19K-0305
Ashmal Anis
Sec: H

DB Assignment #03

Question # 01

(a) Insertion:-

Insertion anomaly occurs that if a new hotel is entered at new location and there are no employees yet so this is the anomaly as we can't keep the primary key NULL this is entity integrity and insertion anomaly.

Deletion:

if we want to delete any employee and he is the last employee of the hotel, then the hotel information will also be deleted.

Update:

if we want to change any location of hotel, than all the hotel information has to be ~~date~~ updated/ modified. multiple update will be required.

(b) 1NF:-

The table is already is 1NF as the attribute domain is atomic (indivisible) and simplified.

2NF:

For a schema to be in 2NF, there should not be any partial dependency in the table.

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FD:- hNo → hLoc

NIN → eName

NIN, hNo → eName, hours, contactNo, hLoc

As we can see that the candidate key is NIN and hNo combined and NIN is a proper subset of candidate key that can also determine eName so partial dependency exist.

t1 [NIN, hNo → eName, hours, contactNo, hLoc
hNo → hLoc

t2 [NIN → eName

2 tables formed.

3NF As we can see that no transitive dependency exists the table is already in 3NF.

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Question #02

(a) Assumptions we are only finding functional dependency that are required to normalize the table.

PatientNumber → FullName
WardNumber → WardName
DrugNo → DrugName, Description, Dossage, Method
BedNo → WardNo

(b) the table is already in 1NF so we start with 2NF.
2NF:- To make sure that the table is in 2NF, there should not be any partial dependency

PatientNumber, DrugNumber → DrugName, Description, Dossage, Method

thus the PD exists between FD (1) and FD(5) thus decompose it.

R1
PatientNumber → FullName

R2
WardNumber → WardName
~~DrugNumber → DrugName, Description, Dossage, Method~~
PatientNumber, DrugNumber → DrugName, Description, Dossage, Method

R3
DrugNumber → DrugName, Description, Dossage Method.

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3NF for 3NF to exist, the table should not have any transitive dependency.

Name → description
Non prime attribute determines another non-prime attribute

Name → description	WardNumber → WardName
	~~DrugNumber → DrugName, Description~~
	~~Dosage, Method~~
	PatientNumber, DrugNumber → DrugName, Description, Dosage,

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Question #03

Snum -> SName, Ssn, Se_addr, Se_Phone, Bdate, Sex, Class, Major_code, Minor_code, Prog

Ssn -> SName, Snum, Se_addr, Se_phone, Sp_addr, Sp_phone, Bdate, Sex, Class, Major_code, Minor_code, Prog

Dname -> Dcode, Doffice, Dphone, Dcollege

Dcode -> Dname, Doffice, Dphone, Dcollege

Cnum -> Cname, Cdesc, Credit, level, Cdept

Sec_course, Sec_num, semester, year -> Iname

Sec_name, Sec_num, semester, year, Ssn -> Grade

STUDENT (Snum, Ssn, SName, Se_addr, Se_Phone, Sp_addr, Sp_Phone, Bdate, Sex, Class, Major_code, Minor_code, Prog)

DEPARTMENT (Dcode, Dname, Doffice, Dphone, Dcollege)

COURSE (Cnum, Cname, Cdesc, Credit, level, Cdept (FK))

SECTION (Sec_course (FK), Sec_num, semester, year, Iname)

GRADE (Sec_course, Sec_num, semester, year, SSN, Grade)

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