Documentation

Establish Connection

First, we need to set the environment variables:

```
HOST_ADDRESS = ""  # ip address of the server
PORT_NUMBER = ""   # port number
DB_NAME = ""       # name of the database
USER_NAME = ""     # your username
PASSWORD = ""      # your password
```

Then, we send these parameters using *connect* function from **psycopg2** library.

```
# Connect to your PostgreSQL database on a remote server
conn = psycopg2.connect(host=HOST_ADDRESS, port=PORT_NUMBER, database=DB_NAME,
user=USER_NAME, password=PASSWORD)
```

Create Tables

Note: all of the SQL queries are executed using *conn.execute* function.

Next, we need to create tables and populate them in our database using following SQL queries:

```
CREATE TABLE students (ST_ID INT NOT NULL PRIMARY KEY, ST_NAME VARCHAR(20),
ST_LAST VARCHAR(20));

CREATE TABLE interests (STUDENT_ID INT NOT NULL, INTEREST VARCHAR(15), FOREIGN
KEY (STUDENT_ID) REFERENCES students(ST_ID));

INSERT INTO students (ST_ID, ST_NAME, ST_LAST) VALUES (X, X, X); -- replace X
with your data

INSERT INTO interests (STUDENT_ID, INTEREST) VALUES (X, X); -- replace X
```

Migration

Here are the queries used to execute migration:

```
-- rename column
ALTER TABLE students RENAME COLUMN st_id TO student_id;       -- step 1

-- change length of the column
ALTER TABLE students ALTER COLUMN st_name TYPE VARCHAR(30);   -- step 2

-- create temporary table to migrate old data into right form
CREATE TABLE INTEREST_TEMP AS (
            SELECT
                STUDENT_ID,
                JSON_AGG(INTEREST) AS INTERESTS
            FROM INTERESTS
            GROUP BY STUDENT_ID
            ORDER BY STUDENT_ID
        );                                                    -- step 3

-- replace old table with the new one
DROP TABLE interests;
ALTER TABLE INTEREST_TEMP RENAME TO interests;
```

Rollback

Here are the queries used to execute rollback:

```
ALTER TABLE students RENAME COLUMN student_id TO st_id;
ALTER TABLE students ALTER COLUMN st_name TYPE VARCHAR(15);

-- save elements of new table into list in python using:
SELECT * FROM interests;

-- replace and fill the table with data of old format and schema
CREATE TABLE interests (STUDENT_ID INT NOT NULL, INTEREST VARCHAR(15), FOREIGN
KEY (STUDENT_ID) REFERENCES students(ST_ID));

-- fill new data instead of Xs
INSERT INTO interests (STUDENT_ID, INTEREST) VALUES (X, X);
```