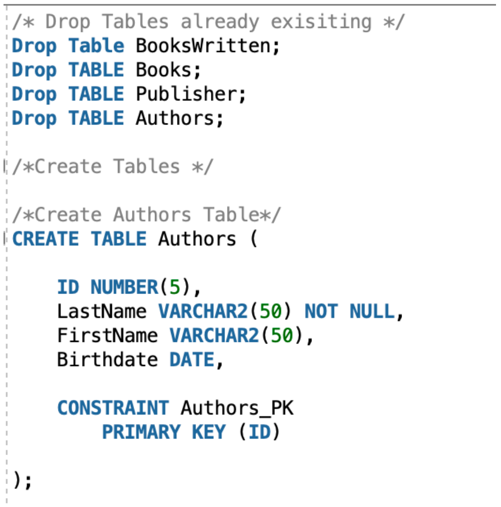
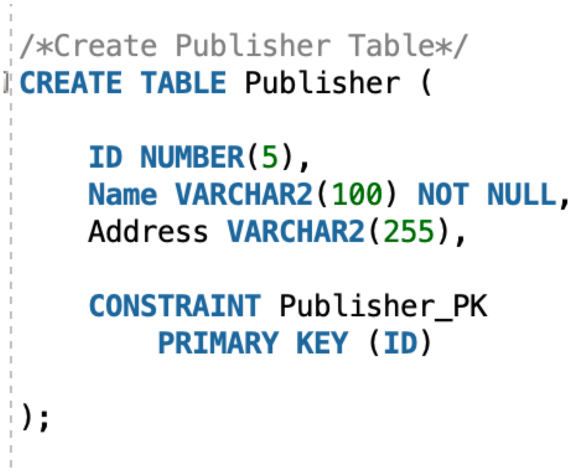
Sierra Salaam
June 25, 2023
Assignment 02

Part 1

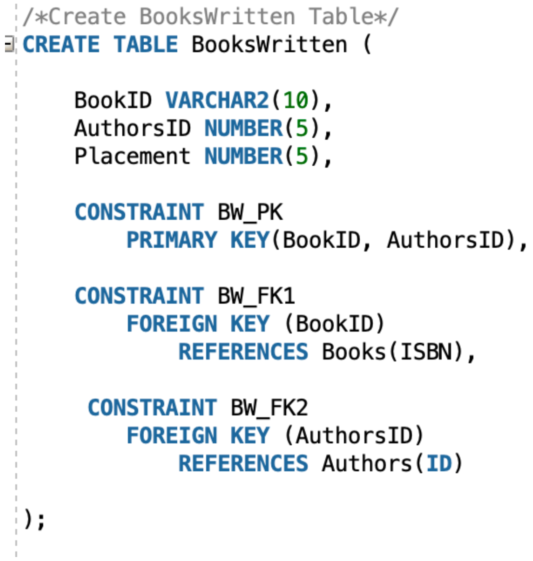
1. Previous assignment (Part 2-a), write the necessary SQL DDL script to create the tables



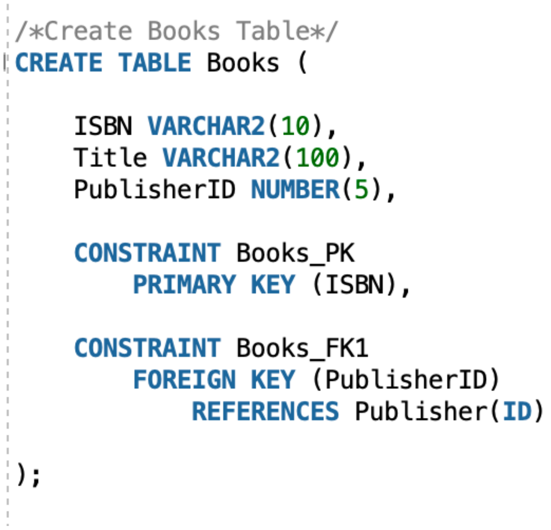
```
/* Drop Tables already exisiting */
Drop Table BooksWritten;
Drop TABLE Books;
Drop TABLE Publisher;
Drop TABLE Authors;

/*Create Tables */

/*Create Authors Table*/
CREATE TABLE Authors (

    ID NUMBER(5),
    LastName VARCHAR2(50) NOT NULL,
    FirstName VARCHAR2(50),
    Birthdate DATE,

    CONSTRAINT Authors_PK
        PRIMARY KEY (ID)

);
```



```
/*Create Publisher Table*/
CREATE TABLE Publisher (

    ID NUMBER(5),
    Name VARCHAR2(100) NOT NULL,
    Address VARCHAR2(255),

    CONSTRAINT Publisher_PK
        PRIMARY KEY (ID)

);
```



```
/*Create BooksWritten Table*/
CREATE TABLE BooksWritten (

    BookID VARCHAR2(10),
    AuthorsID NUMBER(5),
    Placement NUMBER(5),

    CONSTRAINT BW_PK
        PRIMARY KEY(BookID, AuthorsID),

    CONSTRAINT BW_FK1
        FOREIGN KEY (BookID)
            REFERENCES Books(ISBN),

     CONSTRAINT BW_FK2
        FOREIGN KEY (AuthorsID)
            REFERENCES Authors(ID)

);
```



```
/*Create Books Table*/
CREATE TABLE Books (

    ISBN VARCHAR2(10),
    Title VARCHAR2(100),
    PublisherID NUMBER(5),

    CONSTRAINT Books_PK
        PRIMARY KEY (ISBN),

    CONSTRAINT Books_FK1
        FOREIGN KEY (PublisherID)
            REFERENCES Publisher(ID)

);
```

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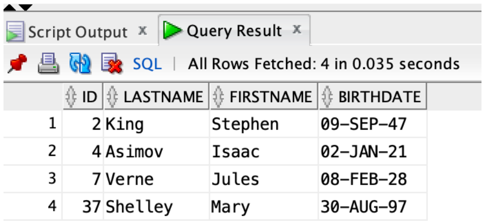
2. SQL INSERT statements to populate your database from Part 2-a

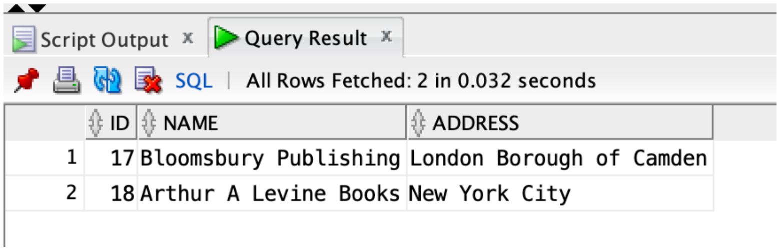
Authors



All Rows Fetched: 4 in 0.035 seconds

	ID	LASTNAME	FIRSTNAME	BIRTHDATE
1	2	King	Stephen	09-SEP-47
2	4	Asimov	Isaac	02-JAN-21
3	7	Verne	Jules	08-FEB-28
4	37	Shelley	Mary	30-AUG-97

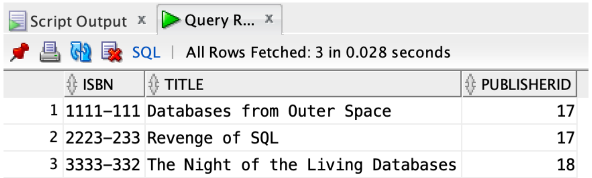
Publisher



All Rows Fetched: 2 in 0.032 seconds

	ID	NAME	ADDRESS
1	17	Bloomsbury Publishing	London Borough of Camden
2	18	Arthur A Levine Books	New York City

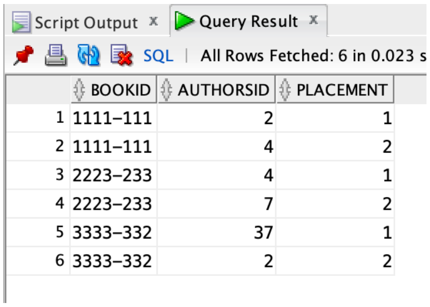
Books



All Rows Fetched: 3 in 0.028 seconds

	ISBN	TITLE	PUBLISHERID
1	1111-111	Databases from Outer Space	17
2	2223-233	Revenge of SQL	17
3	3333-332	The Night of the Living Databases	18

BookWritten



All Rows Fetched: 6 in 0.023 s

	BOOKID	AUTHORSID	PLACEMENT
1	1111-111	2	1
2	1111-111	4	2
3	2223-233	4	1
4	2223-233	7	2
5	3333-332	37	1
6	3333-332	2	2

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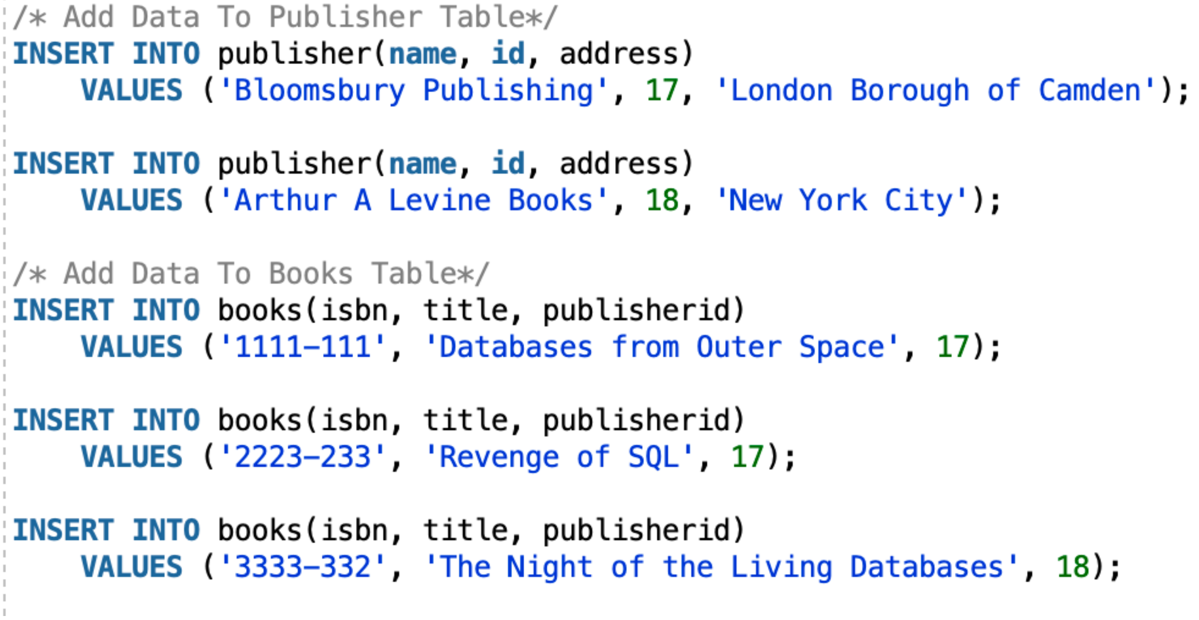
Blocks of Code Insert Data



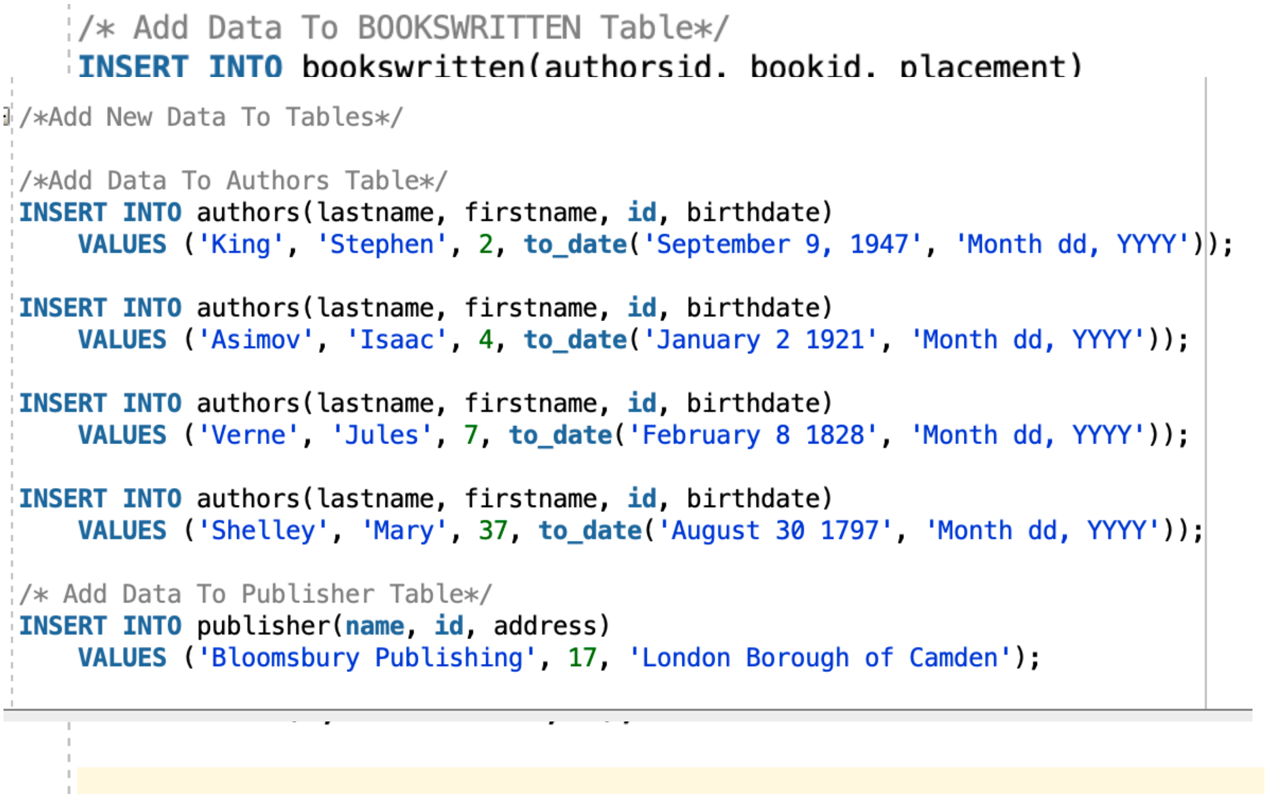
```
/* Add Data To Publisher Table*/
INSERT INTO publisher(name, id, address)
    VALUES ('Bloomsbury Publishing', 17, 'London Borough of Camden');

INSERT INTO publisher(name, id, address)
    VALUES ('Arthur A Levine Books', 18, 'New York City');

/* Add Data To Books Table*/
INSERT INTO books(isbn, title, publisherid)
    VALUES ('1111-111', 'Databases from Outer Space', 17);

INSERT INTO books(isbn, title, publisherid)
    VALUES ('2223-233', 'Revenge of SQL', 17);

INSERT INTO books(isbn, title, publisherid)
    VALUES ('3333-332', 'The Night of the Living Databases', 18);
```



```
/* Add Data To BOOKSWRITTEN Table*/
INSERT INTO bookswritten(authorsid, bookid, placement)
```

```
/*Add New Data To Tables*/

/*Add Data To Authors Table*/
INSERT INTO authors(lastname, firstname, id, birthdate)
    VALUES ('King', 'Stephen', 2, to_date('September 9, 1947', 'Month dd, YYYY'));

INSERT INTO authors(lastname, firstname, id, birthdate)
    VALUES ('Asimov', 'Isaac', 4, to_date('January 2 1921', 'Month dd, YYYY'));

INSERT INTO authors(lastname, firstname, id, birthdate)
    VALUES ('Verne', 'Jules', 7, to_date('February 8 1828', 'Month dd, YYYY'));

INSERT INTO authors(lastname, firstname, id, birthdate)
    VALUES ('Shelley', 'Mary', 37, to_date('August 30 1797', 'Month dd, YYYY'));

/* Add Data To Publisher Table*/
INSERT INTO publisher(name, id, address)
    VALUES ('Bloomsbury Publishing', 17, 'London Borough of Camden');
```

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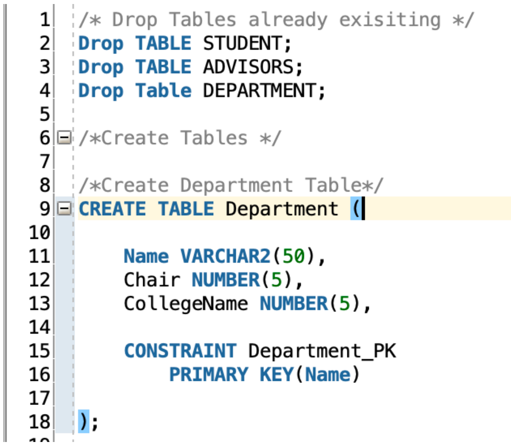
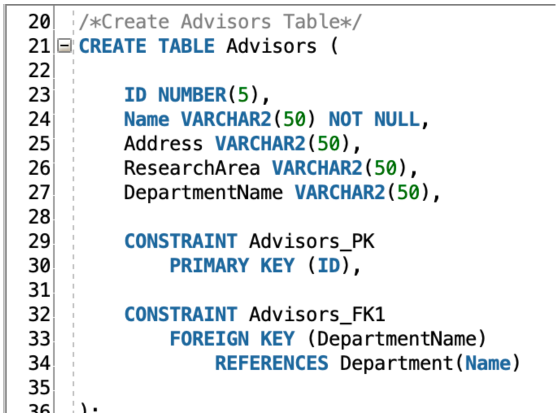
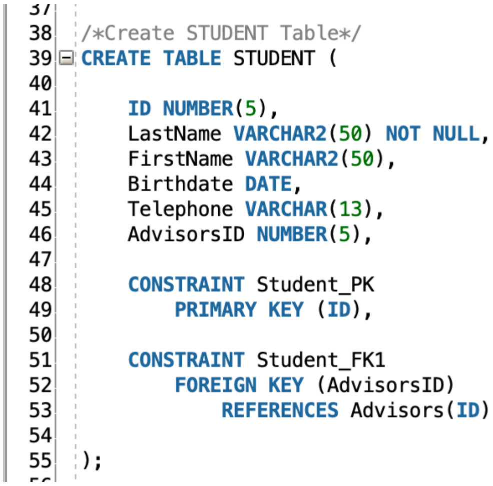
3. Previous assignment (Part 2-b) write the necessary SQL DDL script to create the tables



```sql
/* Drop Tables already exisiting */
Drop TABLE STUDENT;
Drop TABLE ADVISORS;
Drop Table DEPARTMENT;

/*Create Tables */

/*Create Department Table*/
CREATE TABLE Department (

    Name VARCHAR2(50),
    Chair NUMBER(5),
    CollegeName NUMBER(5),

    CONSTRAINT Department_PK
        PRIMARY KEY(Name)

);
```



```sql
/*Create Advisors Table*/
CREATE TABLE Advisors (

    ID NUMBER(5),
    Name VARCHAR2(50) NOT NULL,
    Address VARCHAR2(50),
    ResearchArea VARCHAR2(50),
    DepartmentName VARCHAR2(50),

    CONSTRAINT Advisors_PK
        PRIMARY KEY (ID),

    CONSTRAINT Advisors_FK1
        FOREIGN KEY (DepartmentName)
            REFERENCES Department(Name)

);
```



```sql
/*Create STUDENT Table*/
CREATE TABLE STUDENT (

    ID NUMBER(5),
    LastName VARCHAR2(50) NOT NULL,
    FirstName VARCHAR2(50),
    Birthdate DATE,
    Telephone VARCHAR(13),
    AdvisorsID NUMBER(5),

    CONSTRAINT Student_PK
        PRIMARY KEY (ID),

    CONSTRAINT Student_FK1
        FOREIGN KEY (AdvisorsID)
            REFERENCES Advisors(ID)

);
```

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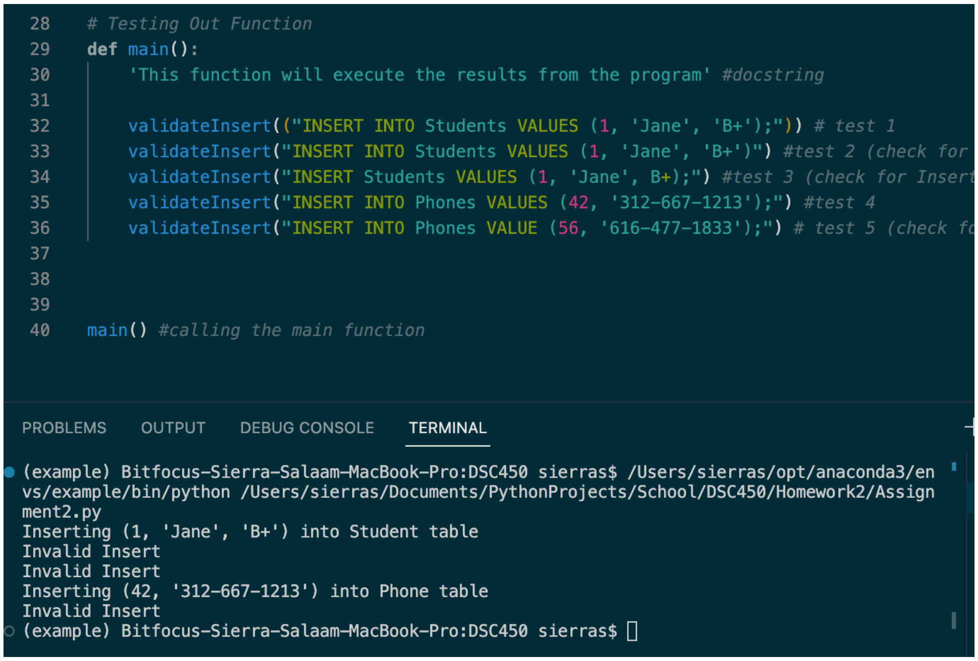
4. Python function to validate SQL insert statements



```python
# Testing Out Function
def main():
    'This function will execute the results from the program' #docstring

    validateInsert(("INSERT INTO Students VALUES (1, 'Jane', 'B+');")) # test 1
    validateInsert("INSERT INTO Students VALUES (1, 'Jane', 'B+')") #test 2 (check for
    validateInsert("INSERT Students VALUES (1, 'Jane', B+);") #test 3 (check for Insert
    validateInsert("INSERT INTO Phones VALUES (42, '312-667-1213');") #test 4
    validateInsert("INSERT INTO Phones VALUE (56, '616-477-1833');") # test 5 (check fo



main() #calling the main function
```

```
(example) Bitfocus-Sierra-Salaam-MacBook-Pro:DSC450 sierras$ /Users/sierras/opt/anaconda3/en
vs/example/bin/python /Users/sierras/Documents/PythonProjects/School/DSC450/Homework2/Assign
ment2.py
Inserting (1, 'Jane', 'B+') into Student table
Invalid Insert
Invalid Insert
Inserting (42, '312-667-1213') into Phone table
Invalid Insert
(example) Bitfocus-Sierra-Salaam-MacBook-Pro:DSC450 sierras$ 
```

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Part 2

1NF

Meeting (Date, Client, Office, FloorNum, Building, City, Representative)

A. The city is depending on the building. When the building field is repeated the city field is focused to repeat within the table. This will cause redundancy of the building and city within the table.

For Example:

In the example the city of Allendale is duplicated in the table because of the building that is duplicated in the table - Kirkoff Community Center. Since the building resides in a certain city, then the city is a dependent field.

Client	Office	FloorNum	Building	City	Date	Representative
C10123	421K	4	Kirkoff Community Center	Allendale	12/18/2023	Marketing
C72923	563K	5	Kirkoff Community Center	Allendale	3/4/2023	Sales
C56309	321E	3	Doug Summer Engineering	Grand Rapids	5/18/2023	Accounting
C63284	716B	7	Pew Business	Grand Rapids	8/10/2023	Sales

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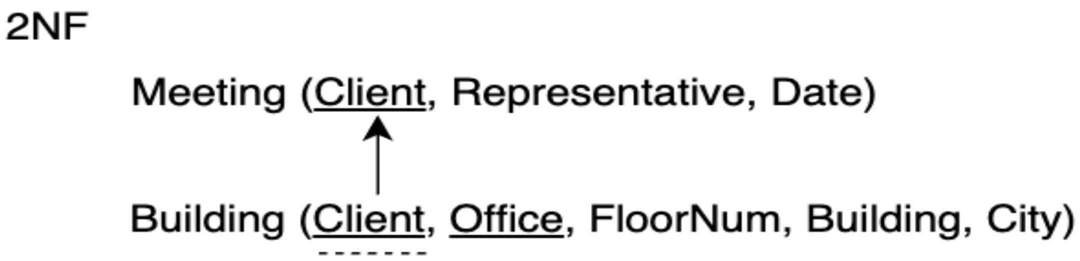
B. 2NF

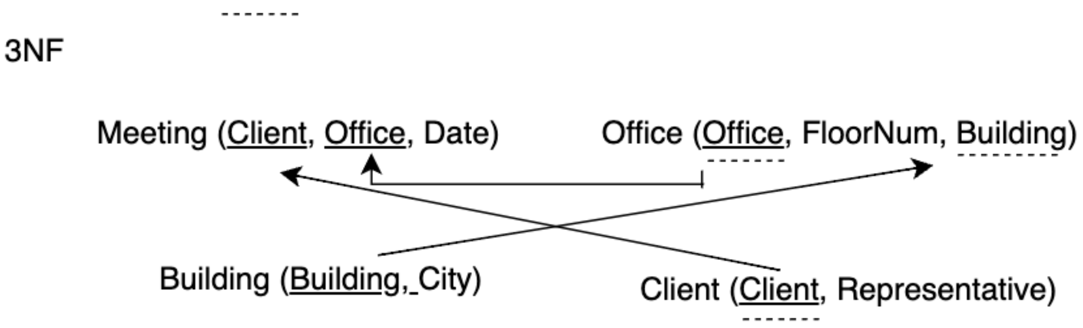


2NF

Meeting (Client, Representative, Date)

Building (Client, Office, FloorNum, Building, City)

C. 3NF



3NF

Meeting (Client, Office, Date)

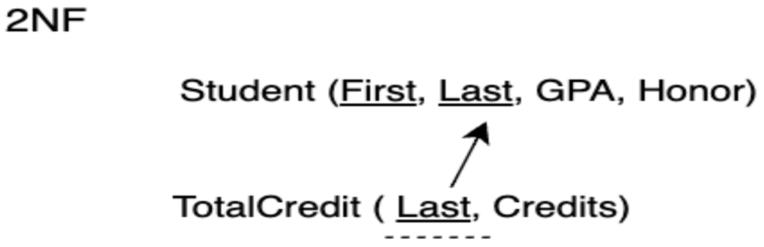
Office (Office, FloorNum, Building)

Building (Building, City)

Client (Client, Representative)

Part 3

A. This is not considered 2NF. The Last field is part of a subset of the primary key, which is First and Last, Last → Credits is considered as partial functional dependency which violates 2NF. The Last field is the FD which violates the 2NF



2NF

Student (First, Last, GPA, Honor)

TotalCredit (Last, Credits)

B. This is not considered 3NF. Just like 2NF, 3NF does not like partial function dependency and the Last Field is the FD which violates 3NF

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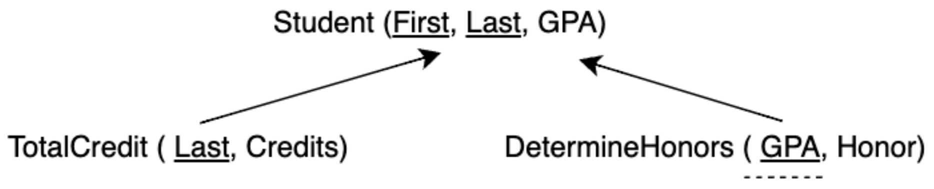
3NF


Student (First, Last, GPA)
TotalCredit (Last, Credits)
DetermineHonors (GPA, Honor)