Databases: Exercises 6 (18p/18p)

Task 1 [3p/3p]

Create Personsa database table named Create with columns

Create `Persons`*a database table named Create with columns*

- `hetu`*, a fixed-size string of 11 characters, the primary key*
- `sukunimi`*, variable-sized string max 64 characters, mandatory*
- `etunimi`*, variable-sized string max 64 characters, mandatory*
- `email`*, variable size string max 128 characters, is not mandatory, but you cannot store two exactly the same email addresses*
- `biologinen_sukupuoli`*, variable-sized string max 32 characters, mandatory. Allowed values are only* `mies`, `nainen`, `intersukupuolinen`.
- `fobia`*, variable size string max 64 characters, mandatory, default value is*`hippopotomonstrosesquippedaliofobia`

The answer to this task should return the SQL statement to create the table, as well as the `desc Persons`*printout of the command and any additional comments.*

ANSWER

CHAR(size)	A FIXED length string (can contain letters, numbers, and special characters). The size parameter specifies the column length in characters - can be from 0 to 255. Default is 1
VARCHAR(size)	A VARIABLE length string (can contain letters, numbers, and special characters). The size parameter specifies the maximum string length in characters - can be from 0 to 65535

SQL NOT NULL Constraint

By default, a column can hold NULL values.

The `NOT NULL` constraint enforces a column to NOT accept NULL values.

SQL PRIMARY KEY Constraint

The `PRIMARY KEY` constraint uniquely identifies each record in a table.

Primary keys must contain UNIQUE values, and cannot contain NULL values.

A table can have only ONE primary key; and in the table, this primary key can consist of single or multiple columns (fields).

SQL DEFAULT Constraint

The `DEFAULT` constraint is used to set a default value for a column.

The default value will be added to all new records, if no other value is specified.

SQL CHECK Constraint

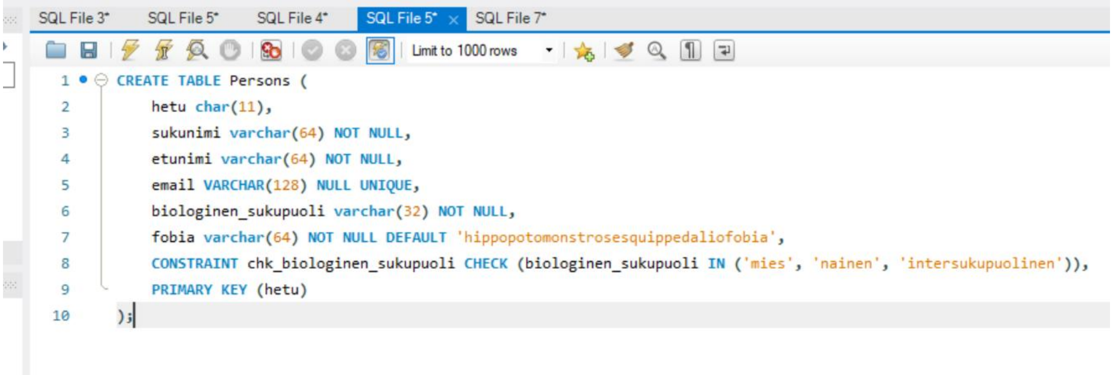
The CHECK constraint is used to limit the value range that can be placed in a column.

If you define a CHECK constraint on a column it will allow only certain values for this column.

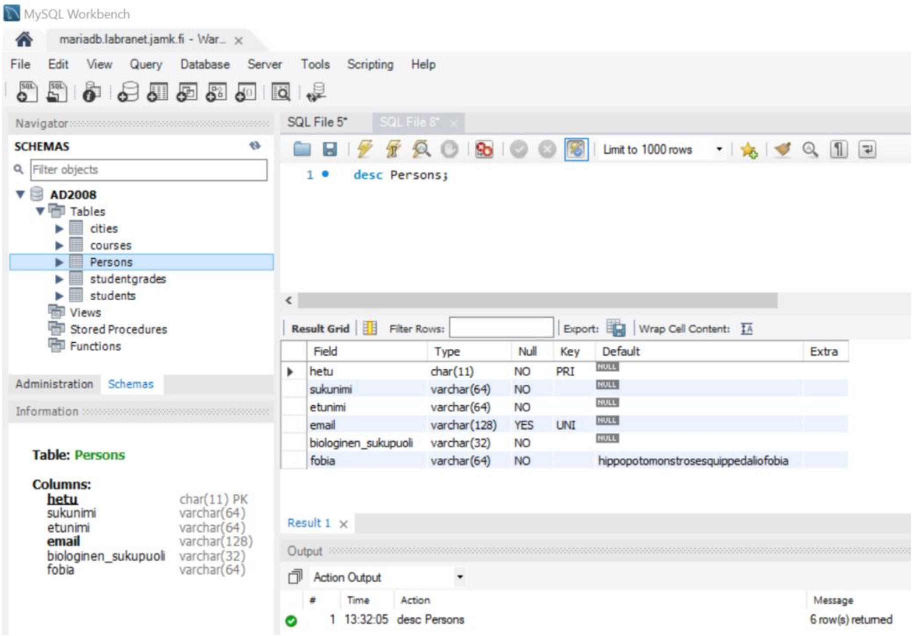
If you define a CHECK constraint on a table it can limit the values in certain columns based on values in other columns in the row.

SQL UNIQUE Constraint

The UNIQUE constraint ensures that all values in a column are different.



```
CREATE TABLE Persons (
    hetu char(11),
    sukunimi varchar(64) NOT NULL,
    etunimi varchar(64) NOT NULL,
    email VARCHAR(128) NULL UNIQUE,
    biologinen_sukupuoli varchar(32) NOT NULL,
    fobia varchar(64) NOT NULL DEFAULT 'hippopotomonstrosesquippedaliofobia',
    CONSTRAINT chk_biologinen_sukupuoli CHECK (biologinen_sukupuoli IN ('mies', 'nainen', 'intersukupuolinen')),
    PRIMARY KEY (hetu)
);
```



```
desc Persons;
```

Table: Persons

Columns:

hetu	char(11) PK
sukunimi	varchar(64)
etunimi	varchar(64)
email	varchar(128)
biologinen_sukupuoli	varchar(32)
fobia	varchar(64)

Field	Type	Null	Key	Default	Extra
hetu	char(11)	NO	PRI	NULL	
sukunimi	varchar(64)	NO		NULL	
etunimi	varchar(64)	NO		NULL	
email	varchar(128)	YES	UNI	NULL	
biologinen_sukupuoli	varchar(32)	NO		NULL	
fobia	varchar(64)	NO		hippopotomonstrosesquippedaliofobia	

	#	Time	Action	Message
✓	1	13:32:05	desc Persons	6 row(s) returned

Task 2 [3p/3p]

Question:

Add the content INSERT INTO to the task 1 Personsboard with -sentences. Vainio Vilja's phobia should be recorded without writing it in your visible INSERT INTO sentence

ANSWER

The SQL INSERT INTO Statement

The `INSERT INTO` statement is used to insert new records in a table.

INSERT INTO Syntax

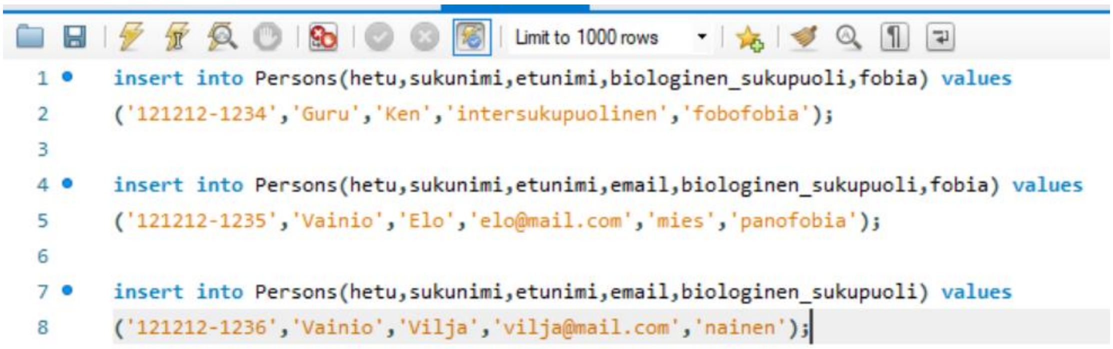
It is possible to write the `INSERT INTO` statement in two ways:

1. Specify both the column names and the values to be inserted:

```
INSERT INTO table_name (column1, column2, column3, ...)
VALUES (value1, value2, value3, ...);
```

2. If you are adding values for all the columns of the table, you do not need to specify the column names in the SQL query. However, make sure the order of the values is in the same order as the columns in the table. Here, the `INSERT INTO` syntax would be as follows:

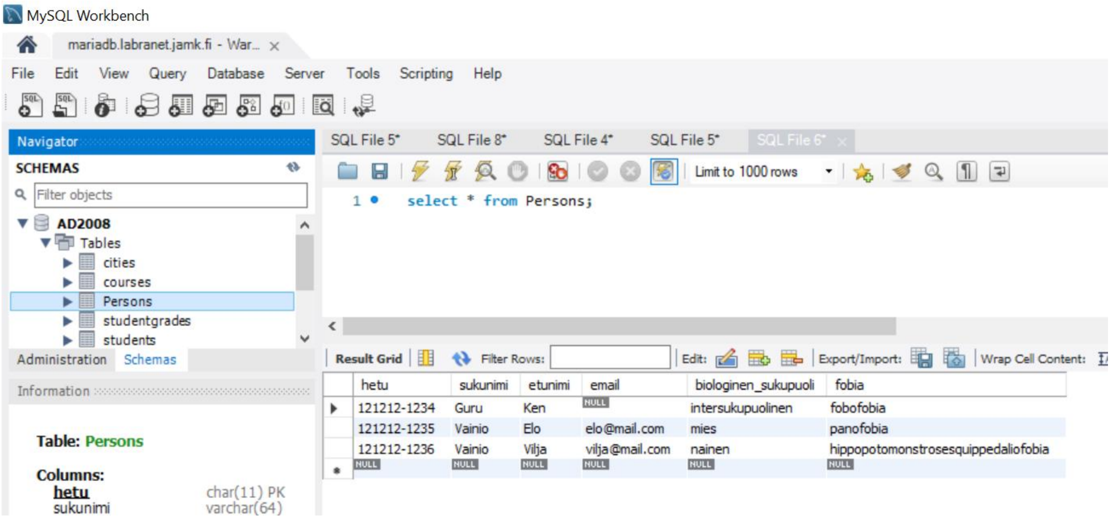
```
INSERT INTO table_name
VALUES (value1, value2, value3, ...);
```



```
insert into Persons(hetu,sukunimi,etunimi,biologinen_sukupuoli,fobia) values
('121212-1234','Guru','Ken','intersukupuolinen','fobofobia');

insert into Persons(hetu,sukunimi,etunimi,email,biologinen_sukupuoli,fobia) values
('121212-1235','Vainio','Elo','elo@mail.com','mies','panofobia');

insert into Persons(hetu,sukunimi,etunimi,email,biologinen_sukupuoli) values
('121212-1236','Vainio','Vilja','vilja@mail.com','nainen');
```


MySQL Workbench
mariadb.labranet.jamk.fi - War...
File Edit View Query Database Server Tools Scripting Help
Navigator
SCHEMAS
Filter objects
AD2008
Tables
cities
courses
Persons
studentgrades
students
Administration Schemas
Information
SQL File 5* SQL File 8* SQL File 4* SQL File 5* SQL File 6*
Limit to 1000 rows
Result Grid Filter Rows: Edit: Export/Import: Wrap Cell Content:

```
select * from Persons;
```

	hetu	sukunimi	etunimi	email	biologinen_sukupuoli	fobia
▶	121212-1234	Guru	Ken	NULL	intersukupuolinen	fobofobia
	121212-1235	Vainio	Elo	elo@mail.com	mies	panofobia
	121212-1236	Vainio	Vilja	vilja@mail.com	nainen	hippopotomonstrosesquippedaliofobia
*	NULL	NULL	NULL	NULL	NULL	NULL

Table: Persons

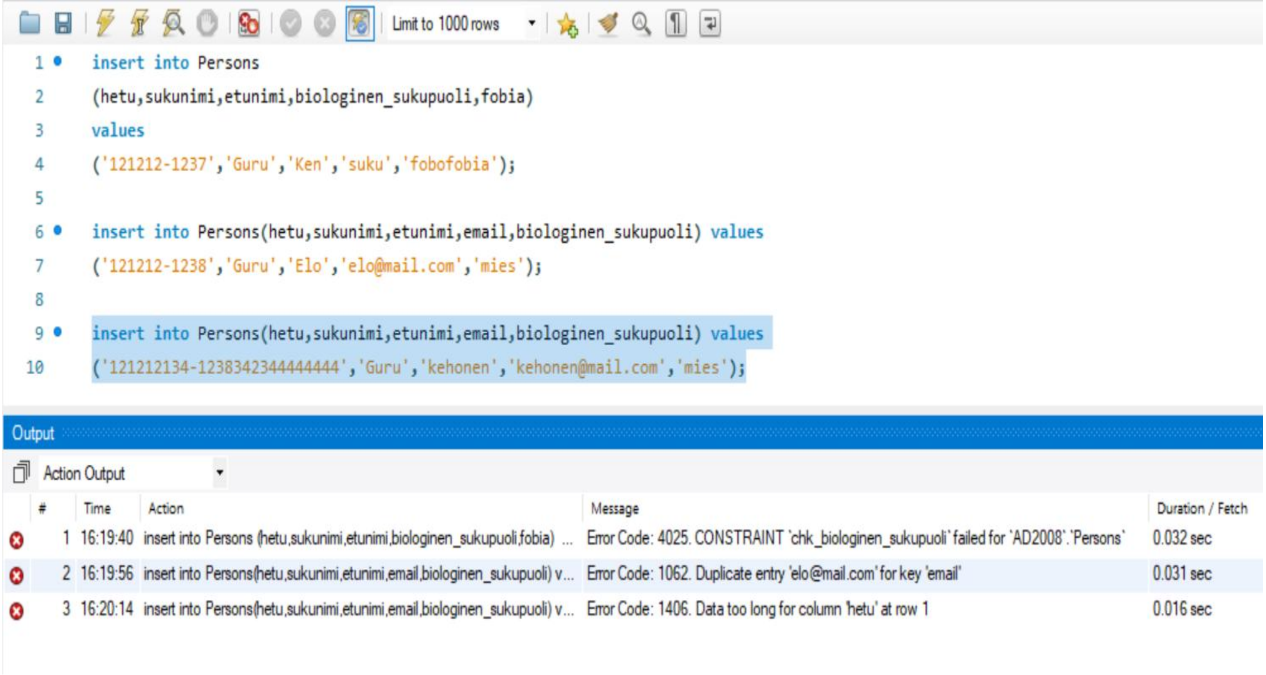
Columns:

hetu	char(11) PK
sukunimi	varchar(64)

Indicate INSERT INTOwith -clauses that Personsyou cannot add rows to the -table

A. sukupuoliis not among the allowed genders
B. emailis exactly the same as someone already saved on the board
C. hetu is too tall.

The above insert into clauses shows error which is in the screenshot



```
insert into Persons
(hetu,sukunimi,etunimi,biologinen_sukupuoli,fobia)
values
('121212-1237','Guru','Ken','suku','fobofobia');

insert into Persons(hetu,sukunimi,etunimi,email,biologinen_sukupuoli) values
('121212-1238','Guru','Elo','elo@mail.com','mies');

insert into Persons(hetu,sukunimi,etunimi,email,biologinen_sukupuoli) values
('121212134-1238342344444444','Guru','kehonen','kehonen@mail.com','mies');
```

#	Time	Action	Message	Duration / Fetch
1	16:19:40	insert into Persons (hetu,sukunimi,etunimi,biologinen_sukupuoli,fobia) ...	Error Code: 4025. CONSTRAINT `chk_biologinen_sukupuoli` failed for `AD2008`.`Persons`	0.032 sec
2	16:19:56	insert into Persons(hetu,sukunimi,etunimi,email,biologinen_sukupuoli) v...	Error Code: 1062. Duplicate entry 'elo@mail.com' for key 'email'	0.031 sec
3	16:20:14	insert into Persons(hetu,sukunimi,etunimi,email,biologinen_sukupuoli) v...	Error Code: 1406. Data too long for column 'hetu' at row 1	0.016 sec

Task 3 [6p/6p]

create a table PhoneManufacturers with columns

(1A) id, integer, auto-increment column, required, primary key
(1B) manufacturer, variable size string max 32 characters, mandatory

ANSWER

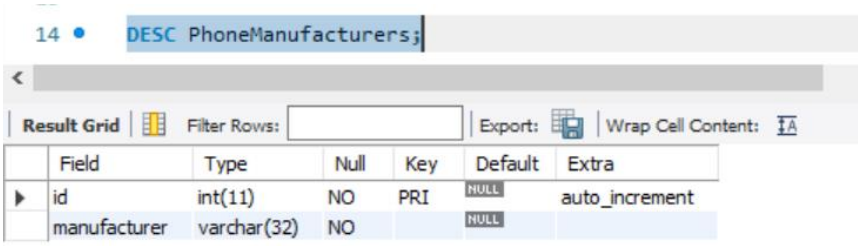
- AUTO INCREMENT Field

Auto-increment allows a unique number to be generated automatically when a new record is inserted into a table.

- Often this is the primary key field that we would like to be created automatically every time a new record is inserted.

```
CREATE TABLE PhoneManufacturers (
   id int NOT NULL AUTO_INCREMENT,
   manufacturer varchar(32) NOT NULL,
   PRIMARY KEY (id)
);
```

The below screenshot shows the PhoneManufacturers table is created



```
DESC PhoneManufacturers;
```

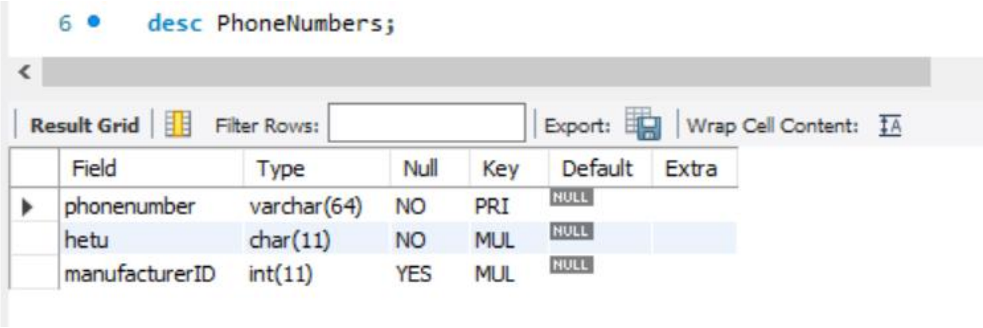
Field	Type	Null	Key	Default	Extra
id	int(11)	NO	PRI	NULL	auto_increment
manufacturer	varchar(32)	NO		NULL	

(2A) phonenumber, variable size string max 64 characters, mandatory, primary key
(2B) hetu, a fixed-size string of 11 characters, required. This column acts as a reference key to the table Personscolumn hetu(primary key). The cascading rule is to prohibit both DELETE and UPDATE operations from deleting/changing persons in the parent board that have phone numbers.
(2C) manufacturerID, integer, not required, default NULL. This column acts as a reference key to the table PhoneManufacturerscolumn id(primary key). The rolling rule is for both DELETE and UPDATE operations to set the manufacturer of the parent board to NULL when you are deleting/changing the data of a manufacturer that has phone numbers attached to it.

ANSWER

```
CREATE TABLE PhoneNumbers (
   phonenumber varchar(64) NOT NULL,
   hetu char(11) NOT NULL,
   manufacturerID INT NULL,
   PRIMARY KEY (phonenumber),
   FOREIGN KEY (hetu) REFERENCES Persons (hetu)
   ON DELETE NO ACTION
   ON UPDATE NO ACTION,
   FOREIGN KEY (manufacturerID) REFERENCES PhoneManufacturers (id)
   ON DELETE SET NULL
   ON UPDATE SET NULL
);
```

The below screenshot shows the PhoneNumbers table is created



```
desc PhoneNumbers;
```

	Field	Type	Null	Key	Default	Extra
▶	phonenumber	varchar(64)	NO	PRI	NULL	
	hetu	char(11)	NO	MUL	NULL	
	manufacturerID	int(11)	YES	MUL	NULL	

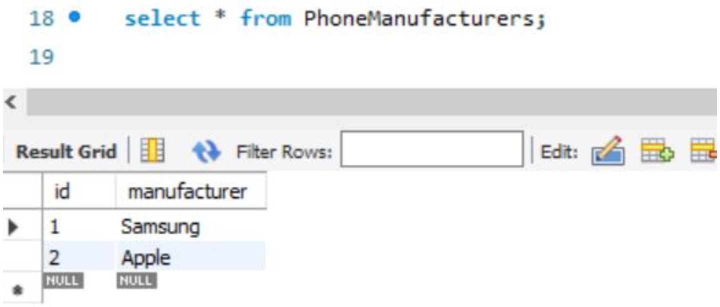
Add INSERT INTOto the board PhoneManufacturersphone manufacturer Samsung and Apple. Add a Samsung phone with numbers to the person Ken Guru. Add the phones with numbers for the persons Elo Vainio and Vilja Vainio, whose manufacturer is Apple.

ANSWER

insert into PhoneManufacturers(manufacturer) values
('Samsung');

insert into PhoneManufacturers(manufacturer) values
('Apple');

The below screenshot shows the PhoneManufacturers table with inserted values



```
select * from PhoneManufacturers;
```

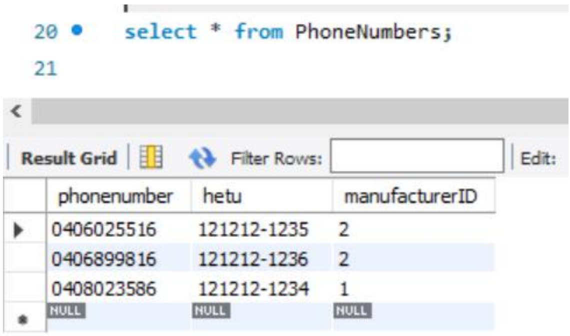
	id	manufacturer
▶	1	Samsung
	2	Apple
*	NULL	NULL

insert into PhoneNumbers(phonenumber,hetu,manufacturerID) values
('0408023586','121212-1234','1');

insert into PhoneNumbers(phonenumber,hetu,manufacturerID) values
('0406025516','121212-1235','2');

insert into PhoneNumbers(phonenumber,hetu,manufacturerID) values
('0406899816','121212-1236','2');

The below screenshot shows the PhoneNumbers table with inserted values



```
select * from PhoneNumbers;
```

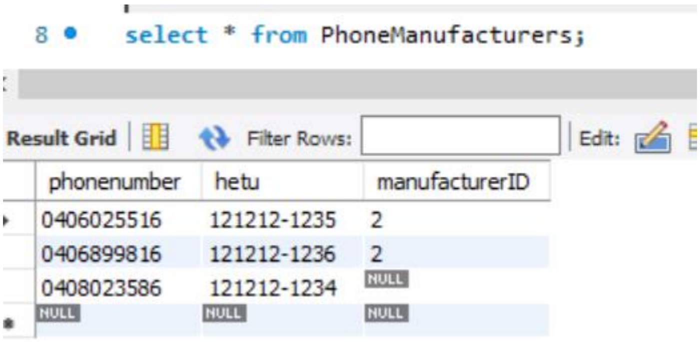
phonenumber	hetu	manufacturerID
0406025516	121212-1235	2
0406899816	121212-1236	2
0408023586	121212-1234	1
NULL	NULL	NULL

Remove PhoneManufacturers the manufacturer Samsung from the table and state that the phone manufacturer of the user Ken Guru is NULL after this operation.

ANSWER

DELETE FROM PhoneManufacturers WHERE id = '1';

The below screenshot shows the PhoneManufacturers table with deleted value Samsung manufacturer and the result is null for the user ken guru due rolling back rule



```
select * from PhoneManufacturers;
```

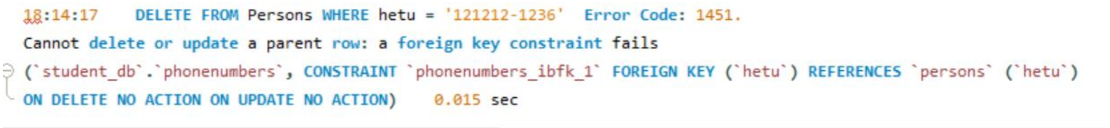
phonenumber	hetu	manufacturerID
0406025516	121212-1235	2
0406899816	121212-1236	2
0408023586	121212-1234	NULL
NULL	NULL	NULL

Try to remove the user from the Vilja Vainio Personsboard and state that the removal is not possible due to the rolling rules.

ANSWER

DELETE FROM Persons WHERE hetu = '121212-1236';

The below screenshot shows the error message when I tried tha above statement.



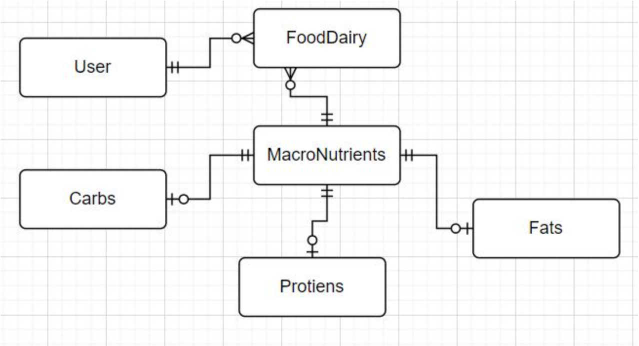
```
18:14:17    DELETE FROM Persons WHERE hetu = '121212-1236'  Error Code: 1451.
Cannot delete or update a parent row: a foreign key constraint fails
(`student_db`.`phonenumbers`, CONSTRAINT `phonenumbers_ibfk_1` FOREIGN KEY (`hetu`) REFERENCES `persons` (`hetu`)
ON DELETE NO ACTION ON UPDATE NO ACTION)    0.015 sec
```

Task 4 [6p/6p]

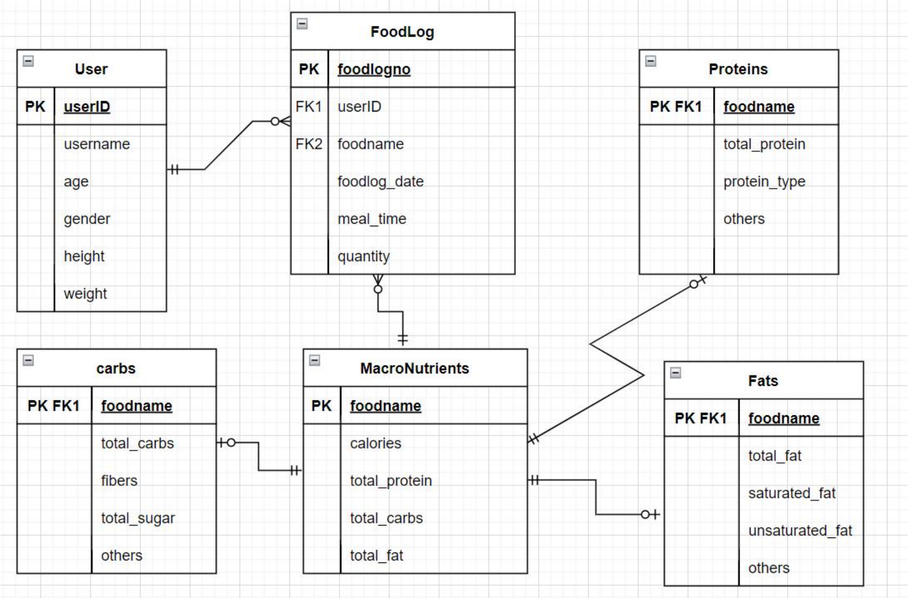
TOPIC: TRACKING individual person Nutrition in their dailylife.

1. The goal is a preliminary plan to track consumption habits from user.
2. To gather personal information from user.
3. User daily consumption into Food log/Food dairy
4. To contain a list of food items and its appropriate calories, macronutrients and details.
5. This data base includes User, Macronutrients,Fats,proteins, Carbs, foodlog.
6. I created a ER diagrams using drawio. Which is shown below.

Conceptual model 1.0:



Conceptual model 2.0:



Explanation:

1) A user from the user table may record 0 or many food items in the foodlog.A food item recorded in the foodlog must be a user in the usertable.
2) A foodname from the macronutrients table may or maynot be recorded many times in foodlog.A food item recorded in the foodlog must be from a foodname in the macronutrients.
3) A foodname from the macronutrients table may or maynot be recorded once in the carbs table. A foodname from the carbs table must be from a foodname in the macronutrients table.
4) A foodname from the macronutrients table may or maynot be recorded once in the fats table. A foodname from the fats table must be from a foodname in the macronutrients table.
5) A foodname from the macronutrients table may or maynot be recorded once in the proteins table. A foodname from the proteins table must be from a foodname in the macronutrients table.

- The initial composition is to collect the list of food item’s names and the amount of macronutrients present in them.