

Exercise 7: SQL Basics - Constraints

dr Szymon Murawski

Important! The following queries will permanently change the database. If you want to restore the database to default, execute the query in 'install.sql' file on Moodle and also delete all newly created tables.

Task 1: Create relation "customers" with the following attributes:

- pesel as string of fixed length of 11 characters
- first_name as string of 30 characters (varying length)
- last_name as string of 30 characters (varying length)
- birthday as date.

In addition define the following constraints:

- Set pesel as primary key
- pesel must containt exactly 11 characters
- Two first digits of pesel must be the same as two last digits of year of birth
- Next two digits of pesel must be the same as month of birth
- Next two digits of pesel must be the same as day of birth
- Both first and last cannot be empty

Table customers should now look like this:

<u>pesel</u>	<u>first_name</u>	<u>last_name</u>	<u>birthday</u>
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Task 2: Try to insert the following rows into the relation. Which one of them fail and for what reason?

- '39090100001','John','Smith','1939-09-01'
- '750218','Bill','Carter','1975-02-18'
- '75021800123','Bill','Carter','1975-02-20'
- '75021800123','Bill','Carter','1975-02-18'

Task 3: Create table "invoices" with the following attributes:

- invoice_id as autoincrement integer and primary key
- pesel as string of fixed length of 11 characters, that is a reference to table "customers"
- amount as number with 8 digits, two of them after decimal point, greater than zero

Table invoices should now look like this:

invoice_id	pesel	amount
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Task 4: Try inserting the following rows into the table invoices. Which of them fail and why?

- pesel='39090100001', amount=123.45
- pesel='39090199999', amount=678.90
- pesel='39090100001', amount=1234567890
- pesel='75021800123'
- invoice_id=1, pesel='39090100001', amount=123.45

Task 5: Display the full content of relation invoices

	invoice_id	pesel	amount
Expected result	1	39090100001	123,45
	2	75021800123	

Task 6: Once again display the full content of relation invoices, but this time, if the amount is NULL display 0

	invoice_id	pesel	amount
Expected result	1	39090100001	123,45
	2	75021800123	0

Task 7: Display id and pesel of those invoices, for which the amount is not set

	invoice_id	pesel
Expected result	2	75021800123

Task 8: Try removing customer with name 'Bill' from relation "customers". What happens?

Task 9: Recreate the constraints in such a way, that removing a customer will also set corresponding pesel in table "invoices" to nulls. Now remove the customer with name 'Bill' from relation "customers"

Task 10: Try changing pesel of customer with name "John". What happens?

Task 11: As before, recreate the constraints in such a way, that changing pesel of a customers also changes pesel of all the invoices of that person. Once again try updating pesel of customer "John"

Task 12: Display the constraints of tables "customers" and "invoices"

constraint_name	table_name	column_name	constraint_type
customers_pkey	customers	pesel	PRIMARY KEY
invoices_pesel_fkey	invoices	pesel	FOREIGN KEY
invoices_pkey	invoices	invoice_id	PRIMARY KEY

Task 13: Drop tables "customers" and "invoices"