CSIC235 Assignment -1

Name – Hay Munn Hnin Wai

Student Id – 6573277

Tutorial Group – T02

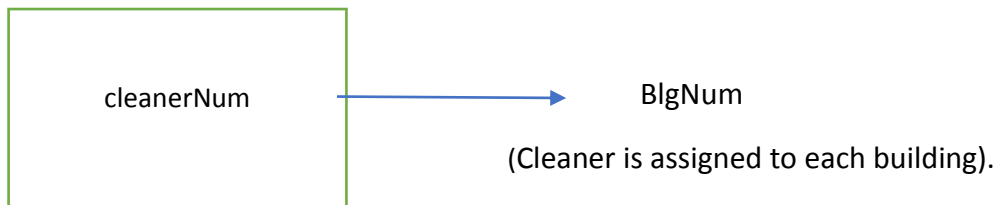**Q1**. **CLEANING-SCHEDULE** (blgNum, roomNum, sittingCapacity, cleanerNum)

Possible Functional Dependencies as follow:

cleanerNum → BlgNum
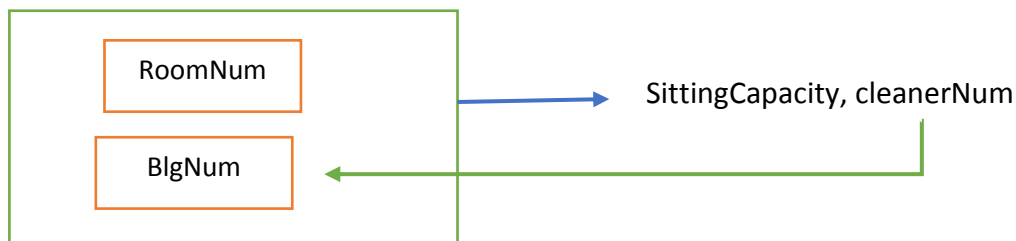
blgNm, roomNum → sittingCapacity , cleanerNum

 (All these dependencies are one to one dependency).

Table 1- LOCATION

(Cleaner is assigned to each building).

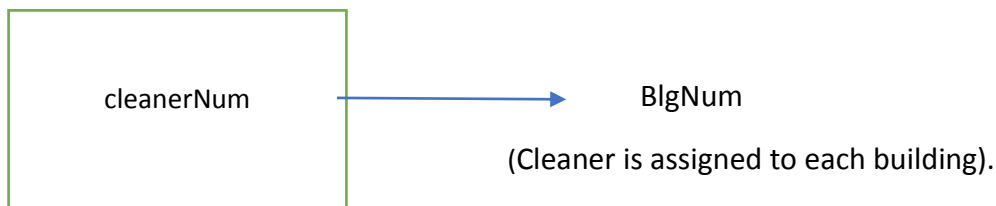PK: cleanerNum

Table 2- ROOMS

Pk : (BlgNum, RoomNum) is a minal super-key.

From the above dependencies, the table is in 1NF. There is no Partial and Transitive Dependency in the table. Hence, the above table is in 3NF.

From the above table, there is One **Non-Trivial Dependency** exist in the relation table (ROOM), which is <mark>cleanerNum → BlgNum</mark>. To resolve the violation of BCNF, we have to remove this Non-Trivial Dependency from the table. So, after removed, we get the following 2 Relation Tables:
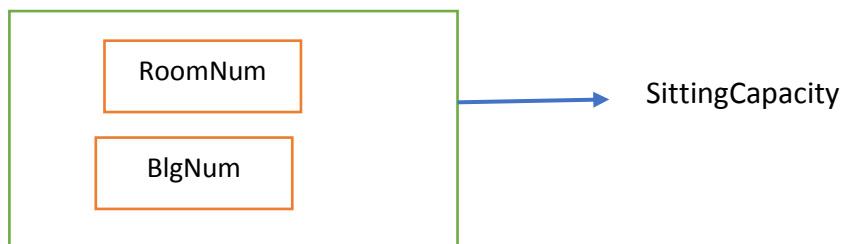
1. **LOCATION (cleanerNum, BlgNum)**
2. **CAPACITY (RoomNum, BlgNum, SittingCapacity)**

Table 1- LOCATION

cleanerNum → BlgNum

(Cleaner is assigned to each building).

PK: cleanerNum

Table 2- CAPACITY

RoomNum
BlgNum → SittingCapacity

Now the above Tables are in BCNF.

In order to be in 4NF,

- All attributes must be dependent on the primary key, but they must be independent of each other.
- No row may contain two or more multivalued facts about an entity.

  - LOCATION (BlgNum, CleanerNum)
  - CAPACITY (BlgNum,RoomNum,SittingCapacity)

Multi-Value Dependency from the above 2 Tables:

BlgNum → → RoomNum (Each Building will have many Room nos).

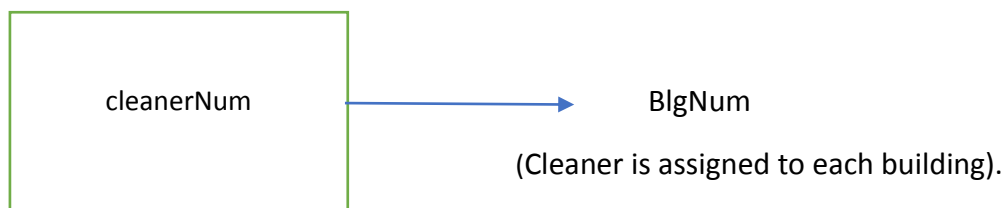After the correction, the set of Relational tables in 4NF as follow:

Table 1- CLEANER

cleanerNum   →   BlgNum

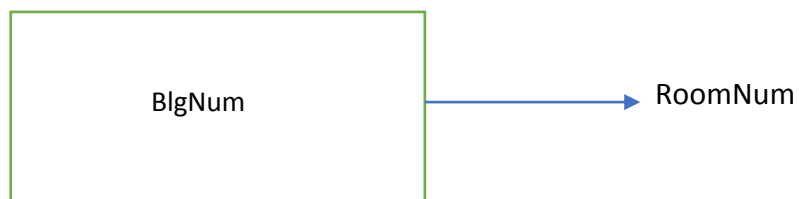(Cleaner is assigned to each building).

Table 2- BUILDING

BlgNum   →   RoomNum

Table 3 - SITTING CAPACITY

BlgNum   →   RoomNo