DB ASSIGNMENT 03

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20K0183 ; Sec: B

q) Anomalies related to updation, insertion & deletion!

01) Insertion:-

→ For adding a new contract in the table we must add a new employee

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02) Deletion:

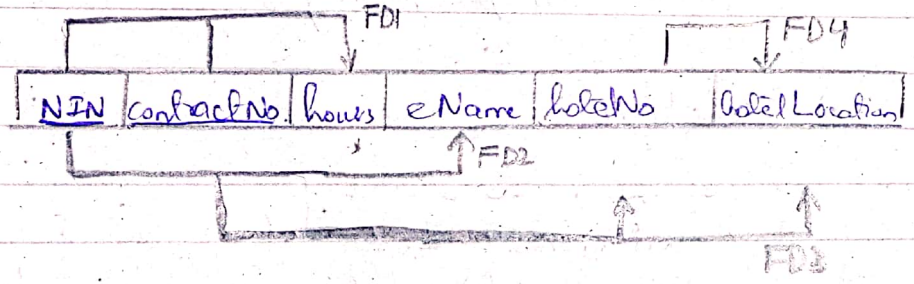
→ If we want to delete a contract info, the information about the employee will also be deleted..

> Updation

i) In order update the hotel location the information about the employee must be updated.

B)

In the 1st Normal Form we remove all the related group & their assigned primary keys (candidate keys) Then we figure out the functional dependencies (FDs) and illustrate them using the dependency diagram below:



Obviously FD2 & FD3 violate the 2NF (partial dependency) & FD4 violate transitive property (3NF).

In 2nd normal form we remove the partial dependency of FD2 & FD3 by splitting them into new tables.

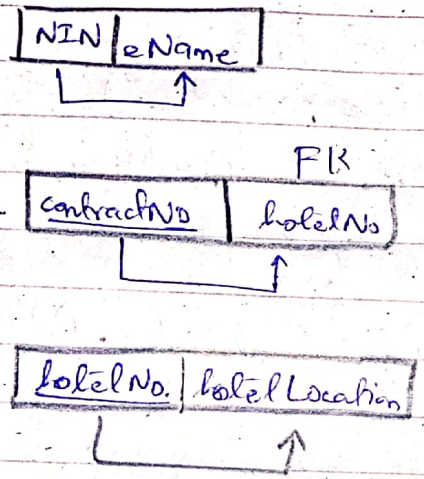
NIN	contractNo	hours

NIN	eName

contractNo	hotelNo	hotelLocation

In 3rd normal form we remove the transitive dependency of FD4 by splitting it into new tables.

FK	FK	
NIN	contractNo	hours



Putting in the values in the Normalized tables.

NIN	eName
1135	Smith J.
1057	Hocine D.
1060	White T.
1135	Smith J.

Assigning names to the tables & highlighting their primary keys we get.

NIN	eName

StaffRecord (NIN, eName)

hotelNo	hotelLocation

HotelInfo (hotelNo., hotelLocation)

FK

contractNo	hotelNo

Contract_Info (contractNo, hotelNo)

FK FK

NIN	contractNo	hours

Work-hourInfo (NIN, contractNo, hours)

QUESTION NO. 02

a)

Functional dependencies in the given data can be described as follows.

→ Patient No ⟶ Full Name
→ Ward No → Ward Name
→ Drug No → Dosage, Method of Admin, Unit/per day, Description

→ Patient No, Drug No., → Units per day, Start Date Finish date.

We can't specify a functional dependency on "Bed number" since its not clear whether bed number is unique to every ward number or to the whole hospital.

b) First Normal Form :-

Patient Number, Drug No, Start Date,

Fullname, Ward No, WardName, Bed No., Name, Description, Dosage, Method of Admin, Units per day, ~~Start Date~~, Finish Date

2nd Normal Form

01) Patient Number, Drug No, Start Date, ~~Full name~~, Ward No, WardName, Bed No, Units peday, ~~End Date~~ Finish Date.

02) Drug No, Name, description, Dosage, Method of Admin

03) Patient No., Full Name

3rd Normal Form

01) Patient No., Drug No, Start Date, Ward No, Bed No, Units per day, Finish Date,

02) Drug No, Name, Description, Dosage, Method of Admin,

03) Patient No. Full Name.

04) Ward No Ward Name

c) Primary Keys are underlined & Foreign keys have (FK) written with them.

1) Ward No, Ward Name

2) Patient No, Full Name

3) Drug No, Name, Description, Dosage, Method of Admin.

4) Patient No. (PK), Drug No (PK), Start Date (FK) Ward No (FK), Bed No, Units per day Finish Date.

QUESTION 03

a) Functional dependencies:

The functional dependencies a/c to the given information can be given as:

1) {SSn} → {Sname, Snum, Sc-addr, Sc-phone, Sp-addr, Sp-phone, Bdate, sex, class, ~~major~~ major-code, minor-code, Prog}

2) {Snum} → {Sname, SSn, Sc-addr, Sc-phone, Sp-addr, Sp-phone, Bdate, Sex, class, major-code, minor-code, Prog}

3) {Dname} → {Dcode, Doffice, Dphone, Dcollege}

4) {Dcode} → {Dname, Doffice, Dphone, Dcollege}

5) {Cnum} → {Cname, Cdesc, Credit, level, Cdept}

6) {Sec_num} → {Tname, semester, Year, Seccourse}

7) {ssn, Sec_Num} → {Grade}

B) 3NF Schema:

* Primary keys are underlined & Foreign keys have (FK) besides them.

1) STUDENT (Ssn, Snum, Sname, Sc-addr, Sc-phone, Sp-addr, Bdate, Sex, class, Major-code, minor-code, Prog, DName (FK), CNum (FK), SecNum (FK))

2) DEPARTMENT (DCODE, Dname, Doffice, Dphone, Dcollege).

3) COURSE (CNUM, cName, cDesc, credit level, CDept)

4) Section (Secnum, IName, Semester, year, Seccourse)

5) StudentGrade (Ssn, SecNum, Grade)

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End of assignment.