IT Technology
Database and Programing
Assignment 21 PK and FK

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Professional Higher Education

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1 Introduction

This document shows the implementation of Primary and Foreign keys in a database using SQLite. The Primary keys uniquely identifies each row in a database table. The Foreign keys are columns that references the primary keys of another table.The audience of this document are the teachers and any of our classmates who is interested in to check.

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2 Creating the tables and the relations between them

```
C:\Users\HOMEPC>sqlite3.exe shop
SQLite version 3.18.0 2017-03-28 18:48:43
Enter ".help" for usage hints.
sqlite> CREATE TABLE customerTable(idCust INT PRIMARY KEY, name, email, address, ci
ty SMALLINT,
   ...> FOREIGN KEY (city) REFERENCES cityTable (idCity));
sqlite> INSERT INTO customerTable (idCust, name, email, address, city)
   ...> VALUES
   ...> (1, 'Per', 'pda@eal.dk', 'Mystreet 1', 1),
   ...> (2, 'Alice', 'at@hotmail.com', 'Allstreet 741', 3),
   ...> (3, 'Artur', 'ab@gmail.com', 'Topstreet 56', 2);
sqlite> CREATE TABLE cityTable(idCity SMALLINT PRIMARY KEY, city, country INT,
   ...> FOREIGN KEY (country)REFERENCES countryTable(idCountry));
sqlite> INSERT INTO cityTable (idCity, city, country)
   ...> VALUES
   ...> (1, 'Odense', 1),
   ...> (2, 'Vilnius', 2),
   ...> (3, 'London', 1),
   ...> (4, 'Kaunas', 2),
   ...> (5, 'Berlin', 4),
   ...> (6, 'Stoke', 1);
sqlite> CREATE TABLE countryTable(idCountry INT PRIMARY KEY, country);
sqlite> INSERT INTO countryTable (idCountry, country)
   ...> VALUES
   ...> (1, 'Denmark'),
   ...> (2, 'Lithuania'),
   ...> (3, 'Turkey'),
   ...> (4, 'Germany'),
   ...> (5, 'England');
sqlite> CREATE TABLE orderTable(idOrder INT PRIMARY KEY, custID, date,
   ...> FOREIGN KEY (custID) REFERENCES customerTable (idCust));
sqlite> INSERT INTO orderTable (idOrder, custID, date)
   ...> VALUES
   ...> (20140001, 2, 01-02-2014),
   ...> (20140002, 2, 03-10-2014),
   ...> (20140003, 3, 04-08-2013),
   ...> (20140004, 1, 06-06-2015);
```

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```
sqlite> CREATE TABLE orderProductTable(orderID, productID,
   ...> FOREIGN KEY (orderID) REFERENCES orderTable (idOrder),
   ...> FOREIGN KEY (productID) REFERENCES productTable (idProd));
sqlite> INSERT INTO orderProductTable (orderID, productID)
   ...> VALUES
   ...> (20140002, 7),
   ...> (20140002, 1),
   ...> (20140003, 19),
   ...> (20140001, 10),
   ...> (20140002, 10),
   ...> (20140003, 7);
sqlite> CREATE TABLE productTable (idProd INT PRIMARY KEY, product);
sqlite> INSERT INTO productTable (idProd, product)
   ...> VALUES
   ...> (1, 'Mouse'),
   ...> (2, 'Keyboard'),
   ...> (3, 'Monitor'),
   ...> (5, 'USB hub'),
   ...> (7, 'Anti Virus'),
   ...> (10, 'HDMI cable'),
   ...> (19, 'CPU');
sqlite>
```

3 Relations

PK —► FK
idCust(customerTable) —► custID(orderTable)
idCity(cityTable) —► city(customerTable)
idCountry(countryTable) —► country(cityTable)
idOrder(orderTable) —► orderID(orderProductTable)
idProduct—► productid(orderProductTable)

4 Prove that is working

```
sqlite> SELECT customerTable.name, orderProductTable.orderID, productTable.product,
 orderTable.date
   ...> FROM customerTable, orderTable, productTable, orderProductTable
   ...> WHERE orderTable.custID = customerTable.idCust
   ...> AND orderProductTable.orderID = orderTable.idOrder
   ...> AND orderProductTable.productID = productTable.idProd;
Alice|20140002|Anti Virus|-2021
Alice|20140002|Mouse|-2021
Artur|20140003|CPU|-2017
Alice|20140001|HDMI cable|-2015
Alice|20140002|HDMI cable|-2021
Artur|20140003|Anti Virus|-2017
sqlite>
```

Here is an approvement that our Foreign Key is working, because we are not able to add any information to order Product Table, which contains only Foreign Keys.

```
sqlite> INSERT INTO orderProductTable values (20140003, 59);
Error: FOREIGN KEY constraint failed
```

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5 Conclusion

Now we can see everything is working how it should. About the dates, we miss-typed minus(-) with dash(-) which actually makes a difference and what surprised us was that it is counting which is very cool.

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