

2023 – 2024 Spring Term

CS306 – Database System Course

Term Project Phase 3

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1. Description

In this phase, we are asked to develop an application that is written on python, such that it would allow us to do CRUD operations on our own databases. To ensure the safety of our database, I implemented each function with parameters, such that they would inject these inputs to their respected queries. Like the previous phase, we worked on our own tables seperately.

2. Tables and Their Data

For this phase, like on the phase 2, I am analyzing and doing the operations on the tables “User” and “PaymentMethod”.

User table is formed from 4 fields, an integer “uid”, which is also a primary key, a string “name”, a unique string “email” and a string “password”. The data of the table executing the query directly from the MySQL Workbench and calling the `print_users()` function from my functions.py is:

uid	name	email	password
1	John Doe	johndoe@example.com	password123
2	Jane Smith	janesmith@example.com	password456
3	Alice Johnson	alicejohnson@example.com	password789
4	Bob Brown	bobbrown@example.com	password101
5	Charlie Davis	charliedavis@example.com	password202
6	Diana Evans	dianaevans@example.com	password303
7	Frank Green	frankgreen@example.com	password404
8	Gina Harris	ginaharris@example.com	password505
9	Henry Wilson	henrywilson@example.com	password606
10	Ivy Young	ivyyoung@example.com	password707

```
Users before operations:
Connection established with the database
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
```

PaymentMethod is formed from 3 fields, an integer “pid”, which is also a primary key, a string “type”, and an integer “uid”, which references user table as a foreign key. The data of the table executing the query directly from the MySQL Workbench and calling the print_payment_methods() function from my functions.py is:

pid	type	uid
1	Credit Card	1
2	PayPal	2
3	Debit Card	3
4	Credit Card	4
5	PayPal	5
6	Debit Card	6
7	Credit Card	7
8	PayPal	8
9	Debit Card	9
10	Credit Card	10

```
Payment Methods before operations:
Connection established with the database
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
```

3. Operations and Queries Generated

a. Create User

My create_user() function’s query is as follows:

```
INSERT INTO User (name, email, password) VALUES (%s, %s, %s)
```

To create a new user, I called the function with the parameters I chose:

```
create_user("testTEST", "testTest@example.com", "test123")
```

```
Executing query: INSERT INTO User (name, email, password) VALUES (%s, %s, %s) with values (testTEST, testTest@example.com, test123)
```

b. Read User

My read_users() functions’s query is as follows:

```
SELECT * FROM User
```

To read the table, I called the function:

```
read_users()
```

c. Update User

My `update_user()` function's query is as follows:

```
UPDATE User SET name = %s, email = %s, password = %s, WHERE uid = %s
```

To update the testTEST user with the new values, I called:

```
update_user(13,"UpdatedName","update@example.com","updatedPass")
```

```
Executing query: UPDATE User SET name = %s, email = %s, password = %s WHERE uid = %s with values ('UpdatedName', 'update@example.com', 'updatedPass', 13)
```

d. Delete User

My `delete_user()` function's query is as follows:

```
DELETE FROM User WHERE uid = %s
```

To delete the updated UpdatedName user, I called:

```
delete_user(13)
```

```
Executing query: DELETE FROM User WHERE uid = %s with value (13,)
```

e. Create Payment Method

To create a new payment method, I first created a new user. Its uid is 14.

My `create_payment_method()` function's query is as follows:

```
INSERT INTO PaymentMethod (type, uid) VALUES (%s, %s)
```

To create a new payment method of another user, I called the function with the parameters I chose:

```
create_payment_method("PayPal","14")
```

```
Executing query: INSERT INTO PaymentMethod (type, uid) VALUES (%s, %s) with values (PayPal, 14)
```

f. Read Payment Method

My `read_payment_method()` function's query is as follows:

```
SELECT * FROM PaymentMethod
```

To read the table, I called the function:

```
read_payment_method()
```

g. Update Payment Method

My `update_payment_method` function's query is follows:

```
UPDATE PaymentMethod SET type = %s, uid = %s, WHERE pid = %s
```

To update the payment method of user 14, I called:

```
update_payment_method(11,"Credit Card", 14)
```

```
Executing query: UPDATE PaymentMethod SET type = %s, uid = %s WHERE pid = %s with values ('Credit Card', 14, 11)
```

h. Delete Payment Method

My `delete_payment_method` function's query is as follows:

```
DELETE FROM PaymentMethod WHERE pid = %s
```

To delete the payment method of user 14 and pid 11, I called:

```
delete_payment_method(11)
```

```
Executing query: DELETE FROM PaymentMethod WHERE pid = %s with value (11,)
```

4. Before and After of Each Operation

a. Before and After of Create User

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
```

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
(13, 'testTEST', 'testTest@example.com', 'test123')
```

b. Before and After of Read User

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
(13, 'testTEST', 'testTest@example.com', 'test123')
```

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
(13, 'testTEST', 'testTest@example.com', 'test123')
```

c. Before and After of Update User

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
(13, 'testTEST', 'testTest@example.com', 'test123')
```

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
(13, 'UpdatedName', 'update@example.com', 'updatedPass')
```

d. Before and After of Delete User

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
(13, 'UpdatedName', 'update@example.com', 'updatedPass')
```

```
(1, 'John Doe', 'johndoe@example.com', 'password123')
(2, 'Jane Smith', 'janesmith@example.com', 'password456')
(3, 'Alice Johnson', 'alicejohnson@example.com', 'password789')
(4, 'Bob Brown', 'bobbrown@example.com', 'password101')
(5, 'Charlie Davis', 'charliedavis@example.com', 'password202')
(6, 'Diana Evans', 'dianaevans@example.com', 'password303')
(7, 'Frank Green', 'frankgreen@example.com', 'password404')
(8, 'Gina Harris', 'ginaharris@example.com', 'password505')
(9, 'Henry Wilson', 'henrywilson@example.com', 'password606')
(10, 'Ivy Young', 'ivyyoung@example.com', 'password707')
```

e. Before and After of Create Payment Method

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
```

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
(11, 'PayPal', 14)
```

f. Before and After of Read Payment Method

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
(11, 'PayPal', 14)
```

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
(11, 'PayPal', 14)
```

g. Before and After of Update Payment Method

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
(11, 'PayPal', 14)
```

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
(11, 'Credit Card', 14)
```

h. Before and After of Delete Payment Method

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
(11, 'Credit Card', 14)
```

```
(1, 'Credit Card', 1)
(2, 'PayPal', 2)
(3, 'Debit Card', 3)
(4, 'Credit Card', 4)
(5, 'PayPal', 5)
(6, 'Debit Card', 6)
(7, 'Credit Card', 7)
(8, 'PayPal', 8)
(9, 'Debit Card', 9)
(10, 'Credit Card', 10)
```

This is the end of the project report phase 3.