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Data Analytics 2

Hospital db – Databases and tables

1. Create a database **“hospital\_db”**
2. Exercise -01
  - Create tables for Physician, Department
  - Insert values into them
  - Understand Primary and Foreign Keys and table relationships
3. Exercise -02
  - Create tables for Affiliated\_With, Procedures, Trained\_In, Patient
  - Insert values into them
4. Exercise -03
  - Create tables for Nurse, Procedures, Appointment, Medication
  - Insert values into them
5. Exercise -04
  - Create tables for Prescribes, Block, Room, On\_Call, Stay, Undergoes
  - Insert values into them

## Putting them together:

1. Create a new database **hospital\_database**
2. Create scripts from one file
3. Insert data into **hospital\_database** from one data file

## Putting backup and restore:






1. Take the back up of **hospital\_database**
2. Restore it as a new database **hospital\_database\_new**

# SQL Exercise





```
SELECT * FROM department;
```

	Data Output	Explain	Messages	Notifications
	departmentid [PK] integer		name character varying (30)	head integer
1	1		General Medicine	4
2	2		Surgery	7
3	3		Psychiatry	9



```
SELECT * FROM physician;
```

Data Output		Explain	Messages	Notifications
	 employeeid [PK] integer	 name character varying (30)	 position character varying (30)	 ssn integer
1	1	John Dorian	Staff Internist	111111111
2	2	Elliot Reid	Attending Physician	222222222
3	3	Christopher Turk	Surgical Attending Physician	333333333
4	4	Percival Cox	Senior Attending Physician	444444444
5	5	Bob Kelso	Head Chief of Medicine	555555555
6	6	Todd Quinlan	Surgical Attending Physician	666666666
7	7	John Wen	Surgical Attending Physician	777777777
8	8	Keith Dudemeister	MD Resident	888888888
9	9	Molly Clock	Attending Psychiatrist	999999999







SELECT \* FROM affiliated\_with;

Data Output		Explain	Messages	Notifications
	physician [PK] integer 	department [PK] integer 	primaryaffiliation boolean 	
1	1	1	true	
2	2	1	true	
3	3	1	false	
4	3	2	true	
5	4	1	true	
6	5	1	true	
7	6	2	true	
8	7	1	false	
9	7	2	true	
10	8	1	true	
11	9	3	true	

SELECT \* FROM patient

	Data Output	Explain	Messages	Notifications
	 <b>ssn</b> [PK] integer 	<b>name</b> character varying (30) 	<b>address</b> character varying (30) 	<b>phone</b> character varying (30)
1	100000001	John Smith	42 Foobar Lane	555-0256
2	100000002	Grace Ritchie	37 Snafu Drive	555-0512
3	100000003	Random J. Patient	101 Omgbbq Street	555-1204
4	100000004	Dennis Doe	1100 Foobaz Avenue	555-2048

```
SELECT * FROM nurse;
```

Data Output		Explain	Messages	Notifications	
	<b>employeeid</b> [PK] integer 	<b>name</b> character varying (30) 	<b>position</b> character varying (30) 	<b>registered</b> boolean 	<b>ssn</b> integer 
1	101	Carla Espinosa	Head Nurse	true	111111110
2	102	Laverne Roberts	Nurse	true	222222220
3	103	Paul Flowers	Nurse	false	333333330

```
SELECT * FROM appointment;
```

Data Output		Explain	Messages	Notifications		
	appointmentid [PK] integer	patient integer	prepnurse integer	physician integer	startdate timestamp without time zone	enddate timestamp without time zone
1	13216584	100000001	101	1	2008-04-24 10:00:00	2008-04-24 11:00:00
2	26548913	100000002	101	2	2008-04-24 10:00:00	2008-04-24 11:00:00
3	36549879	100000001	102	1	2008-04-25 10:00:00	2008-04-25 11:00:00
4	46846589	100000004	103	4	2008-04-25 10:00:00	2008-04-25 11:00:00
5	59871321	100000004	[null]	4	2008-04-26 10:00:00	2008-04-26 11:00:00
6	69879231	100000003	103	2	2008-04-26 11:00:00	2008-04-26 12:00:00
7	76983231	100000001	[null]	3	2008-04-26 12:00:00	2008-04-26 13:00:00
8	86213939	100000004	102	9	2008-04-27 10:00:00	2008-04-21 11:00:00
9	93216548	100000002	101	2	2008-04-27 10:00:00	2008-04-27 11:00:00

```
--find general medicine doctors name
```

```
SELECT physician.name, affiliated_with.department, department.name
```

```
FROM affiliated_with
```

```
INNER JOIN department ON affiliated_with.department=department.departmentID
```

```
INNER JOIN physician ON affiliated_with.physician=physician.employeeid
```

```
WHERE affiliated_with.department=1;
```

Data Output Explain Messages Notifications

	name character varying (30)	department integer	name character varying (30)
1	John Dorian	1	General Medicine
2	Elliot Reid	1	General Medicine
3	Christopher Turk	1	General Medicine
4	Percival Cox	1	General Medicine
5	Bob Kelso	1	General Medicine
6	John Wen	1	General Medicine
7	Keith Dudemeister	1	General Medicine

--find which patient - doctor visit

SELECT physician.name, affiliated\_with.department, department.name

FROM affiliated\_with

INNER JOIN department ON affiliated\_with.department=department.departmentID

INNER JOIN physician ON affiliated\_with.physician=physician.employeeid

WHERE affiliated\_with.department=1;

	patient character varying (30)	physician character varying (30)	date timestamp without time zone
1	John Smith	John Dorian	2008-04-24 10:00:00
2	Grace Ritchie	Elliot Reid	2008-04-24 10:00:00
3	John Smith	John Dorian	2008-04-25 10:00:00
4	Dennis Doe	Percival Cox	2008-04-25 10:00:00
5	Dennis Doe	Percival Cox	2008-04-26 10:00:00
6	Random J. Patient	Elliot Reid	2008-04-26 11:00:00
7	John Smith	Christopher Turk	2008-04-26 12:00:00
8	Dennis Doe	Molly Clock	2008-04-27 10:00:00
9	Grace Ritchie	Elliot Reid	2008-04-27 10:00:00

--find room details

```
SELECT * FROM room;
```

	roomnumber [PK] integer	roomtype character varying (30)	blockfloor integer	blockcode integer	unavailable boolean
1	101	Single	1	1	false
2	102	Single	1	1	false
3	103	Single	1	1	false
4	111	Single	1	2	false
5	112	Single	1	2	true
6	113	Single	1	2	false
7	121	Single	1	3	false
8	122	Single	1	3	false
9	123	Single	1	3	false

```
SELECT COUNT(unavailable) FROM room WHERE unavailable=True GROUP BY unavailable;
```

Data Output		Explain
	count bigint	
1	8	








--total patient count on blockcode=2

```
SELECT COUNT(*) FROM room WHERE blockcode=2;
```

Data Output	
	count bigint
1	12

--check procedure details

SELECT \* FROM undergoes;

Data Output		Explain	Messages	Notifications		
	patient [PK] integer 	procedures [PK] integer 	stay [PK] integer 	dateundergoes [PK] timestamp without time zone 	physician integer 	assistingnurse integer 
1	100000001	6	3215	2008-05-02 00:00:00	3	101
2	100000001	2	3215	2008-05-03 00:00:00	7	101
3	100000004	1	3217	2008-05-07 00:00:00	3	102
4	100000004	5	3217	2008-05-09 00:00:00	6	[null]
5	100000001	7	3217	2008-05-10 00:00:00	7	101
6	100000004	4	3217	2008-05-13 00:00:00	3	103

-- find hospital workload such as procedure time and doctors, nurse details

SELECT

physician.name AS doctor\_name,

nurse.name AS nurse\_name,

undergoes.dateundergoes AS procedure\_time

FROM undergoes

INNER JOIN physician ON undergoes.physician=physician.employeeid

LEFT JOIN nurse ON undergoes.assistingnurse=nurse.employeeid

WHERE physician=3;

Data Output		Explain	Messages	Notifications
	<b>doctor_name</b> character varying (30)	<b>nurse_name</b> character varying (30)	<b>procedure_time</b> timestamp without time zone	
1	Christopher Turk	Carla Espinosa	2008-05-02 00:00:00	
2	Christopher Turk	Laverne Roberts	2008-05-07 00:00:00	
3	Christopher Turk	Paul Flowers	2008-05-13 00:00:00	



## --patient medication and prescription details

```
SELECT * FROM medication;
```

	 <b>code</b> [PK] integer 	<b>name</b> character varying (30) 	<b>brand</b> character varying (30) 	<b>description</b> character varying (30) 
1	1	Procrastin-X	X	N/A
2	2	Thesisin	Foo Labs	N/A
3	3	Awakin	Bar Laboratories	N/A
4	4	Crescavitin	Baz Industries	N/A
5	5	Melioraurin	Snafu Pharmaceuticals	N/A





```
SELECT
```

```
    patient.name,  
    prescribes.dose,  
    medication.name,  
    medication.brand
```

```
FROM prescribes
```

```
INNER JOIN medication ON prescribes.medication=medication.code
```

```
INNER JOIN patient ON prescribes.patient=patient.ssn;
```

	<b>name</b> character varying (30) 	<b>dose</b> character varying (30) 	<b>name</b> character varying (30) 	<b>brand</b> character varying (30) 
1	John Smith	5	Procrastin-X	X
2	Dennis Doe	10	Thesisin	Foo Labs
3	Dennis Doe	5	Thesisin	Foo Labs

--trained in procedures




SELECT \* FROM procedures;

		<b>code</b> [PK] integer 	<b>name</b> character varying (30) 	<b>cost</b> real 
1		1	Reverse Rhinopodoplasty	1500
2		2	Obtuse Pyloric Recombobul...	3750
3		3	Folded Demiophthalmectomy	4500
4		4	Complete Wallectomy	10000
5		5	Obfuscated Dermogastroto...	4899
6		6	Reversible Pancreomyoplasty	5600
7		7	Follicular Demiectiony	25

SELECT \* FROM trained\_in;

		<b>physician</b> [PK] integer 	<b>treatment</b> [PK] integer 	<b>certificationdate</b> timestamp without time zone 	<b>certificationexpires</b> timestamp without time zone 
1		3	1	2008-01-01 00:00:00	2008-12-31 00:00:00
2		3	2	2008-01-01 00:00:00	2008-12-31 00:00:00
3		3	5	2008-01-01 00:00:00	2008-12-31 00:00:00
4		3	6	2008-01-01 00:00:00	2008-12-31 00:00:00
5		3	7	2008-01-01 00:00:00	2008-12-31 00:00:00
6		6	2	2008-01-01 00:00:00	2008-12-31 00:00:00
7		6	5	2007-01-01 00:00:00	2007-12-31 00:00:00
8		6	6	2008-01-01 00:00:00	2008-12-31 00:00:00
9		7	1	2008-01-01 00:00:00	2008-12-31 00:00:00
10		7	2	2008-01-01 00:00:00	2008-12-31 00:00:00

```
SELECT treatment, count(treatment) FROM trained_in GROUP BY treatment;
```

	 treatment integer 	count bigint 
1	3	1
2	5	3
3	4	1
4	6	3
5	2	3
6	7	2
7	1	2

```

SELECT procedures.name, COUNT(trained_in.treatment), physician.name
FROM trained_in
INNER JOIN procedures ON trained_in.treatment=procedures.code
INNER JOIN physician ON trained_in.physician=physician.employeeid
GROUP BY trained_in.treatment, physician.name, procedures.name
ORDER BY trained_in.treatment;

```

	name character varying (30)	count bigint	name character varying (30)
1	Reverse Rhinopodoplasty	1	Christopher Turk
2	Reverse Rhinopodoplasty	1	John Wen
3	Obtuse Pyloric Recombobul...	1	Christopher Turk
4	Obtuse Pyloric Recombobul...	1	John Wen
5	Obtuse Pyloric Recombobul...	1	Todd Quinlan
6	Folded Demiophthalmectomy	1	John Wen
7	Complete Walleectomy	1	John Wen
8	Obfuscated Dermogastroto...	1	Christopher Turk
9	Obfuscated Dermogastroto...	1	John Wen
10	Obfuscated Dermogastroto...	1	Todd Quinlan
11	Reversible Pancreomyoplasty	1	Christopher Turk
12	Reversible Pancreomyoplasty	1	John Wen
13	Reversible Pancreomyoplasty	1	Todd Quinlan
14	Follicular Demiectomy	1	Christopher Turk

✓ Success