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Assignment-2

1) Company :-

Company (EmpID, EmpAddr, (ProjID, ProjName, MgrID, MgrName, HoursWorked)).

Primary key :-

EmpID, ProjID.

a) 1NF

- As we identify all the primary key & also all the values are atomic it does not violate 1NF.

- Company (EmpID, EmpName, EmpAddr, ProjID, ProjName, MgrID, MgrName, HoursWorked).

b) 2NF

Employee (EmpID, EmpAddr, ~~ProjID~~)

Project (ProjID, ProjName, MgrID, MgrName).

Company (EmpID, ProjID, HoursWorked)

→ It does not violate 2NF because all the non-prime attributes depends on primary key.

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c) 3NF.

→ For 3NF there are transitive relationships.
So, to eliminate it we create a new relations.

Company (EmpID, ProjID, HoursWorked).

Employee (EmpID, EmpAddr, ~~ProjID~~).

Project (ProjID, ProjName, MrgID).

Manager (MrgID, ~~MrgName~~ MrgName).

Now, it doesn't violate 3NF.

2) StockExchange →

StockExchange (Company, Symbol, HQ, ~~Date~~, ClosePrice).

Primary Key - Symbol & Date.

a) 1NF

Since, all the Primary keys are identified & there are no repeating groups, it does not violate 1NF.

b) 2NF.

StockExchange (Symbol, Date, ClosePrice)

Company-info (Symbol, Company, HQ).

All the non-prime attributes are dependent on Primary key so it does not violate 2NF.

c) 3NF

It does not violate 3NF since there are transitive dependency according to functional dependency.

3) Property :

Property (id, county, lotNum, lotArea, Price, taxRate,
(datePaid, amount)).

Primary key : id, datePaid.

a) 1NF

Property (id, county, lotNum, lotArea, Price, taxRate,
datePaid, amount)

Here, all the values are atomic & it also does not violate 1NF & all the primary key are identified.

b) 2NF

Property (id, datePaid)

date (datePaid, amount)

Identity (id, county, lotNum, lotArea, Price, taxRate).

All the non-prime attributes are dependent on Primary key so it does not violate 2NF.

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C) 3NF.

It does ~~not~~ violate 3NF as there are transitive relationships. So, we create new relations to eliminate them

Property (id, Date Paid)

Date (Date Paid, amount)

Identity (id, county, lotArea, lotNum).

Rate (county, taxRate)

Area (LotArea, Price)

4) Pharmacy:

Pharmacy (Patient_id, Patient_name, address, (Rx_num, trademark_name, generic_name, (filldate, num-refills-left), num-refills)).

a) 1NF

Primary key - Patient-Id, Rx-num, filldate

Pharmacy (Patient-Id, Patient-name, address, Rx-num, trademark-name, generic-name, filldate, num-refills-left, num-refills)

It does not violate 1NF because all the primary-keys have been identified & also all the values are atomic

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b) 2NF

Pharmacy (Patient-id, Rx-num, filldate)

Patient (Patient-id, Patient-name, address)

Medicine-info (Patient-id, Rx-num, trademark-name,
generic-name)

Refills (Rx-num, num-refills)

Remaining-refills (Rx-num, filldate, num-refills-left)

It does not violate 2NF because all the non-Prime attributes are dependent on Primary key. Also, there are no partial dependency.

c) 3NF

- The relation does not violate 3NF, since there are no transitive ~~relation~~ dependencies. So, we have 5 relations in total.