**Homework 1**

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**Q1:**

CREATE TABLE `city`(

`id` INT(4) NOT NULL,

`city` VARCHAR(32),

`state` VARCHAR(32),

`country` VARCHAR(32),

PRIMARY KEY(`id`)

);

CREATE TABLE `planes`(

`plane-number` INT(8) NOT NULL,

`model` VARCHAR(32),

`capacity` VARCHAR(32),

`create-year` YEAR(4),

PRIMARY KEY(`plane-number`)

);

CREATE TABLE `pilot`(

`ssn` INT(16) NOT NULL,

`home-city` INT(4),

`fullname` VARCHAR(32),

`day-of-birth` INT(2),

`month-of-birth` INT(2),

`year-of-birth` INT(4),

`salary` DOUBLE(8, 2),

PRIMARY KEY(`ssn`),

FOREIGN KEY(`home-city`) REFERENCES `city`(`id`)

);

CREATE TABLE `flight`(

`flight-number` VARCHAR(16) NOT NULL,

`captain-ssn` INT(16),

`plane-number` INT(8),

`takeoff-city` INT(4),

`landing-city` INT(4),

`time-takeoff` VARCHAR(32),

`time-landing` VARCHAR(32),

PRIMARY KEY(`flight-number`),

FOREIGN KEY(`captain-ssn`) REFERENCES `pilot`(`ssn`),

FOREIGN KEY(`takeoff-city`) REFERENCES `city`(`id`),

FOREIGN KEY(`landing-city`) REFERENCES `city`(`id`),

FOREIGN KEY(`plane-number`) REFERENCES `planes`(`plane-number`)

);

**Q2:**

SELECT DISTINCT

`city`

FROM

`city`

WHERE

`country` = 'Germany'

**Q3:**

SELECT DISTINCT

`fullname`

FROM

`pilot`

WHERE

`home-city` IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'Germany'

)

**Q4:**

SELECT

`fullname`

FROM

`pilot`

WHERE

`ssn` IN(

SELECT DISTINCT

`captain-ssn`

FROM

`flight`

WHERE

`landing-city` IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'Germany'

) OR `takeoff-city` IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'Germany'

)

)

**Q5:**

SELECT DISTINCT

`model`

FROM

`planes`

WHERE

`planes`.`plane-number` IN(

SELECT

`plane-number`

FROM

`flight`

WHERE

`takeoff-city` IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'USA'

)

) AND `planes`.`plane-number` IN(

SELECT

`plane-number`

FROM

`flight`

WHERE

`landing-city` IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'USA'

)

)

**Q6:**

SELECT

`model`

FROM

`planes`

WHERE

`plane-number` IN(

SELECT

`plane-number`

FROM

`flight`

WHERE

`takeoff-city` IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'USA'

) AND `landing-city` NOT IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'USA'

)

) OR `plane-number` IN(

SELECT

`plane-number`

FROM

`flight`

WHERE

`takeoff-city` NOT IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'USA'

) AND `landing-city` IN(

SELECT

`id`

FROM

`city`

WHERE

`country` = 'USA'

)

)

**Q7:**

1. BC
2. BC, AD

**Q8:**

1. 15
2. Find all the information (fight, planes and city) of flights which takeoff from Pittsburgh.

Do selection before union.

1. SELECT \* FROM `city`, `flight`, `planes` WHERE `city`.`city` = 'Pittsburgh' AND `city`.`id` = `flight`.`takeoff-city` AND `flight`.`plane-number` = `planes`.`plane-number`