DATA 604 Assignment 3

Michael Ellsworth UCID 30101253

Question 1

Part 1

For each of the identified FOREIGN KEYS in this schema, ***identify any apparent design issues (if any). If there are no apparent design issues with a FOREIGN KEY, explicitly state there are no issues with that KEY.*** *(Hint: you may want to sketch out a relational schema diagram for your own reference. This should not be handed in.)*

In the “Employee” table, the foreign key “manager” references the same table in which it resides. This could be an issue if there are two people with the same “full_name”.

In the “Office Building” table, the foreign key “employee_sin” suggests there is only one employee per office building. It is unlikely that there would be only one employee per office building.

Additionally, in the “Office Building” table, the foreign keys “title” and “years_in_role” should be a composite foreign key. In the original design, you could enter a record for “title” and a record for “year” but those would not necessarily have to match a combination of “title” and “year in the Salary table.

Part 2

Create a new schema (you may do this in the form of CREATE TABLE commands or a relational schema drawn with draw.io or another diagramming tool) which resolves these issues and explain how your solution solves the problems.

```
CREATE TABLE Salary (
        title varchar(12),
        years_experience int,
        salary decimal(15,2),
        PRIMARY KEY (title, years_experience)
);

CREATE TABLE Employee (
        sin int(9),
```

```
        title varchar(10),
        years_in_role int,
        full_name varchar(30) NOT NULL,
        manager varchar(30),
        office_building varchar(4)
        PRIMARY KEY (sin),
        FOREIGN KEY (manager) REFERENCES Manager (manager_name),
        FOREIGN KEY (title, years_in_role) REFERENCES Salary (title), Salary
        (years_experience)
        FOREIGN KEY (office_building) REFERENCES OfficeBuilding (name_abbrev)
);

CREATE TABLE Manager (
        employee_sin int(9),
        employee_name varchar(30) NOT NULL,
        manager_sin int(9),
        manager_name varchar(30) NOT NULL,
        PRIMARY KEY (employee_sin, manager_sin),
        FOREIGN KEY (employee_sin) REFERENCES Employee (sin),
        FOREIGN KEY (manager_sin) REFERENCES Employee (sin),
        FOREIGN KEY (employee_name) REFERENCES Employee (full_name),
        FOREIGN KEY (manager_name) REFERENCES Employee (full_name)
);

CREATE TABLE OfficeBuilding (
        name_abbrev varchar(4), -- unique short abbreviation for office name varchar(20),
        -- address
        street_number int,
        street_name varchar(20),
        city varchar(20),
        province_state varchar(20),
        country varchar(20),
        pcode varchar(6),
        -- end address
        employee_sin int(9),
        PRIMARY KEY (name_abbrev),
);
```