ASSIGNMENT - 3
CS553 - Advanced Database Systems LAB

Name: Utsav Balar
Roll no.: T24CS003

File: t24cs003-assignment-3.py

```python
from tinydb import TinyDB, Query
import os

if os.path.exists("db.json"):
    os.remove("db.json")


db = TinyDB("db.json")


# Tables
students_table = db.table("students")
courses_table = db.table("courses")
exam_table = db.table("exams")
faculty_table = db.table("faculty")
enrollment_table = db.table("enrollment")
teaching_table = db.table("teaching")
exam_registration_table = db.table("exam_registration")
exam_results_table = db.table("exam_results")

# Inserting sample data
students_table.insert_multiple(
    [
        {
            "StudentID": 1,
            "Name": "abcd",
            "Email": "abcd@test.com",
            "Phone": "325870489",
            "Address": "Surat",
        },
        {
            "StudentID": 2,
            "Name": "efgh",
            "Email": "efgh@test.com",
            "Phone": "408320174",
            "Address": "Dehli",
        },
```

```json
    {
        "StudentID": 3,
        "Name": "Utsav Balar",
        "Email": "utsav@balar.com",
        "Phone": "123456789",
        "Address": "Umpling",
    },
    {
        "StudentID": 4,
        "Name": "lmno",
        "Email": "lmno@test.com",
        "Phone": "985973232",
        "Address": "Vadodra",
    },
    {
        "StudentID": 5,
        "Name": "pqrs",
        "Email": "pqrs@test.com",
        "Phone": "325870489",
        "Address": "Assam",
    },
    {
        "StudentID": 6,
        "Name": "tuvw",
        "Email": "tuvw@test.com",
        "Phone": "483112984",
        "Address": "Tamil Nadu",
    },
    {
        "StudentID": 7,
        "Name": "xyz",
        "Email": "xyz@test.com",
        "Phone": "324982309",
        "Address": "Punjab",
    },
    {
        "StudentID": 8,
        "Name": "ijkl",
        "Email": "ijkl@test.com",
        "Phone": "918321473",
        "Address": "Mumbai",
    },
]
```

```python
)

courses_table.insert_multiple(
    [
        {
            "CourseID": 701,
            "CourseName": "Advanced Engineering Mathematics",
            "Credits": 4,
        },
        {
            "CourseID": 501,
            "CourseName": "Advanced Algorithms and Complexity",
            "Credits": 4,
        },
            {"CourseID": 503, "CourseName": "Advanced Database Systems",
"Credits": 4},
            {"CourseID": 555, "CourseName": "Advanced Programming Lab",
"Credits": 4},
        {"CourseID": 553, "CourseName": "Advanced Databases Systems Lab",
"Credits": 4},
            {"CourseID": 511, "CourseName": "Digital Image processing",
"Credits": 4},
            {"CourseID": 517, "CourseName": "Soft Computing Mathematics",
"Credits": 4},
    ]
)

exam_table.insert_multiple(
    [
        {
            "ExamID": 1,
            "ExamDate": "2024-09-15",
            "ExamTime": "10:00",
            "Location": "CR12",
        },
        {
            "ExamID": 2,
            "ExamDate": "2024-09-05",
            "ExamTime": "10:00",
            "Location": "CR11",
        },
        {
            "ExamID": 3,
```

```python
            "ExamDate": "2024-09-25",
            "ExamTime": "10:00",
            "Location": "CR12",
        },
        {

            "ExamID": 4,
            "ExamDate": "2024-09-16",
            "ExamTime": "10:00",
            "Location": "CR11",
        },
        {

            "ExamID": 5,
            "ExamDate": "2024-09-15",
            "ExamTime": "10:00",
            "Location": "CR12",
        },
        {

            "ExamID": 6,
            "ExamDate": "2024-09-15",
            "ExamTime": "10:00",
            "Location": "CR11",
        },
    ]
)

faculty_table.insert_multiple(
    [
        {
            "FacultyID": 101,
            "Name": "Rizzvik Sharam",
            "Email": "rizz@sharma.com",
            "Phone": "987654321",
            "Department": "Mathematics",
        },
        {
            "FacultyID": 102,
            "Name": "Rohil Khan",
            "Email": "rohil@khan.com",
            "Phone": "947560821",
            "Department": "Computer Vision",
        },
        {
            "FacultyID": 103,
```

```
            "Name": "Runganko Dosa",
            "Email": "dosaruganko@mail.com",
            "Phone": "6934738422",
            "Department": "Soft Computing",
        },
        {

            "FacultyID": 104,
            "Name": "Kumari Ashu",
            "Email": "ashukumari@mail.com",
            "Phone": "5876094585",
            "Department": "Advanced Algorithms and Complexity",
        },
        {

            "FacultyID": 105,
            "Name": "Ustav blyat",
            "Email": "blyatutsav@mail.com",
            "Phone": "9407658934",
            "Department": "Advanced Databases Systems",
        },
    ]
)

enrollment_table.insert_multiple(
    [
        {
            "EnrollmentID": 1,
            "StudentID": 1,
            "CourseID": 701,
            "EnrollmentDate": "2024-05-15",
        },
        {
            "EnrollmentID": 2,
            "StudentID": 2,
            "CourseID": 701,
            "EnrollmentDate": "2024-05-15",
        },
        {
            "EnrollmentID": 4,
            "StudentID": 3,
            "CourseID": 701,
            "EnrollmentDate": "2024-05-15",
        },
        {
```

```
            "EnrollmentID": 5,
            "StudentID": 4,
            "CourseID": 701,
            "EnrollmentDate": "2024-05-15",
        },
        {
            "EnrollmentID": 6,
            "StudentID": 5,
            "CourseID": 701,
            "EnrollmentDate": "2024-05-15",
        },
        {
            "EnrollmentID": 7,
            "StudentID": 6,
            "CourseID": 701,
            "EnrollmentDate": "2024-05-15",
        },
    ]
)

teaching_table.insert_multiple(
    [
        {"TeachingID": 1, "FacultyID": 101, "CourseID": 701},
        {"TeachingID": 2, "FacultyID": 102, "CourseID": 511},
        {"TeachingID": 3, "FacultyID": 103, "CourseID": 517},
        {"TeachingID": 4, "FacultyID": 104, "CourseID": 501},
        {"TeachingID": 5, "FacultyID": 105, "CourseID": 503},
        {"TeachingID": 6, "FacultyID": 104, "CourseID": 555},
        {"TeachingID": 7, "FacultyID": 104, "CourseID": 553},
    ]
)

exam_registration_table.insert_multiple(
    [
            { "RegistrationID": 1, "StudentID": 1, "ExamID": 1,
"RegistrationDate": "2024-08-25", },
            { "RegistrationID": 2, "StudentID": 2, "ExamID": 1,
"RegistrationDate": "2024-08-05", },
            { "RegistrationID": 3, "StudentID": 3, "ExamID": 1,
"RegistrationDate": "2024-08-15", },
            { "RegistrationID": 4, "StudentID": 4, "ExamID": 1,
"RegistrationDate": "2024-08-25", },
```

```python
                { "RegistrationID": 5, "StudentID": 5, "ExamID": 1,
"RegistrationDate": "2024-08-15", },
                { "RegistrationID": 6, "StudentID": 6, "ExamID": 1,
"RegistrationDate": "2024-08-05", },
    ]
)

exam_results_table.insert_multiple([
    {"ResultID": 1, "StudentID": 1, "ExamID": 1, "Score": 88.50},
    {"ResultID": 2, "StudentID": 2, "ExamID": 1, "Score": 58.00},
    {"ResultID": 3, "StudentID": 3, "ExamID": 1, "Score": 80.00},
    {"ResultID": 4, "StudentID": 4, "ExamID": 1, "Score": 98.25},
    {"ResultID": 5, "StudentID": 5, "ExamID": 1, "Score": 18.50},
    {"ResultID": 6, "StudentID": 6, "ExamID": 1, "Score": 68.75},
    ])

# Querying data
Student = Query()
students = students_table.all()

# Adjusting column widths for better alignment
print("\n\n\tStudents Table\n")
print(f"{'StudentID':<10} | {'Name':<15} | {'Email':<25} | {'Phone':<12}
| {'Address'}")
print("-" * 70)
for student in students:
    print(
                f"{student['StudentID']:<10} | {student['Name']:<15} |
{student['Email']:<25} | {student['Phone']:<12} | {student['Address']}"
    )

Course = Query()
courses = courses_table.all()

print("\n\n\tCourses Table")
print(f"\n{'CourseID':<10} | {'CourseName':<35} | {'Credits':<7}")
print("-" * 60)
for course in courses:
    print(
                f"{course['CourseID']:<10} | {course['CourseName']:<35} |
{course['Credits']}"
    )
```

```python
Exam = Query()
exams = exam_table.all()

print("\n\n\tExams Table")
print(f"\n{'ExamID':<10}   |   {'ExamDate':<15}   |   {'ExamTime':<10}   |
{'Location'}")
print("-" * 50)
for exam in exams:
    print(
                        f"{exam['ExamID']:<10}   |   {exam['ExamDate']:<15}   |
{exam['ExamTime']:<10} | {exam['Location']}"
    )

Faculty = Query()
faculties = faculty_table.all()

print("\n\n\tFaculty Table")
print(
    f"\n{'FacultyID':<10} | {'Name':<15} | {'Email':<25} | {'Phone':<12}
| {'Department'}"
)
print("-" * 70)
for faculty in faculties:
    print(
                f"{faculty['FacultyID']:<10}   |   {faculty['Name']:<15}   |
{faculty['Email']:<25}        |        {faculty['Phone']:<12}        |
{faculty['Department']}"
    )

Enrollment = Query()
enrollements = enrollment_table.all()

print("\n\n\tEnrollement Table")
print(
    f"\n{'EnrollmentID':<15} | {'StudentID':<10} | {'CourseID':<10} |
{'EnrollmentDate'}"
)
print("-" * 60)
for enrollment in enrollements:
    print(
                                f"{enrollment['EnrollmentID']:<15}     |
{enrollment['StudentID']:<10}     |     {enrollment['CourseID']:<10}     |
{enrollment['EnrollmentDate']}"
```

```python
    )

Teaching = Query()
teachers = teaching_table.all()

print("\n\n\tTeachers Table")
print(f"\n{'TeachingID':<10} | {'FacultyID':<10} | {'CourseID'}")
print("-" * 40)
for teacher in teachers:
    print(
            f"{teacher['TeachingID']:<10} | {teacher['FacultyID']:<10} |
{teacher['CourseID']}"
    )

Exam_registration = Query()
registrations = exam_registration_table.all()

print("\n\n\tRegistration Table")
print(
      f"\n{'RegistrationID':<15} | {'StudentID':<10} | {'ExamID':<10} |
{'RegistrationDate'}"
)
print("-" * 60)
for registration in registrations:
    print(
                            f"{registration['RegistrationID']:<15}    |
{registration['StudentID']:<10}    |    {registration['ExamID']:<10}    |
{registration['RegistrationDate']}"
    )

Exam_results = Query()
results = exam_results_table.all()

print("\n\n\tResults Table")
print(f"\n{'ResultID':<10}  |   {'StudentID':<10}   |   {'ExamID':<10}   |
{'Score'}")
print("-" * 50)
for result in results:
    print(
            f"{result['ResultID']:<10} | {result['StudentID']:<10} |
{result['ExamID']:<10} | {result['Score']}"
    )
```

Students Table

StudentID	Name	Email	Phone	Address
1	abcd	abcd@test.com	325870489	Surat
2	efgh	efgh@test.com	408320174	Dehli
3	Utsav Balar	utsav@balar.com	123456789	Umpling
4	lmno	lmno@test.com	985973232	Vadodra
5	pqrs	pqrs@test.com	325870489	Assam
6	tuvw	tuvw@test.com	483112984	Tamil Nadu
7	xyz	xyz@test.com	324982309	Punjab
8	ijkl	ijkl@test.com	918321473	Mumbai

Courses Table

CourseID	CourseName	Credits
701	Advanced Engineering Mathematics	4
501	Advanced Algorithms and Complexity	4
503	Advanced Database Systems	4
555	Advanced Programming Lab	4
553	Advanced Databases Systems Lab	4
511	Digital Image processing	4
517	Soft Computing Mathematics	4

Exams Table

ExamID	ExamDate	ExamTime	Location
1	2024-09-15	10:00	CR12
2	2024-09-05	10:00	CR11
3	2024-09-25	10:00	CR12
4	2024-09-16	10:00	CR11
5	2024-09-15	10:00	CR12
6	2024-09-15	10:00	CR11

Faculty Table

FacultyID	Name	Email	Phone	Department
101	Rizzvik Sharam	rizz@sharma.com	987654321	Mathematics
102	Rohil Khan	rohil@khan.com	947560821	Computer Vision
103	Runganko Dosa	dosaruganko@mail.com	6934738422	Soft Computing
104	Kumari Ashu	ashukumari@mail.com	5876094585	Advanced Algorithms and Complexity
105	Ustav blyat	blyatutsav@mail.com	9407658934	Advanced Databases Systems

Enrollement Table

EnrollmentID	StudentID	CourseID	EnrollmentDate
1	1	701	2024-05-15
2	2	701	2024-05-15
4	3	701	2024-05-15
5	4	701	2024-05-15
6	5	701	2024-05-15
7	6	701	2024-05-15

1

Teachers Table

TeachingID	FacultyID	CourseID
1	101	701
2	102	511
3	103	517
4	104	501
5	105	503
6	104	555
7	104	553

Registration Table

RegistrationID	StudentID	ExamID	RegistrationDate
1	1	1	2024-08-25
2	2	1	2024-08-05
3	3	1	2024-08-15
4	4	1	2024-08-25
5	5	1	2024-08-15
6	6	1	2024-08-05

Results Table

ResultID	StudentID	ExamID	Score
1	1	1	88.5
2	2	1	58.0
3	3	1	80.0
4	4	1	98.25
5	5	1	18.5
6	6	1	68.75