

Databases and SQL – Ex4

Question 1:

```
create database ex4;
use ex4;
```

Question 2:

```
CREATE TABLE person (
  person_id INT AUTO_INCREMENT PRIMARY KEY,
  `name` VARCHAR(30)
);
```

Question 3:

```
INSERT INTO person (`name`) VALUES ('Dr. John Dolittle'), ('Sir Windston Churchill');
```

Output →

	person_id	name
▶	1	Dr. John Dolittle
	2	Sir Windston Churchill
*	NULL	NULL

Question 4:

```
CREATE TABLE pet (
  pet_id INT AUTO_INCREMENT PRIMARY KEY,
  `name` VARCHAR(30)
);
```

Question 5:

```
insert into pet (`name`) values ("Polynesia"), ("Gub-Gub"), ("Jip"), ("Rufus");
```

Output →

	pet_id	name
▶	1	Polynesia
	2	Gub-Gub
	3	Jip
	4	Rufus
*	NULL	NULL

Question 6:

```
alter table pet
add owner_id INT;
```

Output →

	pet_id	name	owner_id
▶	1	Polynesia	NULL
	2	Gub-Gub	NULL
	3	Jip	NULL
	4	Rufus	NULL
✱	NULL	NULL	NULL

Question 7:

```
SET SQL_SAFE_UPDATES = 0;
UPDATE pet
SET
  owner_id = 1337
WHERE
  `name` = 'Rufus';
SET SQL_SAFE_UPDATES = 1;
```

I did succeed. You could say that referential integrity was violated because owner_id is supposed to refer a person having person_id of 1337. No such person exists, thus we are violating referential integrity.

Output →

	pet_id	name	owner_id
▶	1	Polynesia	NULL
	2	Gub-Gub	NULL
	3	Jip	NULL
	4	Rufus	1337
✱	NULL	NULL	NULL

Question 8:

```
alter table pet
add constraint fk_pet_person
foreign key (owner_id)
references person (person_id);
```

Output

→

#	Time	Action	Message	Duration / Fetch
✱ 32	11:32:08	alter table pet add constraint fk_pet_person foreign ...	Error Code: 1452. Cannot add or update a child row...	0.047 sec

Question 9:

I did not succeed (error in Q8 output). This was because one of the existing future foreign keys in the pet table, was not one of the parent table's primary keys.

Fix:

```
SET SQL_SAFE_UPDATES = 0;
UPDATE pet
SET
  owner_id = 2
WHERE
  `name` = 'Rufus';
SET SQL_SAFE_UPDATES = 1;
```

And then re-running Q8 query.

SUCCESS

Output →

38 11:34:13 alter table pet add constraint fk_pet_person foreign ... 4 row(s) affected Records: 4 Duplicates: 0 Warning... 0.140 sec

Question 10:

```
UPDATE pet
SET
  owner_id = 1
WHERE
  pet_id != 4;
```

	pet_id	name	owner_id
▶	1	Polynesia	1
	2	Gub-Gub	1
	3	Jip	1
	4	Rufus	2
*	NULL	NULL	NULL

Output →

Question 11:

```
UPDATE pet
SET
  owner_id = 1337
WHERE
  pet_id = 4;
```

I did not succeed. The reason lays in the output error below. That's because there is no (person_id ==1337) in the parent (person) table. FK must be a PK on parent table.

Output →

48 13:53:23 update pet set owner_id = 1337 where pet_id = 4 Error Code: 1452. Cannot add or update a child row: a foreign key constraint fails ('ex4`.`pet`, CONSTRAINT 'fk_pet_person' FOREIGN KEY ('owner_id') REFERENCES 'person' ('person_id')) 0.000 sec

Question 12:

```
DELETE FROM person
WHERE
  person_id = 1;
```

I did not succeed. Again, the reason lays in the output error below. This is because 'Dr. Dolittle's PK is used as a FK on another table. Removing it may cause serious data errors on the child table.

Output →

51 14:02:46 delete from person where person_id ... Error Code: 1451. Cannot delete or update a parent row: a foreign key constraint fails ('ex4', 'pet', CONSTRAINT 'fk_pet_person' FOREIGN KEY ('owner_id') REFERENCES 'person' ('person_id'))

Question 13:

```
alter table pet
drop foreign key fk_pet_person,
drop index fk_pet_person;
```

Question 14:

```
DELETE FROM person
WHERE
  person_id = 1;
```

I did succeed, but we violated referential integrity. That's because Dr. Dolittle already has 3 pets registered under his person_id. Removing the constraint only prevented us from doing it, but clearly owner_id is referring to a person, which now doesn't exist. Thus, data integrity was violated on pet table.

Output →

person_id	name
2	Sir Windston Churchill
NULL	NULL

pet_id	name	owner_id
1	Polynesia	1 Who?
2	Gub-Gub	1 Who?
3	Jip	1 Who?
4	Rufus	2
NULL	NULL	NULL