Short Intro To pySQLite

Eugene Syriani

Ph.D. Candidate in the Modelling, Simulation and Design Lab

School of Computer Science

McGill University

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OVERVIEW

- Relational Databases
- R-DB for Python: pySQLite
- Integrating pySQLite with Python

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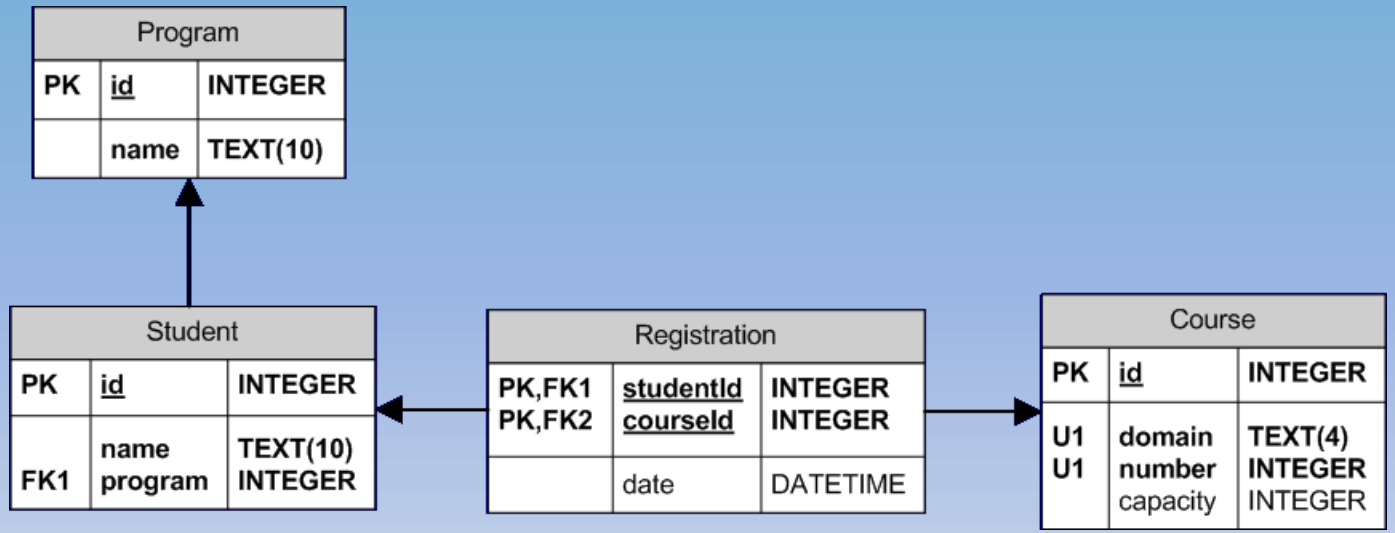
RELATIONAL DATABASE



PYSQLITE TYPES

Python type	SQLite type
NoneType	NULL
int	INTEGER
long	INTEGER
float	REAL
str (utf-8 encoded)	TEXT
unicode	TEXT
buffer	BLOB

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PYSQLITE: INITIALIZATION

```
import sqlite3


con = sqlite3.connect(":memory:")
cur = con.cursor()


# Wrapper
def printStudents(title):
    s = cur.execute("""
    SELECT * FROM Student
    """)
    print title + ':', s.fetchall()
```

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PYSQLITE: CREATION

```
# Create the tables
cur.execute("""
CREATE TABLE Program (
    id INTEGER PRIMARY KEY,
    name TEXT NOT NULL
)""")

cur.execute("""
CREATE TABLE Student (
    id INTEGER PRIMARY KEY,
    name TEXT NOT NULL,
    program INTEGER NOT NULL,
    FOREIGN KEY(program) REFERENCES Program(id)
)""")
```

```
cur.execute("""
CREATE TABLE Course (
    id INTEGER PRIMARY KEY,
    domain TEXT UNIQUE,
    number INTEGER UNIQUE,
    capacity INTEGER
)""")

cur.execute("""
CREATE TABLE Registration (
    studentId INTEGER UNIQUE,
    courseId INTEGER UNIQUE,
    payementAmount REAL,
    FOREIGN KEY(studentId) REFERENCES
    Student(id),
    FOREIGN KEY(courseId) REFERENCES Course(id)
)""")
```

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PYSQLITE: INSERTION

```
# Insert data
cur.execute("""
INSERT INTO Program (id, name) values (1, 'History')
""")

pgms = [('Computer Science',), ('Software Engineering',), ('Psychology',)]
cur.executemany("INSERT INTO Program (name) values (?)", pgms)

cur.executescript("""
INSERT INTO Student (id, name, program) values (26001234, 'Booch', 2);
INSERT INTO Student (name, program) values ('Rumbaugh', 2);
INSERT INTO Student (name, program) values ('Jacobson', 2);
""")
```

PYSQLITE: QUERYING

```
# Query the database
s = cur.execute("""
SELECT * FROM Student
""")
print 'SELECT 1:', s.fetchone()
print 'SELECT all:', s.fetchall()


s = cur.execute("""
SELECT *
FROM Student INNER JOIN
     Program ON Student.program =
   Program.id
""")
print 'INNER JOIN:', s.fetchall()
```

```
s = cur.execute("""
SELECT *
FROM Student INNER JOIN
     Program ON Student.program =
   Program.id
WHERE Student.name LIKE 'R%'
""")
print 'WHERE:', s.fetchall()
```

PYSQLITE: UPDATE

```
# Update data
s = cur.execute("""
UPDATE Student
SET name = "xyz"
WHERE name LIKE '%o%'
""")
printStudents('UPDATE')
```

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PYSQLITE: DELETION

```
# Delete rows
s = cur.execute("""
DELETE FROM Student
WHERE name = 'xyz'
""")
printStudents('DELETE')
```

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REFERENCES

- **Download pySQLite from:**
  http://pysqlite.org

- **Tutorials:**
  http://docs.python.org/library/sqlite3.html
  http://www.devshed.com/c/a/Python/Using-SQLite-in-Python
  http://initd.org/pub/software/pysqlite/doc/usage-guide.html