

PFSD Skilling – 3

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1)

Code to create hospital database and doctor, patient, medicine tables and populate them with appropriate tables:

```
import mysql.connector
from mysql.connector import Error

def create_server_connection(host_name, user_name, user_password):
    connection = None
    try:
        connection = mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=user_password
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")

    return connection

def create_database(connection, query):
    cursor = connection.cursor()
    try:
        cursor.execute(query)
        print("Database created successfully")
    except Error as err:
        print(f"Error: '{err}'")

pw = "nikhil"
db = "hospital"
```

```
connection = create_server_connection("localhost", "root", p
w)
```

```
create_database_query = "CREATE DATABASE hospital"
create_database(connection, create_database_query)
```

```
def create_db_connection(host_name, user_name, user_password
, db_name):
    connection = None
    try:
        connection = mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=user_password,
            database=db_name
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")

    return connection
```

```
def execute_query(connection, query):
    cursor = connection.cursor()
    try:
        cursor.execute(query)
        connection.commit()
        print("Query successful")
    except Error as err:
        print(f"Error: '{err}'")
```

```
create_doctor_table = """
CREATE TABLE doctor (
    doctor_id INT PRIMARY KEY,
    first_name VARCHAR(40) NOT NULL,
    last_name VARCHAR(40) NOT NULL,
```

```

        dob DATE,
        speciality VARCHAR(40) NOT NULL,
        phone_no VARCHAR(20)
    );
"""

create_patient_table = """
CREATE TABLE patient (
    patient_id INT PRIMARY KEY,
    first_name VARCHAR(40) NOT NULL,
    last_name VARCHAR(40) NOT NULL,
    address VARCHAR(60) NOT NULL,
    dob DATE,
    phone_no VARCHAR(20)
);
"""

create_medicine_table = """
CREATE TABLE medicine (
    medicine_id INT PRIMARY KEY,
    medicine_name VARCHAR(40) NOT NULL,
    medicine_stock INT NULL DEFAULT 0,
    manufactured DATE NOT NULL,
    expiry DATE NOT NULL
);
"""

connection = create_db_connection(
    "localhost", "root", pw, db)
execute_query(connection, create_doctor_table)
execute_query(connection, create_patient_table)
execute_query(connection, create_medicine_table)

populate_doctor_table = """
INSERT INTO doctor VALUES
(1, 'James', 'Smith', '1985-04-
20', 'heart', '91774553676'),

```

```
(2, 'Stefanie', 'Martin', '1970-02-17', 'brain', '91234567890'),
(3, 'Steve', 'Wang', '1990-11-12', 'teeth', '97840921333'),
(4, 'Friederike', 'Muller', '1987-07-07', 'bones', '92345678901'),
(5, 'Isobel', 'Ivanova', '1963-05-30', 'stomach', '91772635467'),
(6, 'Niamh', 'Murphy', '1995-09-08', 'brain', '91231231232');
"""
```

```
populate_patient_table = """
INSERT INTO patient VALUES
(1, 'Andrea', 'Duerr', 'New York', '1996-06-16', '9166448524'),
(2, 'Harry', 'Potter', 'Hogwarts', '1998-07-18', '8647951322'),
(3, 'Heiko', 'Fleischer', 'Anakapalli', '1999-11-12', '8521474571'),
(4, 'Marina', 'Berg', 'vijayawada', '2001-03-22', '9645874466');
"""
```

```
populate_medicine_table = """
INSERT INTO medicine VALUES
(1, 'benadryl', 8, '2021-01-01', '2023-01-01'),
(2, 'aspirin', 10, '2021-01-01', '2023-01-01'),
(3, 'azofaram', 18, '2021-01-01', '2023-01-01'),
(4, 'covishield', 16, '2021-01-01', '2023-01-01'),
(5, 'chloroform', 12, '2021-01-01', '2023-01-01'),
(6, 'dulcoflex', 14, '2021-01-01', '2023-01-01');
"""
```

```
connection = create_db_connection("localhost", "root", pw, db)
execute_query(connection, populate_doctor_table)
execute_query(connection, populate_patient_table)
execute_query(connection, populate_medicine_table)
```

Databases before and after executing our python script

```
MySQL 8.0 Command Line Client

mysql> show databases;
+-----+
| Database |
+-----+
| information_schema |
| mysql |
| performance_schema |
| sakila |
| sys |
| world |
+-----+
6 rows in set (0.01 sec)

mysql> show databases;
+-----+
| Database |
+-----+
| hospital |
| information_schema |
| mysql |
| performance_schema |
| sakila |
| sys |
| world |
+-----+
7 rows in set (0.00 sec)

mysql> use hospital;
Database changed
```

```
MySQL 8.0 Command Line Client

mysql> show tables;
+-----+
| Tables_in_hospital |
+-----+
| doctor |
| medicine |
| patient |
+-----+
3 rows in set (0.00 sec)

mysql>
```

```
MySQL 8.0 Command Line Client

mysql> select * from doctor;
+-----+-----+-----+-----+-----+-----+
| doctor_id | first_name | last_name | dob       | speciality | phone_no |
+-----+-----+-----+-----+-----+-----+
| 1 | James | Smith | 1985-04-20 | heart | 91774553676 |
| 2 | Stefanie | Martin | 1970-02-17 | brain | 91234567890 |
| 3 | Steve | Wang | 1990-11-12 | teeth | 97840921333 |
| 4 | Friederike | Muller | 1987-07-07 | bones | 92345678901 |
| 5 | Isobel | Ivanova | 1963-05-30 | stomach | 91772635467 |
| 6 | Niamh | Murphy | 1995-09-08 | brain | 91231231232 |
+-----+-----+-----+-----+-----+-----+
6 rows in set (0.01 sec)

mysql> select * from patient;
+-----+-----+-----+-----+-----+-----+
| patient_id | first_name | last_name | address | dob       | phone_no |
+-----+-----+-----+-----+-----+-----+
| 1 | Andrea | Duerr | New York | 1996-06-16 | 9166448524 |
| 2 | Harry | Potter | Hogwarts | 1998-07-18 | 8647951322 |
| 3 | Heiko | Fleischer | Anakapalli | 1999-11-12 | 8521474571 |
| 4 | Marina | Berg | vijayawada | 2001-03-22 | 9645874466 |
+-----+-----+-----+-----+-----+-----+
4 rows in set (0.01 sec)

mysql> select * from medicine;
+-----+-----+-----+-----+-----+
| medicine_id | medicine_name | medicine_stock | manufactured | expiry |
+-----+-----+-----+-----+-----+
| 1 | benadryl | 8 | 2021-01-01 | 2023-01-01 |
| 2 | aspirin | 10 | 2021-01-01 | 2023-01-01 |
| 3 | azofaram | 18 | 2021-01-01 | 2023-01-01 |
| 4 | covishield | 16 | 2021-01-01 | 2023-01-01 |
| 5 | chloroform | 12 | 2021-01-01 | 2023-01-01 |
| 6 | dulcoflex | 14 | 2021-01-01 | 2023-01-01 |
+-----+-----+-----+-----+-----+
6 rows in set (0.00 sec)

mysql>
```

Read operations:

```
import mysql.connector
import pandas as pd
from mysql.connector import Error

def create_db_connection(host_name, user_name, user_password, db_name):
    connection = None
    try:
        connection = mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=user_password,
            database=db_name
        )
        print("MySQL Database connection successful")
```

```

        except Error as err:
            print(f"Error: '{err}'")

        return connection

def read_query(connection, query):
    cursor = connection.cursor()
    result = None
    try:
        cursor.execute(query)
        result = cursor.fetchall()
        return result
    except Error as err:
        print(f"Error: '{err}'")

pw = "nikhil"
db = "hospital"

read_doctor_data = """
SELECT * FROM doctor;
"""

read_patient_data = """
SELECT * FROM patient;
"""

read_medicine_data = """
SELECT * FROM medicine;
"""

connection = create_db_connection("localhost", "root", pw, db)
doctor = read_query(connection, read_doctor_data)

print("\nDoctor Data:")
for result in doctor:
    print(result)

```

```

medicine = read_query(connection, read_medicine_data)

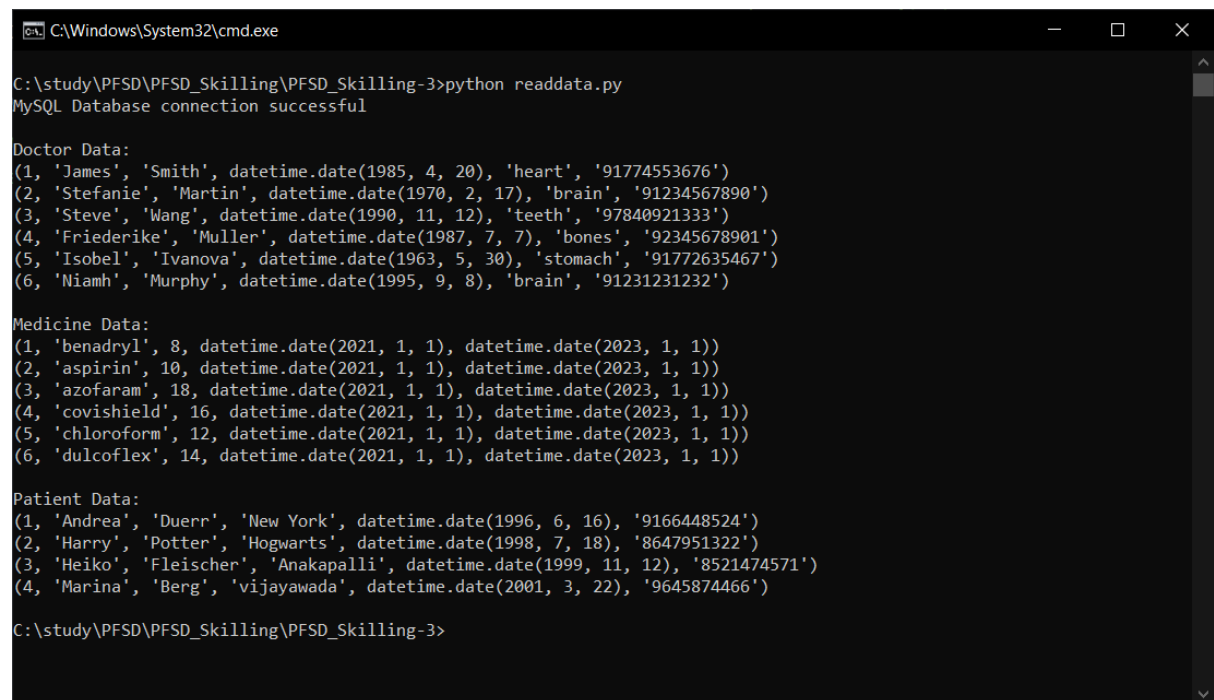
print("\nMedicine Data:")
for result in medicine:
    print(result)

patient = read_query(connection, read_patient_data)

print("\nPatient Data:")
for result in patient:
    print(result)

```

Output:



```

C:\Windows\System32\cmd.exe

C:\study\PFSD\PFSD_Skilling\PFSD_Skilling-3>python readdata.py
MySQL Database connection successful

Doctor Data:
(1, 'James', 'Smith', datetime.date(1985, 4, 20), 'heart', '91774553676')
(2, 'Stefanie', 'Martin', datetime.date(1970, 2, 17), 'brain', '91234567890')
(3, 'Steve', 'Wang', datetime.date(1990, 11, 12), 'teeth', '97840921333')
(4, 'Friederike', 'Muller', datetime.date(1987, 7, 7), 'bones', '92345678901')
(5, 'Isobel', 'Ivanova', datetime.date(1963, 5, 30), 'stomach', '91772635467')
(6, 'Niamh', 'Murphy', datetime.date(1995, 9, 8), 'brain', '91231231232')

Medicine Data:
(1, 'benadryl', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(2, 'aspirin', 10, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(3, 'azofaram', 18, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(4, 'covishield', 16, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(5, 'chloroform', 12, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(6, 'dulcoflex', 14, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))

Patient Data:
(1, 'Andrea', 'Duerr', 'New York', datetime.date(1996, 6, 16), '9166448524')
(2, 'Harry', 'Potter', 'Hogwarts', datetime.date(1998, 7, 18), '8647951322')
(3, 'Heiko', 'Fleischer', 'Anakapalli', datetime.date(1999, 11, 12), '8521474571')
(4, 'Marina', 'Berg', 'vijayawada', datetime.date(2001, 3, 22), '9645874466')

C:\study\PFSD\PFSD_Skilling\PFSD_Skilling-3>

```


Update Operation:

```
import mysql.connector
import pandas as pd
from mysql.connector import Error

def create_db_connection(host_name, user_name, user_password, db_name):
    connection = None
    try:
        connection = mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=user_password,
            database=db_name
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")

    return connection

def execute_query(connection, query):
    cursor = connection.cursor()
    try:
        cursor.execute(query)
        connection.commit()
        print("Query successful")
    except Error as err:
        print(f"Error: '{err}'")

def read_query(connection, query):
    cursor = connection.cursor()
    result = None
    try:
```

```
        cursor.execute(query)
        result = cursor.fetchall()
        return result
    except Error as err:
        print(f"Error: '{err}'")

pw = "nikhil4u"
db = "hospital"

read_medicine_data = """
SELECT * FROM medicine;
"""

connection = create_db_connection("localhost", "root", pw, db)
medicine = read_query(connection, read_medicine_data)

print("\nMedicine Data before updating:")
for result in medicine:
    print(result)

update = """
UPDATE medicine
SET medicine_stock = 8
WHERE medicine_id = 4;
"""

execute_query(connection, update)

medicine = read_query(connection, read_medicine_data)

print("\nMedicine Data after updating:")
for result in medicine:
    print(result)
```

Output:

We can see that we have successfully updated the covishield medicine stock value from 16 to 8.

```
C:\Windows\System32\cmd.exe

C:\study\PFSD\PFSD_Skilling\PFSD_Skilling-3>python updatevalues.py
MySQL Database connection successful

Medicine Data before updating:
(1, 'benadryl', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(2, 'aspirin', 10, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(3, 'azofaram', 18, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(4, 'covishield', 16, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(5, 'chloroform', 12, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(6, 'dulcoflex', 14, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
Query successful

Medicine Data after updating:
(1, 'benadryl', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(2, 'aspirin', 10, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(3, 'azofaram', 18, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(4, 'covishield', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(5, 'chloroform', 12, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(6, 'dulcoflex', 14, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))

C:\study\PFSD\PFSD_Skilling\PFSD_Skilling-3>
```

Delete operation:

```
import mysql.connector
from mysql.connector import Error

def create_db_connection(host_name, user_name, user_password, db_name):
    connection = None
    try:
        connection = mysql.connector.connect(
            host=host_name,
            user=user_name,
            passwd=user_password,
            database=db_name
        )
        print("MySQL Database connection successful")
    except Error as err:
        print(f"Error: '{err}'")
```

```

        return connection

def execute_query(connection, query):
    cursor = connection.cursor()
    try:
        cursor.execute(query)
        connection.commit()
        print("Query successful")
    except Error as err:
        print(f"Error: '{err}'")

def read_query(connection, query):
    cursor = connection.cursor()
    result = None
    try:
        cursor.execute(query)
        result = cursor.fetchall()
        return result
    except Error as err:
        print(f"Error: '{err}'")

pw = "nikhil4u"
db = "hospital"

read_medicine_data = """
SELECT * FROM medicine;
"""

delete_medicine = """
DELETE FROM medicine
WHERE medicine_id = 3;
"""

connection = create_db_connection("localhost", "root", pw, db)

```

```

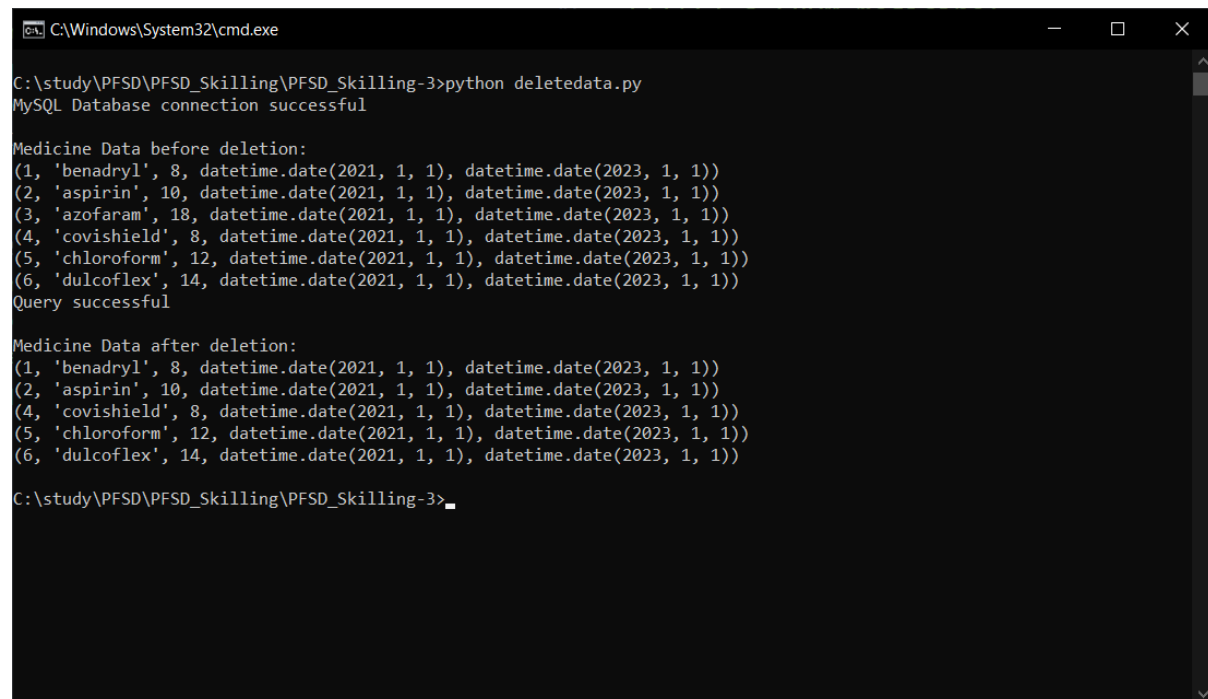
medicine = read_query(connection, read_medicine_data)

print("\nMedicine Data before deletion:")
for result in medicine:
    print(result)

execute_query(connection, delete_medicine)

medicine = read_query(connection, read_medicine_data)
print("\nMedicine Data after deletion:")
for result in medicine:
    print(result)

```



```

C:\Windows\System32\cmd.exe

C:\study\PFSD\PFSD_Skilling\PFSD_Skilling-3>python deletedata.py
MySQL Database connection successful

Medicine Data before deletion:
(1, 'benadryl', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(2, 'aspirin', 10, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(3, 'azofaram', 18, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(4, 'covishield', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(5, 'chloroform', 12, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(6, 'dulcoflex', 14, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
Query successful

Medicine Data after deletion:
(1, 'benadryl', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(2, 'aspirin', 10, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(4, 'covishield', 8, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(5, 'chloroform', 12, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))
(6, 'dulcoflex', 14, datetime.date(2021, 1, 1), datetime.date(2023, 1, 1))

C:\study\PFSD\PFSD_Skilling\PFSD_Skilling-3>

```

2)

Pytest:

```

import math

def area_of_circle(r):
    return math.pi*r*r

```

```

def area_of_triangle(h, b):
    return (h*b)/2

def area_of_square(s):
    return s*s

def test_circle():
    assert area_of_circle(4) == 50

def test_triangle():
    assert area_of_triangle(6, 4) == 12

def test_square():
    assert area_of_square(4) == 16

```

Output:

```

C:\Windows\System32\cmd.exe

C:\study\PFSD>pytest
===== test session starts =====
platform win32 -- Python 3.9.1, pytest-6.2.2, py-1.10.0, pluggy-0.13.1
rootdir: C:\study\PFSD
plugins: anyio-2.0.2
collected 3 items

PFSD_Tasks\test_area.py F.. [100%]

===== FAILURES =====
test_circle

  def test_circle():
>     assert area_of_circle(4) == 50
E       assert 50.26548245743669 == 50
E       + where 50.26548245743669 = area_of_circle(4)

PFSD_Tasks\test_area.py:17: AssertionError
===== short test summary info =====
FAILED PFSD_Tasks/test_area.py::test_circle - assert 50.26548245743669 == 50
===== 1 failed, 2 passed in 0.31s =====

C:\study\PFSD>

```