

# DATABASE SYSTEMS

## **Database Project (Airport)**

### Submitted by:

Name	Section	Code
اسلام طارق فوزى عمران	1	1500269
باهر عبدالفتاح عطيه عبدالفتاح	1	1500405
عمرو سامی احمد احمد	2	1500955
محمد عادل سلطان ايوب	3	1501242

Submitted to:

Prof. Hoda Korashy

Faculty of engineering Ain Shams University

Cairo 2019

# **Table of Contents**

Title	3
Description	3
Assumptions	
EER Diagram	
Foreign Key Table	8
Relational Data Model	9
SQL	10
SELECT QUERIES	29

#### Title

The title of our project: Airport Database.

#### Description

Airport database stores airplanes, their owners, their services, airport technicians, flight attendants and pilots.

Each airplane has a registration number [Reg#], is of a particular plane type [OF- TYPE], and is stored in a particular hangar [STORED-IN].

Each plane type has a model number [Model], a capacity [Capacity], and a weight [Weight].

The database keeps track of the owners of each airplane [OWNS], the pilot authorized to fly [FLIES], the technicians who have maintained the airplane [MAINTAIN] and flight attendants who have worked on the airplane [WORKS\_ON].

Each relationship instance in [OWNS] relates an airplane to an owner and includes the purchase data [Pdate].

Each relationship instance in MAINTAIN relates a technician to a service record [SERVICE].

Each plane undergoes service many times; hence, it is related by [PLANE-SERVICE] to several service records.

A service record includes as attributes the date of maintenance [Date], the number of hours spent on the work [Hours], and the type

of work done [Workcode] and the id of service of work done [Service\_id].

We use a weak entity type [SERVICE] to represent airplane service, because the airplane registration number is used to identify a service record.

An owner is either a person or a corporation. Hence, we use a union category [OWNER] that is a subset of the union of corporation [CORPORATION] and person [PERSON] entity types. Employee is a subset of person.

Employees are either Pilots [PILOT], flight attendants [FLIGHT\_ATTENDANT] and technicians [TECHNICIAN].

Pilot has specific attribute license number [License\_No], Flight attendant has specific attribute spoken language [Spoken\_language] and Technician has specific attribute specialty [Specialty].

Each employee has specific attributes salary [Salary], working hours [Working hours] and the shift worked [Shift].

All person entities in the database have data kept on their social security number [SSN], name [Name], address [Address], and telephone number [Phone].

For corporation entities, the data kept includes name [Name], address [Address], and telephone number [Phone].

#### Assumptions

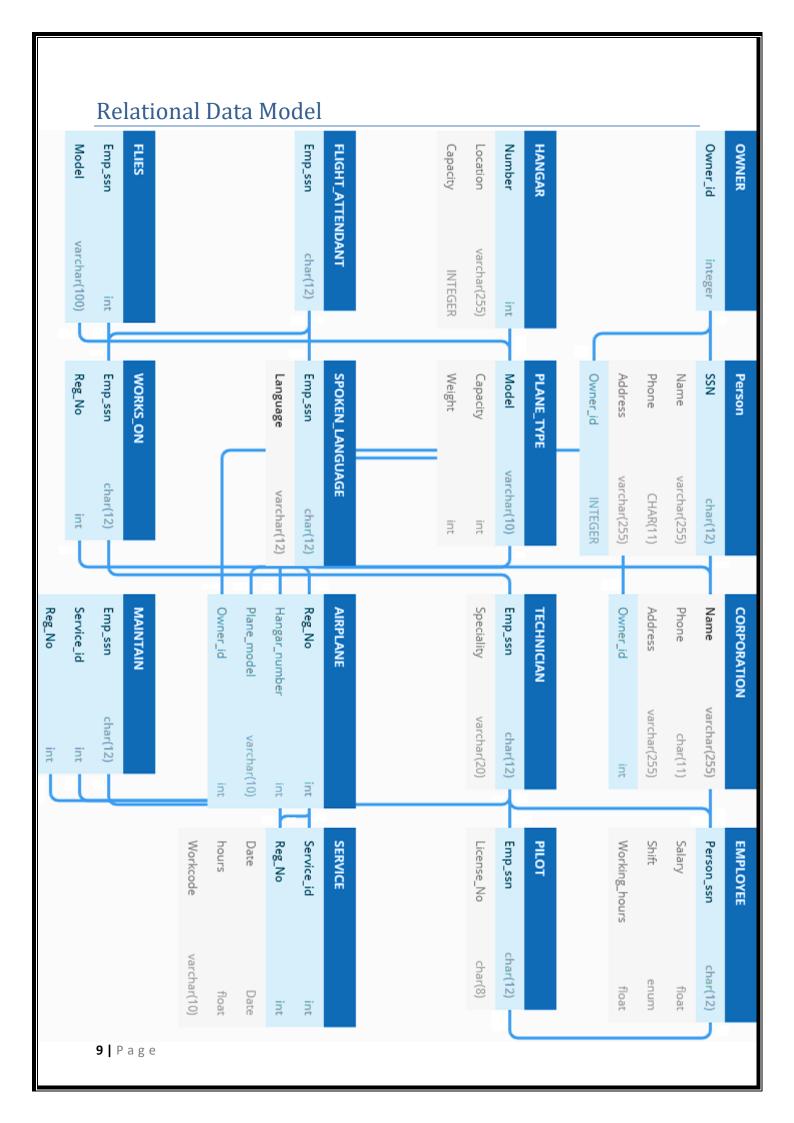
- 1-Employee must be either a Technician ,flight attendant or Pilot.
- 2-Owner must be either a person or a Corporation.
- 3-Many Airplanes can be stored in a hanger.
- 4-An airplane must be stored in a hanger.
- 5-A hanger must store at least an airplane.
- 6-Airplane must have only one plane type.
- 7-Many airplanes can have the same plane type.
- 8-A plane type must be the type of at least one airplane.
- 9-A Pilot must be able to fly one or more certain plane types.
- 10-plane type must be flown by one or more pilots.
- 11-Flight attendant must work on one or more airplanes.
- 12-Flight attendant can speak many languages
- (Spoken\_language multi-valued attribute).
- 13-Airplanes may have one or more flight attendants.
- For ex. Private airplanes may not have a flight attendant.
- 14-Technician must maintain one or more services.
- 15-Service must be maintained by one or more technicians.

- 16-Airplane must have one or more plane services.
- 17-Plane services must be done for each airplane independently.
- 18-Service cannot co-exist without Airplane.
- 19-Owner must own one or more airplanes.
- 20-Airplane must be owned by only one owner.

# **EER Diagram** <u>Model</u> PLANE\_TYPE AIRPLANE HANGAR Capacity Weight Pdate $\leq$ $\leq$ SERVICE FLIES CORPORATION Address Date OWNER c z Name **TECHNICIAN** Specialty PERSON Address FLIGHT\_ATTENDANT **EMPLOYEE** Phone Working hours Salary PILOT **7 |** Page

## Foreign Key Table

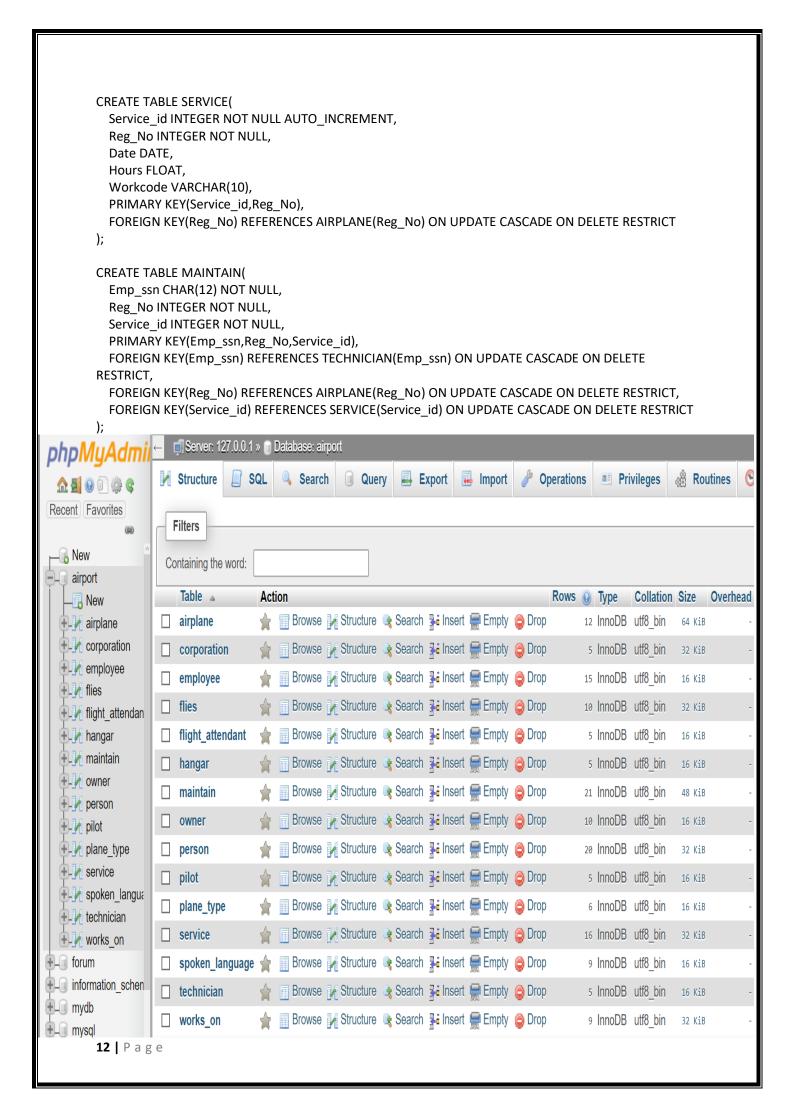
Table Name	Foreign Keys	Refer To
PERSON	Owner_id	OWNER.Owner_id
Employee	Person_ssn	PERSON.SSN
CORPORATION	Owner_id	OWNER.Owner_id
AIRPLANE	Hanger_number , Plane_model, Owner_id	HANGER.Number , PLANE_TYPER.Model, OWNER.Owner_id
PILOT	Emp_ssn	EMPLOYEE.Person_ssn
TECHNICIAN	Emp_ssn	EMPLOYEE.Person_ssn
FLIGHT_ATTENDANT	Emp_ssn	EMPLOYEE.Person_ssn
SPOKEN_LANGUAGE	Emp_ssn	FLIGHT_ATTENDANT.Emp_ssn
FLIES	Emp_ssn , Model	PILOT.Emp_ssn , PLANE_TYPE.Model
WORKS_ON	Emp_ssn , Reg_No	FLIGHT_ATTENDANT.Emp_ssn , AIRPLANE.Model
MAINTAIN	Emp_ssn , Service_id , Reg_No	TECHNICIAN.Emp_ssn , SERVICE.Service_id , AIRPLANE.Reg_No
SERVICE	Reg_No	AIRPLANE.Reg_No



#### **SQL**

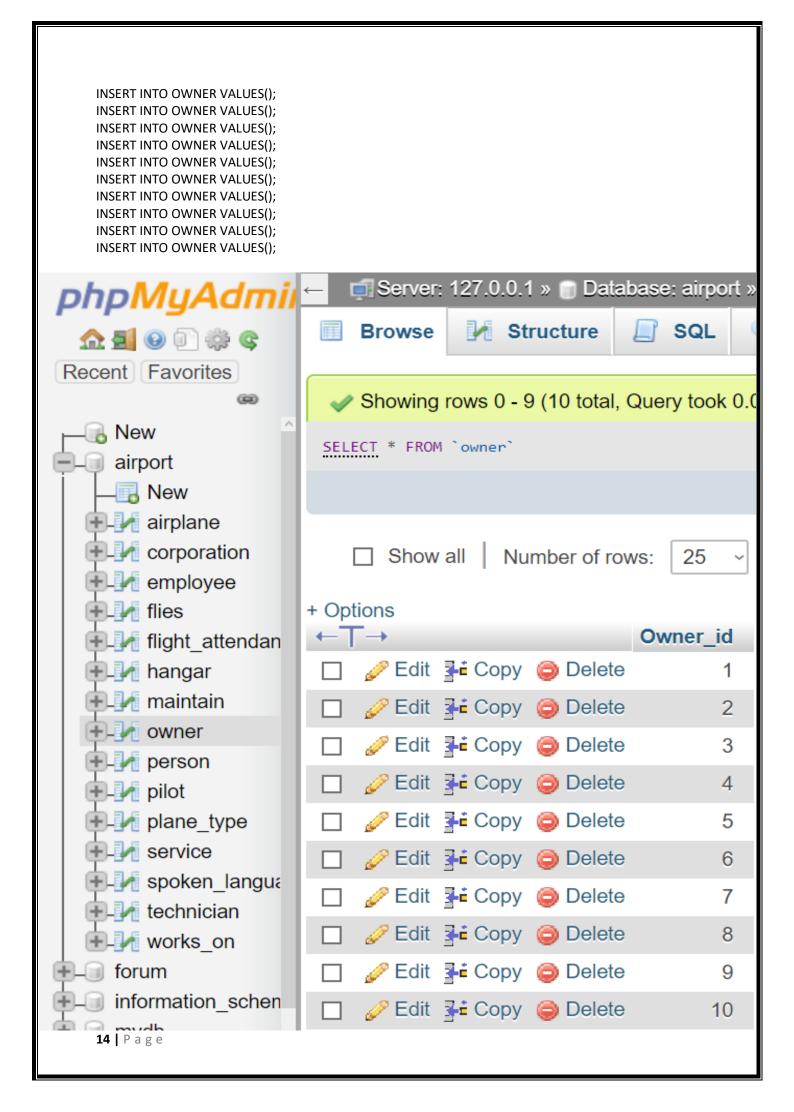
```
CREATE DATABASE airport;
CREATE TABLE OWNER(
       Owner_id INTEGER NOT NULL AUTO_INCREMENT,
       PRIMARY KEY(Owner_id)
);
CREATE TABLE PERSON(
       SSN CHAR(12) NOT NULL,
       Name VARCHAR(255),
       Phone CHAR(11),
       Address VARCHAR(255),
       Owner_id INTEGER,
  PRIMARY KEY(SSN),
       FOREIGN KEY(Owner id) REFERENCES OWNER(Owner id) ON UPDATE CASCADE ON DELETE SET
NULL
);
CREATE TABLE EMPLOYEE(
       Person_ssn CHAR(12) NOT NULL,
  Salary FLOAT,
  Shift ENUM("pm","am"),
  Working hours FLOAT,
  PRIMARY KEY(Person ssn),
  FOREIGN KEY(Person ssn) REFERENCES PERSON(SSN) ON UPDATE CASCADE ON DELETE RESTRICT
);
CREATE TABLE CORPORATION(
       Name VARCHAR(255) NOT NULL,
  Phone CHAR(11),
       Address VARCHAR(255),
       Owner id INTEGER NOT NULL,
       PRIMARY KEY(Name),
  FOREIGN KEY(Owner_id) REFERENCES OWNER(Owner_id) ON UPDATE CASCADE ON DELETE RESTRICT
CREATE TABLE HANGAR(
       Number INTEGER NOT NULL AUTO_INCREMENT,
  Location VARCHAR(255),
       Capacity INTEGER,
       PRIMARY KEY(Number)
CREATE TABLE PLANE_TYPE(
       Model VARCHAR(10) NOT NULL,
  Capacity INTEGER,
       Weight INTEGER,
       PRIMARY KEY(Model)
CREATE TABLE AIRPLANE(
  Reg_No INTEGER NOT NULL AUTO_INCREMENT,
  Hangar_number INTEGER NOT NULL,
  Plane_model VARCHAR(10) NOT NULL,
```

```
Owner id INTEGER NOT NULL,
 Pdate DATE,
       PRIMARY KEY(Reg No),
 FOREIGN KEY(Hangar number) REFERENCES HANGAR(Number) ON UPDATE CASCADE ON DELETE
RESTRICT,
 FOREIGN KEY(Plane model) REFERENCES PLANE TYPE(Model) ON UPDATE CASCADE ON DELETE
RESTRICT,
 FOREIGN KEY(Owner_id) REFERENCES OWNER(Owner_id) ON UPDATE CASCADE ON DELETE RESTRICT
CREATE TABLE PILOT(
       Emp_ssn CHAR(12) NOT NULL,
 License_No CHAR(8),
       PRIMARY KEY(Emp ssn),
 FOREIGN KEY(Emp_ssn) REFERENCES EMPLOYEE(Person_ssn) ON UPDATE CASCADE ON DELETE
RESTRICT
);
CREATE TABLE TECHNICIAN(
       Emp_ssn CHAR(12) NOT NULL,
 Speciality VARCHAR(20),
       PRIMARY KEY(Emp_ssn),
 FOREIGN KEY(Emp_ssn) REFERENCES EMPLOYEE(Person_ssn) ON UPDATE CASCADE ON DELETE
RESTRICT
);
CREATE TABLE FLIGHT ATTENDANT(
       Emp ssn CHAR(12) NOT NULL,
       PRIMARY KEY(Emp ssn),
 FOREIGN KEY(Emp ssn) REFERENCES EMPLOYEE(Person ssn) ON UPDATE CASCADE ON DELETE
RESTRICT
);
CREATE TABLE SPOKEN_LANGUAGE(
       Emp_ssn CHAR(12) NOT NULL,
 Language VARCHAR(12) NOT NULL,
       PRIMARY KEY(Emp ssn,Language),
 FOREIGN KEY(Emp ssn) REFERENCES FLIGHT ATTENDANT(Emp ssn) ON UPDATE CASCADE ON DELETE
RESTRICT
CREATE TABLE FLIES(
       Emp ssn CHAR(12) NOT NULL,
 Model VARCHAR(10) NOT NULL,
 PRIMARY KEY(Emp ssn, Model),
 FOREIGN KEY(Emp_ssn) REFERENCES PILOT(Emp_ssn) ON UPDATE CASCADE ON DELETE RESTRICT,
 FOREIGN KEY(Model) REFERENCES PLANE_TYPE(Model) ON UPDATE CASCADE ON DELETE RESTRICT
);
CREATE TABLE WORKS ON(
 Emp ssn CHAR(12) NOT NULL,
 Reg_No INTEGER NOT NULL,
 PRIMARY KEY(Emp_ssn,Reg_No),
 FOREIGN KEY(Emp ssn) REFERENCES FLIGHT ATTENDANT(Emp ssn) ON UPDATE CASCADE ON DELETE
RESTRICT,
 FOREIGN KEY(Reg No) REFERENCES AIRPLANE(Reg No) ON UPDATE CASCADE ON DELETE RESTRICT
);
```

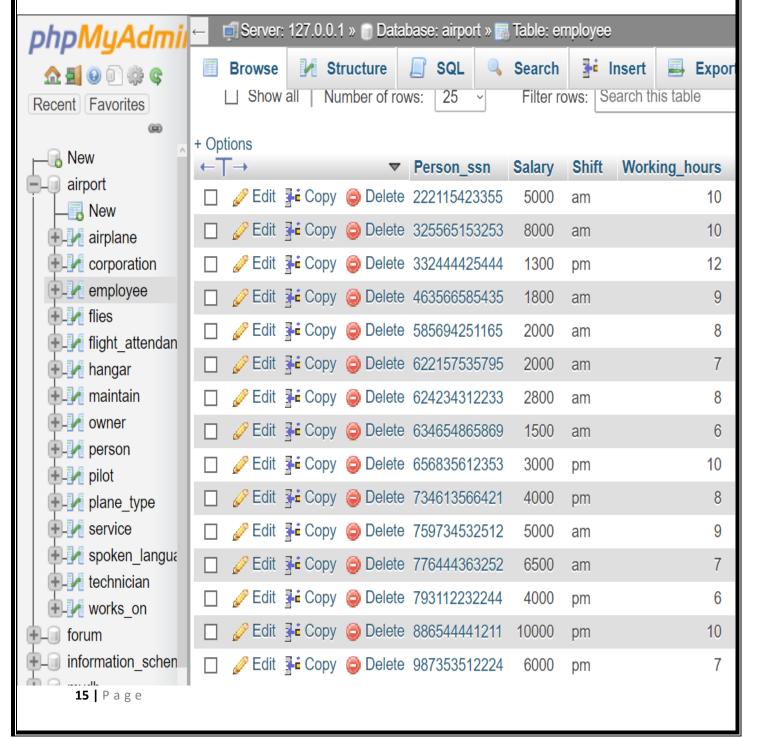


INSERT INTO PERSON VALUES ("123165748192","Shawn Micheals","01012744003","New Cairo",1); INSERT INTO PERSON VALUES ("421341234123", "Shawn Cena", "01112312312", "Maadi", 2); INSERT INTO PERSON VALUES ("643654654634", "Eslam Tarek", "01234123111", "Nasr City", 3); INSERT INTO PERSON VALUES ("234124324132","Baher Ahmed", "01124541412","Ainshams",4); INSERT INTO PERSON VALUES ("678567856867","Ahmed Amr", "01212312312","October",5); INSERT INTO PERSON VALUES ("585694251165", "Samy Amr", "01013412341","Heliopolis",NULL); INSERT INTO PERSON VALUES ("656835612353", "Samer Mohsen", "01132231274", "Giza", NULL); INSERT INTO PERSON VALUES ("634654865869","Aya Ahmed", "01045634564","Dokki",NULL); INSERT INTO PERSON VALUES ("325565153253", "Anas Kfagy", "01241234132","Downtown",NULL); INSERT INTO PERSON VALUES ("734613566421", "Yara atef", "01122142122","Heliopolis",NULL); INSERT INTO PERSON VALUES ("622157535795", "Sara Ahmed", "01113830952", "Attaba", NULL); INSERT INTO PERSON VALUES ("759734532512", "Diaa Adel", "01141445208", "Ramsis", NULL); INSERT INTO PERSON VALUES ("793112232244", "Khaled alfath", "01523412312", "Maadi", NULL); INSERT INTO PERSON VALUES ("987353512224", "Said Ahmed", "01154563414","New Cairo",NULL); "01524161111","Ramsis",NULL); INSERT INTO PERSON VALUES ("222115423355", "Mona Tarek", INSERT INTO PERSON VALUES ("463566585435","Ashraf Taher", "01245235435","Maadi",NULL); "01586939322","New Cairo",NULL); INSERT INTO PERSON VALUES ("624234312233","Ali saad", INSERT INTO PERSON VALUES ("332444425444", "John atef", "01578669696", "Ramsis", NULL); INSERT INTO PERSON VALUES ("776444363252", "Tom hanks", "01222395993","Maadi",NULL); INSERT INTO PERSON VALUES ("886544441211", "Scarlet Gomes", "01012234232", "Heliopolis", NULL);

phpMyAdmii	←	<b>∮</b> Server	: 127.0.0.1	l » 🗍 Da	atal	oase: airpo	t » 📆	Table: pe	rson	, , ,		,,,,,,,,,	-,,		
<u> </u>		Browse	<b>№</b> St	ructure		■ SQL	9	Search	3-0	Insert	<b>■</b> E	xport	+-	Import	
Recent Favorites	+ Opf ← 7				$\nabla$	SSN		Name		Phon	e	Addre	ess	Owner_i	id
⊢ New		Edit	<b>≩</b> Copy	Dele	ete	12316574	8192	Shawn M	icheal	s 01012	2744003	New (	Cairo		1
airport		Edit	<b>≩</b> Copy	Dele	ete	22211542	3355	Mona Tar	ek	01524	161111	Rams	is	NUL	L.
New		🧷 Edit	<b>≩</b> Copy	Dele	ete	23412432	4132	Baher Ah	med	01124	541412	Ainsh	ams		4
airplane		Edit	<b>≟</b> Copy	Dele	ete	32556515	3253	Anas Kfa	gy	01241	234132	Down	town	NUL	L
employee		🥜 Edit	<b>≩</b> Copy	Dele	ete	33244442	5444	John atef		01578	8669696	Rams	is	NUL	L
<b>⊕</b> In flies		Edit	<b>≩</b> сору	Dele	ete	42134123	4123	Shawn C	ena	01112	312312	Maadi			2
flight_attendan		<i></i> € Edit	<b>≩</b> € Copy	Dele	ete	46356658	5435	Ashraf Ta	her	01245	235435	Maadi		NUL	L
hangar hangar maintain			<b>≩</b> Copy	Dele	ete	58569425	1165	Samy Am	nr	01013	3412341	Heliop	olis	NUL	L
+  owner			<b>∓</b> Copy	Dele	ete	62215753	5795	Sara Ahm	ned	01113	830952	Attaba	a	NUL	L
t- person			<b>∓÷</b> Copy	Dele	ete	62423431	2233	Ali saad		01586	939322	New 0	Cairo	NUL	L
⊕- <b>i</b> pilot			<b>⊒</b> Copy	Dele	ete	63465486	5869	Ava Ahme	ed	01045	634564	Dokki		NUL	L
plane_type	П	_				64365465					123111				3
service		_	,	_		65683561							,	NUL	1
technician						67856785					2312312		er	7,702	5
⊕-M works_on		-		_		73461356					142122			NUL	
+- forum				_		75973453					445208			NUL	
information_schen		_	,	_											
mydb mysql		_		_		77644436					2395993			NUL	
performance_sche		-		_		79311223					3412312			NUL	
phpmyadmin						88654444								NUL	
school 13   Page		<i></i> Edit	<b>∔</b> Copy	Dele	ete	98735351	2224	Said Ahm	ned	01154	563414	New (	Cairo	NUL	L



INSERT INTO EMPLOYEE VALUES ("585694251165",2000,"am",8); INSERT INTO EMPLOYEE VALUES ("656835612353",3000,"pm",10); INSERT INTO EMPLOYEE VALUES ("634654865869",1500,"am",6); INSERT INTO EMPLOYEE VALUES ("325565153253",8000,"am",10); INSERT INTO EMPLOYEE VALUES ("734613566421",4000,"pm",8); INSERT INTO EMPLOYEE VALUES ("622157535795",2000,"am",7); INSERT INTO EMPLOYEE VALUES ("622157535795",2000,"am",9); INSERT INTO EMPLOYEE VALUES ("759734532512",5000,"am",9); INSERT INTO EMPLOYEE VALUES ("9873535122244",4000,"pm",6); INSERT INTO EMPLOYEE VALUES ("987353512224",6000,"pm",7); INSERT INTO EMPLOYEE VALUES ("463566585435",1800,"am",9); INSERT INTO EMPLOYEE VALUES ("463566585435",1800,"am",9); INSERT INTO EMPLOYEE VALUES ("624234312233",2800,"am",8); INSERT INTO EMPLOYEE VALUES ("332444425444",1300,"pm",12); INSERT INTO EMPLOYEE VALUES ("776444363252",6500,"am",7); INSERT INTO EMPLOYEE VALUES ("776444363252",6500,"am",7); INSERT INTO EMPLOYEE VALUES ("886544441211",10000,"pm",10);



INSERT INTO TECHNICIAN VALUES ("585694251165", "Engine"); INSERT INTO TECHNICIAN VALUES ("656835612353", "Electrical"); INSERT INTO TECHNICIAN VALUES ("634654865869", "Mechanical"); INSERT INTO TECHNICIAN VALUES ("325565153253", "Electronic"); INSERT INTO TECHNICIAN VALUES ("734613566421", "Engine"); 🗐 Server: 127.0.0.1 » 🍵 Database: airport » 🔜 Table: technician 34 lr **Structure** SQL Search **Browse** Recent Favorites Showing rows 0 - 4 (5 total, Query took 0.0011 seconds.) New SELECT \* FROM `technician` airport 🛨 🎶 airplane 🖳 🖊 corporation Show all Number of rows: 25 Filter rows: 📆 🌃 employee flies + Options **Speciality** Emp ssn + 🋂 flight\_attendan Ø Edit 
 Edit 
 Copy Delete 325565153253 Electronic
 📆 🎶 hangar 📆 🎶 maintain +- / owner Ø Edit 
 Telefter
 Telefter
 Telefter
 Telefter
 Ø Edit 
 Telefter
 Telefter
 Telefter
 Telefter
 Telefter
 Deleter
 Osafeter
 Saland
 Telefter
 Deleter
 Osafeter
 Saland
 Telefter
 Deleter
 Osafeter
 Osafeter
 Deleter
 Deleter
 Osafeter
 Deleter
 +- / person Ø Edit 
 ☐ Copy ☐ Delete 656835612353 Electrical 🛨 - 🖊 pilot ⊕\_I plane\_type 🛨 🎶 service ☐ Check all With selected: 

☐ Edit **Till** Copy 🖳 📝 spoken\_langua technician **16** | Page

INSERT INTO PILOT VALUES ("622157535795", "36353532"); INSERT INTO PILOT VALUES ("759734532512","15345433"); INSERT INTO PILOT VALUES ("793112232244","46344355"); INSERT INTO PILOT VALUES ("987353512224", "53522255"); INSERT INTO PILOT VALUES ("222115423355", "75352353"); Server: 127.0.0.1 » 🗑 Database: airport » 🔚 Table: pilot Structure SQL Search Browse Recent Favorites Showing rows 0 - 4 (5 total, Query took 0.0015 seconds.) New SELECT \* FROM `pilot` airport 📲 🎶 airplane 📆 corporation Show all Number of rows: 25 Filter rows: 📆 employee + Options + / flies  $\leftarrow T \rightarrow$ License\_No Emp\_ssn 📲 🋂 flight\_attendan 📆 Mangar 🕂 🥢 maintain ∠ Edit → Copy 
Delete 622157535795 36353532 owner person / pilot 🧖 plane type **17** | Page

INSERT INTO FLIGHT\_ATTENDANT VALUES ("463566585435"); INSERT INTO FLIGHT\_ATTENDANT VALUES ("624234312233"); INSERT INTO FLIGHT ATTENDANT VALUES ("332444425444"); INSERT INTO FLIGHT ATTENDANT VALUES ("776444363252"); INSERT INTO FLIGHT ATTENDANT VALUES ("886544441211"); Server: 127.0.0.1 » 间 Database: airport » phpMyAdmi Structure SQL **Browse** Recent Favorites Showing rows 0 - 4 (5 total, Query took 0.0010 New SELECT \* FROM `flight attendant` airport New 🛨 🎶 airplane \_\_\_\_corporation Show all | Number of rows: 25 🛨 🎶 employee + Options + In flies Emp\_ssn + 🎶 flight attendan 🛨 🎶 hangar 🛨 🥢 maintain + James owner Ø Edit 
 ♣ Copy Opelete 624234312233 🛨 🎶 person +-- pilot 🐔 plane type **18** | Page

INSERT INTO SPOKEN\_LANGUAGE VALUES ("463566585435","English"); INSERT INTO SPOKEN\_LANGUAGE VALUES ("463566585435","Deutsch"); INSERT INTO SPOKEN LANGUAGE VALUES ("624234312233", "English"); INSERT INTO SPOKEN LANGUAGE VALUES ("624234312233", "French"); INSERT INTO SPOKEN\_LANGUAGE VALUES ("332444425444","English"); INSERT INTO SPOKEN LANGUAGE VALUES ("332444425444", "Spanish"); INSERT INTO SPOKEN\_LANGUAGE VALUES ("776444363252", "English"); INSERT INTO SPOKEN\_LANGUAGE VALUES ("776444363252","Italian"); INSERT INTO SPOKEN LANGUAGE VALUES ("886544441211", "English"); Server: 127.0.0.1 » Database: airport » R Table: spoker Structure SQL Search Browse Recent Favorites Showing rows 0 - 8 (9 total, Query took 0.0010 seconds.) New SELECT \* FROM `spoken\_language` airport 🕕 🎶 airplane • corporation ☐ Show all Number of rows: 25 Filter rows: 🛨 🋂 employee + Options + In flies  $\leftarrow T \rightarrow$ Emp ssn Language 🛨 🎶 flight attendan Ø Edit 

 The Copy 
 Delete 332444425444 English 🛨 🎶 hangar 🛨 🎶 maintain Ø Edit 

 Copy 
 Opelete 332444425444 Spanish +- owner Ø Edit № Copy Delete 463566585435 Deutsch +-- person Ø Edit 

 Copy 
 Delete 463566585435 English +-- pilot Ø Edit 
 The Copy 
 Ope Delete 624234312233 English ❶-M plane\_type +- / service 🛨 🋂 spoken\_langua Ø Edit 
 ☐ Copy Delete 776444363252 English +-- technician Ø Edit ♣ Copy Delete 776444363252 Italian +-- works on Ø Edit 
 ☐ Copy ☐ Delete 886544441211 English forum **19** | Page

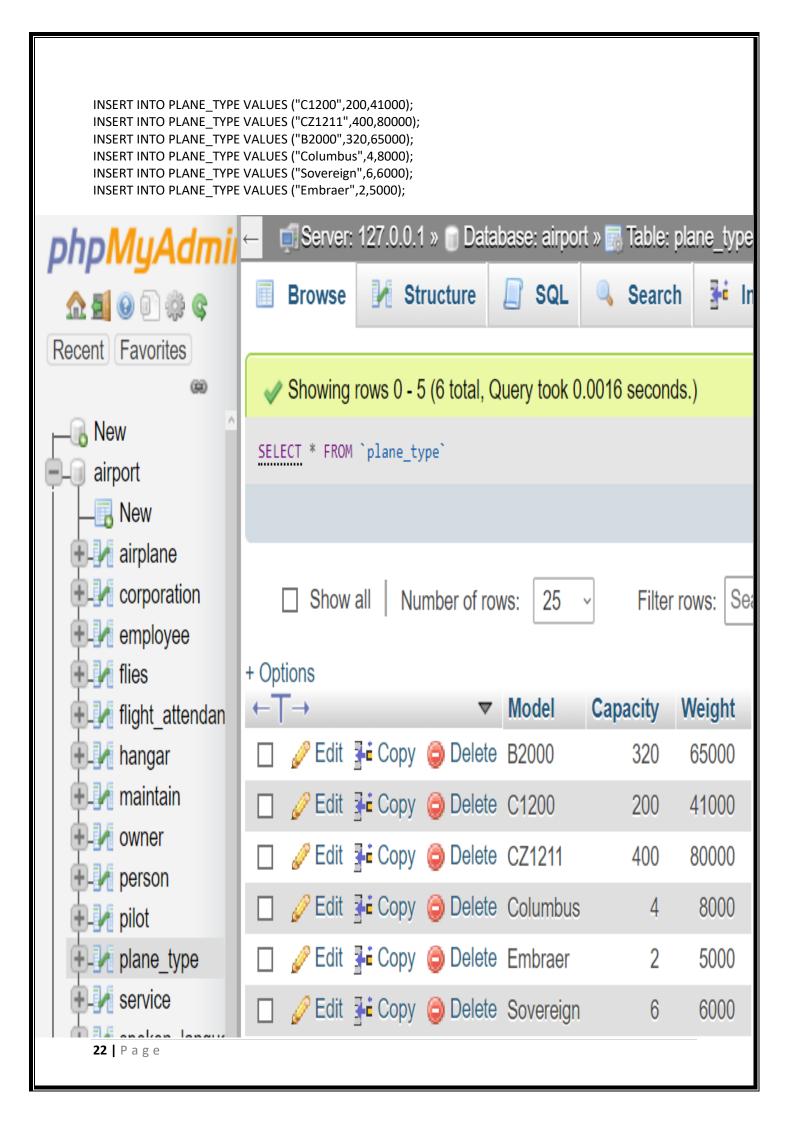
INSERT INTO CORPORATION VALUES ("EGYPTAIR","00222780987","Sheraton",6); INSERT INTO CORPORATION VALUES ("Aegean", "00223811813", "New Cairo", 7); INSERT INTO CORPORATION VALUES ("JetBlue", "00224234211", "Nasr City", 8); INSERT INTO CORPORATION VALUES ("Delta Air Lines", "00221414232", "Heliopolis", 9); INSERT INTO CORPORATION VALUES ("Frontier Airlines","00222113123", "New Capital",10); 📑 Server: 127.0.0.1 » 🗻 Database: airport » 🔜 Table: corporation lnsert : Structure SQL **Export Browse** Search Recent Favorites Showing rows 0 - 4 (5 total, Query took 0.0186 seconds.) New New SELECT \* FROM `corporation` airport 👍 New -M airplane corporation Filter rows: | Search this table ☐ Show all Number of rows: 25 📆 🌃 employee + Options + In flies  $+T\rightarrow$ Phone Address Owner id Name 📆 flight\_attendan 00223811813 New Cairo + / hangar + maintain 00221414232 Heliopolis +- owner 00222780987 Sheraton +- person 10 +--// pilot

🦉 Edit 🁫 Copy 🧔 Delete JetBlue

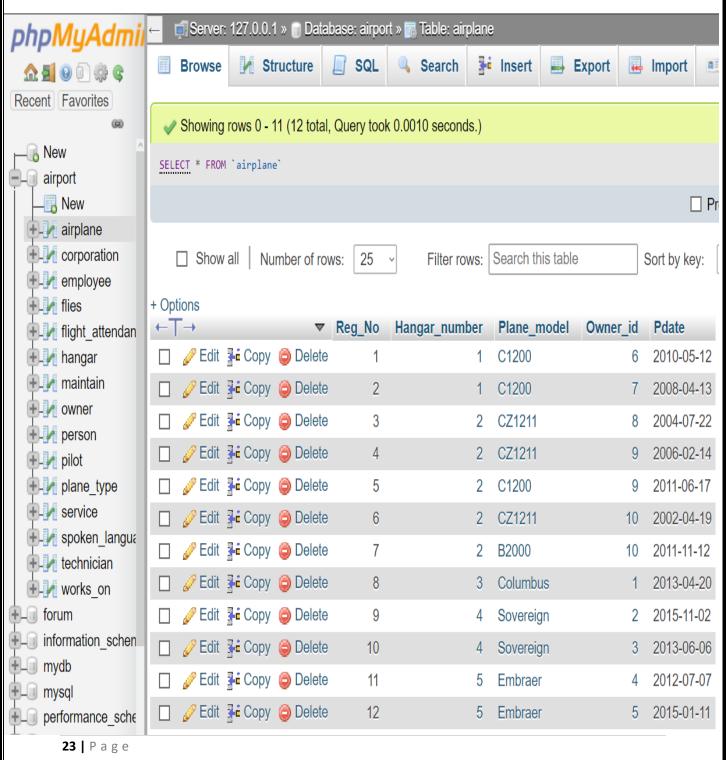
00224234211 Nasr City

📲 🎢 plane type

INSERT INTO HANGAR VALUES (Number, "Zone A1", 12); INSERT INTO HANGAR VALUES (Number, "Zone B1",11); INSERT INTO HANGAR VALUES (Number, "Zone C1", 12); INSERT INTO HANGAR VALUES (Number, "Zone D1",8); INSERT INTO HANGAR VALUES (Number, "Zone E1", 10); 🗐 Server: 127.0.0.1 » 🍵 Database: airport » 🔚 Table: hangar 👬 Ins Structure SQL Search Browse Recent Favorites Showing rows 0 - 4 (5 total, Query took 0.0015 seconds.) New SELECT \* FROM `hangar` airport 膈 New 🛂 airplane Corporation Show all Number of rows: 25 Sear Filter rows: 📆 employee + Options 🖊 flies  $\leftarrow T \rightarrow$ Number Location Capacity 🋂 flight\_attendan Ø Edit 
 ♣ Copy 
 ⑥ Delete Zone A1 12 🥢 hangar 🋂 maintain Zone B1 11 n owner Ø Edit 
 ♣ Copy 
 ⑥ Delete Zone C1 12 -M person 🧷 Edit 👫 Copy 🔘 Delete Zone D1 🆊 pilot Ø Edit 
 ♣ Copy 
 Opelete Zone E1 🌶 plane type 10 **21** | Page



INSERT INTO AIRPLANE VALUES (Reg\_No,1,"C1200",6,"2010-05-12");
INSERT INTO AIRPLANE VALUES (Reg\_No,1,"C1200",7,"2008-04-13");
INSERT INTO AIRPLANE VALUES (Reg\_No,2,"CZ1211",8,"2004-07-22");
INSERT INTO AIRPLANE VALUES (Reg\_No,2,"CZ1211",9,"2006-02-14");
INSERT INTO AIRPLANE VALUES (Reg\_No,2,"C1200",9,"2011-06-17");
INSERT INTO AIRPLANE VALUES (Reg\_No,2,"CZ1211",10,"2002-04-19");
INSERT INTO AIRPLANE VALUES (Reg\_No,2,"B2000",10,"2011-11-12");
INSERT INTO AIRPLANE VALUES (Reg\_No,3,"Columbus",1,"2013-04-20");
INSERT INTO AIRPLANE VALUES (Reg\_No,4,"Sovereign",2,"2015-11-2");
INSERT INTO AIRPLANE VALUES (Reg\_No,4,"Sovereign",3,"2013-6-6");
INSERT INTO AIRPLANE VALUES (Reg\_No,5,"Embraer",4,"2012-7-7");
INSERT INTO AIRPLANE VALUES (Reg\_No,5,"Embraer",5,"2015-1-11");



```
INSERT INTO FLIES VALUES ("622157535795", "C1200");
     INSERT INTO FLIES VALUES ("622157535795", "B2000");
     INSERT INTO FLIES VALUES ("793112232244","C1200");
     INSERT INTO FLIES VALUES ("987353512224", "CZ1211");
     INSERT INTO FLIES VALUES ("987353512224", "B2000");
     INSERT INTO FLIES VALUES ("759734532512", "Columbus");
     INSERT INTO FLIES VALUES ("759734532512", "Sovereign");
     INSERT INTO FLIES VALUES ("759734532512", "Embraer");
     INSERT INTO FLIES VALUES ("222115423355", "Sovereign");
     INSERT INTO FLIES VALUES ("222115423355", "Embraer");
                            🗐 Server: 127.0.0.1 » 🍵 Database: airport » 🔜 Table: flies
phpMyAdn
                                       Structure
                             Browse
                                                           SQL
                                                                       Search
  Recent Favorites
                           Showing rows 0 - 9 (10 total, Query took 0.0011 seconds.)
   New
                          SELECT * FROM `flies`
   airport
     R New
     🛂 airplane
     Corporation
                            ☐ Show all | Number of rows:
                                                            25
                                                                        Filter row
   🖳 🌃 employee
                        + Options
    F_ flies
                                                        Emp ssn
                                                                      Model
   + 4 flight attendan

    Ø Edit 
    ♣ Copy  Delete 222115423355 Embraer

   📆 Mangar
   📆 🌃 maintain

∠ Edit → Copy 
 Delete 222115423355 Sovereign

   + person

∠ Edit → Copy  Delete 622157535795 C1200

   🗗 🎶 plane type

    Ø Edit 
    ♣ Copy 
    Operation Delete 759734532512 Columbus

↓ service

    Ø Edit 
    ☐ Copy    ☐ Delete 759734532512 Embraer

     🋂 spoken langua

    Ø Edit 
    ♣ Copy   Delete 759734532512 Sovereign

   🖳 🚧 technician

∠ Edit → Copy  Delete 793112232244 C1200

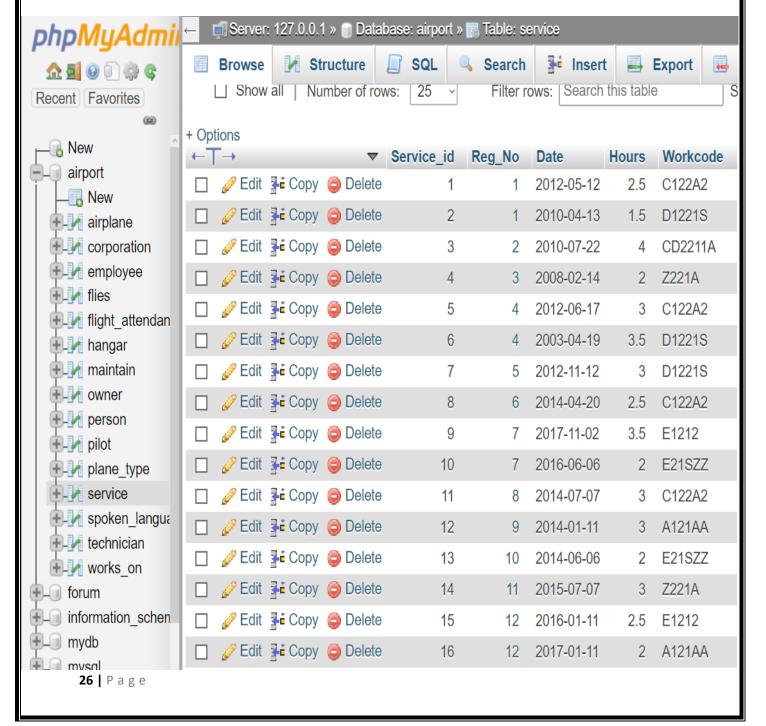
   🛨 🎶 works on
     forum
                              information_schen
                             mydh
     24 | Page
```

INSERT INTO WORKS\_ON VALUES ("463566585435",1); INSERT INTO WORKS\_ON VALUES ("463566585435",2); INSERT INTO WORKS ON VALUES ("624234312233",3); INSERT INTO WORKS ON VALUES ("332444425444",3); INSERT INTO WORKS\_ON VALUES ("332444425444",4); INSERT INTO WORKS ON VALUES ("776444363252",5); INSERT INTO WORKS\_ON VALUES ("886544441211",6); INSERT INTO WORKS\_ON VALUES ("886544441211",7); INSERT INTO WORKS ON VALUES ("886544441211",10); Server: 127.0.0.1 » 🗐 Database: airport » 🔜 Table: worl phpMyAdmii⊆ Structure SQL Search Browse Recent Favorites Showing rows 0 - 8 (9 total, Query took 0.0904 seconds.) - New SELECT \* FROM `works\_on` airport + 🎶 airplane • corporation ☐ Show all Number of rows: 25 Filter row 🖭 🋂 employee 📆 🖊 flies + Options Emp ssn Reg No 🛨 🋂 flight\_attendan + M hangar 🛨 🎶 maintain 4 +-- owner ∠ Edit 
→ Copy 
→ Delete 463566585435 1 +-- person +-- pilot ⊕₋₩ plane\_type 3 +- service Ø Edit 
 ☐ Copy ☐ Delete 776444363252 5 🛨 🋂 spoken\_langua 🛨 🎶 technician Ø Edit 

Copy 

Delete 886544441211 +-- works on forum 10 **25** | Page

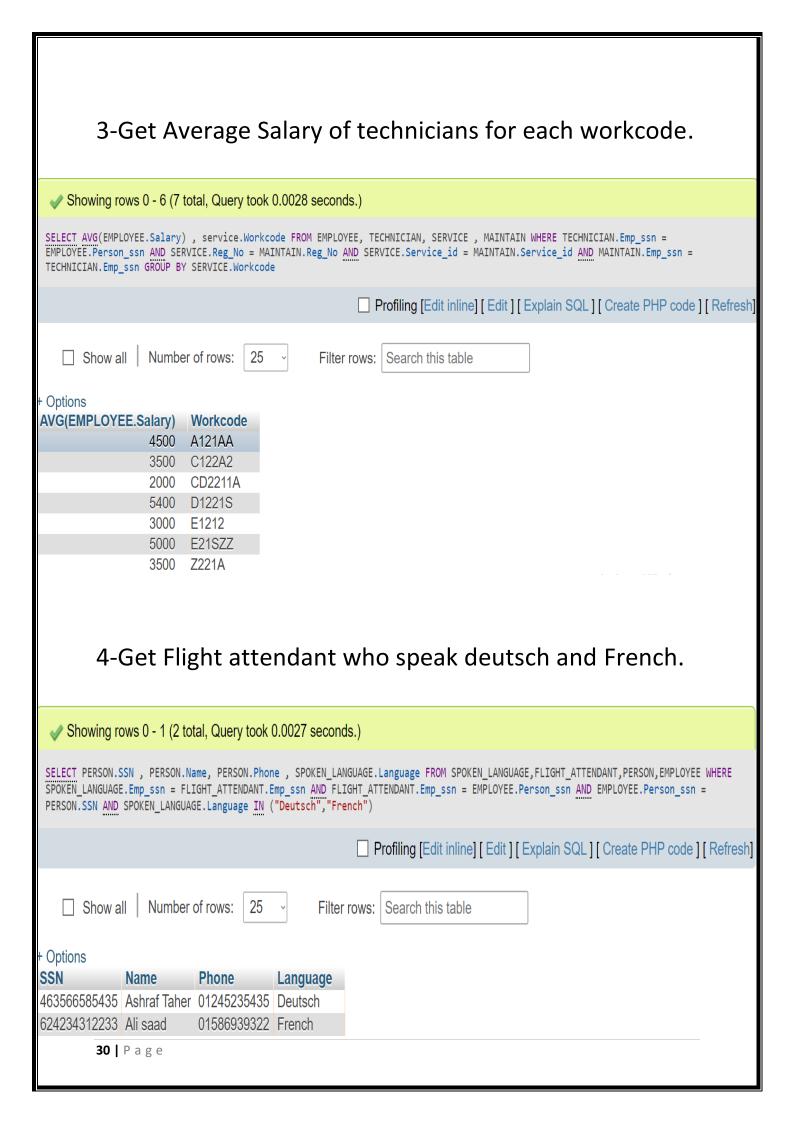
```
INSERT INTO SERVICE VALUES (Service_id,1,"2012-05-12",2.5,"C122A2");
INSERT INTO SERVICE VALUES (Service_id,1,"2010-04-13",1.5,"D1221S");
INSERT INTO SERVICE VALUES (Service id,2,"2010-07-22",4,"CD2211A");
INSERT INTO SERVICE VALUES (Service id,3,"2008-02-14",2,"Z221A");
INSERT INTO SERVICE VALUES (Service_id,4,"2012-06-17",3,"C122A2");
INSERT INTO SERVICE VALUES (Service id,4,"2003-04-19",3.5,"D1221S");
INSERT INTO SERVICE VALUES (Service_id,5,"2012-11-12",3,"D1221S");
INSERT INTO SERVICE VALUES (Service_id,6,"2014-04-20",2.5,"C122A2");
INSERT INTO SERVICE VALUES (Service id,7,"2017-11-02",3.5,"E1212");
INSERT INTO SERVICE VALUES (Service_id,7,"2016-06-06",2,"E21SZZ");
INSERT INTO SERVICE VALUES (Service_id,8,"2014-07-07",3,"C122A2");
INSERT INTO SERVICE VALUES (Service_id,9,"2014-01-11",3,"A121AA");
INSERT INTO SERVICE VALUES (Service id,10,"2014-06-06",2,"E21SZZ");
INSERT INTO SERVICE VALUES (Service_id,11,"2015-07-07",3,"Z221A");
INSERT INTO SERVICE VALUES (Service id,12,"2016-01-11",2.5,"E1212");
INSERT INTO SERVICE VALUES (Service id,12,"2017-01-11",2,"A121AA");
```



INSERT INTO MAINTAIN VALUES ("585694251165",1,1); INSERT INTO MAINTAIN VALUES ("656835612353",1,1); INSERT INTO MAINTAIN VALUES ("656835612353",1,2); INSERT INTO MAINTAIN VALUES ("325565153253",1,2); INSERT INTO MAINTAIN VALUES ("734613566421",1,2); INSERT INTO MAINTAIN VALUES ("585694251165",2,3); INSERT INTO MAINTAIN VALUES ("656835612353",3,4); INSERT INTO MAINTAIN VALUES ("634654865869",4,5); INSERT INTO MAINTAIN VALUES ("325565153253",4,6); INSERT INTO MAINTAIN VALUES ("734613566421",5,7); INSERT INTO MAINTAIN VALUES ("325565153253",6,8); INSERT INTO MAINTAIN VALUES ("734613566421",7,9); INSERT INTO MAINTAIN VALUES ("585694251165",7,10); INSERT INTO MAINTAIN VALUES ("656835612353",8,11); INSERT INTO MAINTAIN VALUES ("634654865869",9,12); INSERT INTO MAINTAIN VALUES ("325565153253",10,13); INSERT INTO MAINTAIN VALUES ("734613566421",11,14); INSERT INTO MAINTAIN VALUES ("585694251165",12,15); INSERT INTO MAINTAIN VALUES ("656835612353",12,15); INSERT INTO MAINTAIN VALUES ("325565153253",12,16); INSERT INTO MAINTAIN VALUES ("734613566421",12,16);

phpMyAdmii	←	🧐 Server	. 127.0.0.	1 » 🧻 Data	base: airport » 📊	Table: ma	intain
⚠ 🗐 🥹 🚭 Recent Favorites		Browse ☐ Show		tructure umber of rov	<b>SQL Q</b> ws: 25 ✓	Search Filter ro	Insert  Ws: Search this
New	+ Opf ←7			$\triangledown$	Emp_ssn	Reg_No	Service_id
airport New		🥜 Edit	<b>3-</b> Сору	Delete	325565153253	1	2
• Acw		Ø Edit	<b>≩</b> Сору	Delete	325565153253	4	6
corporation		Edit	<b>3 ≟</b> Copy	Delete	325565153253	6	8
employee			<b>≟</b> Copy	Delete	325565153253	10	13
flies flight_attendar		<i></i> €dit	<b>3</b> -i Copy	Delete	325565153253	12	16
⊕ M hangar			<b>≩</b> Copy	Delete	585694251165	1	1
maintain		Edit	<b>3</b> - Сору	Delete	585694251165	2	3
e owner person		<i></i> € Edit	<b>≩</b> Сору	Delete	585694251165	7	10
polson		<i></i> €dit	<b>3</b> Сору	Delete	585694251165	12	15
●-M plane_type			<b>≩</b> Сору	Delete	634654865869	4	5
service spoken_langu		<i></i> €dit	<b>3</b> € Сору	Delete	634654865869	9	12
technician			<b>≩</b> Сору	Delete	656835612353	1	1
⊕-M works_on			<b>3</b> € Сору	Delete	656835612353	1	2
forum			<b>3</b> сору	Delete	656835612353	3	4
information_scher mydb		<i></i> €dit	<b>3</b> - Сору	Delete	656835612353	8	11
● mysql		<i></i>	<b>3</b> -i Copy	Delete	656835612353	12	15
performance_sche			<b>3</b> -i Copy	Delete	734613566421	1	2
phpmyadmin school		Edit	<b>≟</b> Copy	Delete	734613566421	5	7
⊕ _ schoolh		Edit	<b>3</b> - Copy	Delete	734613566421	7	9
service advertising		Edit	<b>Т</b> Сору	Delete	734613566421	11	14
test trial1 28   Page		<i></i> € Edit	Сору	Delete	734613566421	12	16

## **SELECT QUERIES** 1-Get Pilots who fly plane model "B200". ✓ Showing rows 0 - 1 (2 total, Query took 0.0212 seconds.) SELECT PERSON.SSN , PERSON.Name, PERSON.Phone, EMPLOYEE.Salary, PILOT.License\_No FROM FLIES,PILOT,PERSON,EMPLOYEE,PLANE\_TYPE WHERE FLIES.Emp ssn = PILOT.Emp ssn AND FLIES.Model = PLANE\_TYPE.Model AND PILOT.Emp\_ssn = EMPLOYEE.Person\_ssn AND EMPLOYEE.Person\_ssn = PERSON.SSN AND PLANE TYPE.Model = "B2000" Profiling [Edit inline] [Edit ] [Explain SQL] [Create PHP code] [Refresh] Filter rows: Search this table ☐ Show all Number of rows: 25 + Options SSN Name Phone Salary License\_No 2000 36353532 622157535795 Sara Ahmed 01113830952 987353512224 Said Ahmed 01154563414 6000 53522255 2-Get Airplanes and their owners that exist in hangar number "4" and order them by their owner name. ✓ Showing rows 0 - 1 (2 total, Query took 0.0026 seconds.) SELECT AIRPLANE.Reg No, Person.Name,AIRPLANE.Plane model FROM AIRPLANE,HANGAR,OWNER,PERSON WHERE HANGAR.Number = AIRPLANE.Hangar number AND AIRPLANE.Owner id = OWNER.Owner id AND OWNER.Owner id = PERSON.Owner id AND HANGAR.Number = 4 ORDER BY person.Name Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh] ☐ Show all Number of rows: Filter rows: | Search this table + Options Plane\_model Reg No Name 10 Eslam Tarek Sovereign 9 Shawn Cena Sovereign **29** | Page



5-Get Corporations name that have more than one airplane. ✓ Showing rows 0 - 0 (1 total, Query took 0.0027 seconds.) SELECT PERSON.SSN , PERSON.Name, PERSON.Phone FROM WORKS\_ON,FLIGHT\_ATTENDANT,PERSON,EMPLOYEE,AIRPLANE WHERE WORKS\_ON.Emp\_ssn = FLIGHT\_ATTENDANT.Emp\_ssn AND WORKS\_ON.Reg\_No = AIRPLANE.Reg\_No AND FLIGHT\_ATTENDANT.Emp\_ssn = EMPLOYEE.Person\_ssn AND EMPLOYEE.Person\_ssn = PERSON.SSN AND AIRPLANE.Plane\_model = "Sovereign" Profiling [Edit inline] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh] Filter rows: | Search this table ☐ Show all Number of rows: 25 + Options **▽** SSN  $\leftarrow T \rightarrow$ Name Phone 6-Get flight attendants who work on plane model "Sovereign SELECT CORPORATION.Name FROM CORPORATION, OWNER, AIRPLANE WHERE CORPORATION.Owner\_id = OWNER.Owner\_id AND AIRPLANE.Owner\_id = OWNER.Owner\_id GROUP BY OWNER.Owner\_id HAVING count(\*) >1 Profiling [Edit inline] [ Edit ] [ Explain SQL ] [ Create PHP code ] [ Refresh] Show all Number of rows: Filter rows: | Search this table - Options Name 🧷 Edit 👫 Copy 🥚 Delete Delta Air Lines Ø Edit 
 ☐ Copy 
 ☐ Delete Frontier Airlines **31 |** Page