12pm	M
	Alex	Lung Cancer	2pm to 5pm	H
	Max	Cancer	8am to 11am	H
	Drake	Finger cut	2pm to 5pm	L
	Jack	Back Surgery	8am to 11am	H
	Luke	Cardiac Arrest	8pm to 11pm	H
	Jenny	Acne issue	2pm to 6pm	L
	Aria	Breathing issue Asthma	8am to 11am	H
	Duke	HairFall	2pm to 5pm	L

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//Non-Equi join

select patients.patient_name,patients.Current_status,beds.status from patients inner join beds

on patients.Pid!=beds.Pid;

patient_name	Current_status	status
John	Discharged	O
Jenny	on_medications	O
Jenny	on_medications	O
Jenny	on_medications	O
Jenny	on_medications	O
Jenny	on_medications	O
Jenny	on_medications	O
Jenny	on_medications	O
Jack	Admitted	O
Jack	Admitted	O
Jack	Admitted	O
Jack	Admitted	O
Jack	Admitted	O
Jack	Admitted	O
Jane	Discharged	O
Jane	Discharged	O
Jane	Discharged	O
Jane	Discharged	O
Jane	Discharged	O
Jane	Discharged	O

//Natural Join

select patients.patient_name,patients.Current_status,beds.status from patients natural join beds;

patient_name	Current_status	status
Jack	Admitted	O
Alex	Admitted	O
Jade	Admitted	O
Aria	Admitted	O
Max	Admitted	O
Luke	Admitted	O
Mike	Admitted	O

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//Left Join

Select patients.patient_name,patients.Current_status,beds.status from patients

Left join beds on patients.pid=beds.pid;

patient_name	Current_status	status
John	Discharged	NULL
Jenny	on_medications	NULL
Jack	Admitted	O
Jane	Discharged	NULL
Alex	Admitted	O
Jade	Admitted	O
Aria	Admitted	O
Duke	on_medications	NULL
Max	Admitted	O
Luke	Admitted	O
Drake	on_medications	NULL
Mike	Admitted	O

//Right join

select patients.patient_name,patients.Current_status,beds.status from patients

right join beds on patients.pid=beds.pid;

patient_name	Current_status	status
Jack	Admitted	O
Alex	Admitted	O
NULL	NULL	V
NULL	NULL	NA
Jade	Admitted	O
Aria	Admitted	O
Max	Admitted	O
Luke	Admitted	O
NULL	NULL	NA
Mike	Admitted	O

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//Union

Select patients.patient_name,patients.Current_status,beds.status from patients right join beds

on patients.pid=beds.pid union select patients.patient_name,patients.Current_status,beds.status from patients right join beds on patients.pid=beds.pid;

patient_name	Current_status	status
Jack	Admitted	O
Alex	Admitted	O
NULL	NULL	V
NULL	NULL	NA
Jade	Admitted	O
Aria	Admitted	O
Max	Admitted	O
Luke	Admitted	O
Mike	Admitted	O

// Union all

Select patients.patient_name,patients.Current_status,beds.status from patients right join beds

on patients.pid=beds.pid union all select patients.patient_name,patients.Current_status,beds.status from patients right join beds on patients.pid=beds.pid;

patient_name	Current_status	status
Jack	Admitted	O
Alex	Admitted	O
NULL	NULL	V
NULL	NULL	NA
Jade	Admitted	O
Aria	Admitted	O
Max	Admitted	O
Luke	Admitted	O
NULL	NULL	NA
Mike	Admitted	O
Jack	Admitted	O
Alex	Admitted	O
NULL	NULL	V
NULL	NULL	NA
Jade	Admitted	O
Aria	Admitted	O
Max	Admitted	O
Luke	Admitted	O
NULL	NULL	NA
Mike	Admitted	O

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//self join

Self join works only on a single table where two id's represent the same table .

//Sub-Querry

Select DOC_name from doctors where Doc_id=(SELECT Doc_id from doctors where speciality="Cardiologist");

Outout= Dr.Barber

DOC_name
▶ Dr.Barber