

Instituto Tecnológico de Costa Rica

Ingeniería en Computación

Bases de Datos 1

Profesor: Adriana Álvarez

Laboratorio - Normalización

1. The following table is susceptible to update anomalies. Provide examples of insertion, deletion, and modification anomalies.

staffNo	dentistName	patientNo	patientName	appointment date time	surgeryNo
S1011	Tony Smith	P100	Gillian White	12-Aug-03 10.00	S10
S1011	Tony Smith	P105	Jill Bell	13-Aug-03 12.00	S15
S1024	Helen Pearson	P108	Ian MacKay	12-Sept-03 10.00	S10
S1024	Helen Pearson	P108	Ian MacKay	14-Sept-03 10.00	S10
S1032	Robin Plevin	P105	Jill Bell	14-Oct-03 16.30	S15
S1032	Robin Plevin	P110	John Walker	15-Oct-03 18.00	S13

2. An agency called InstantCover supplies part-time/temporary staff to hotels throughout Scotland. The table lists the time spent by agency staff working at two hotels. The National Insurance Number (NIN) is unique for employee.

NIN	contractNo	hoursPerWeek	eName	hotelNo	hotelLocation
113567WD	C1024	16	John Smith	H25	Edinburgh
234111XA	C1024	24	Diane Hocine	H25	Edinburgh
712670YD	C1025	28	Sarah White	H4	Glasgow
113567WD	C1025	16	John Smith	H4	Glasgow

Provide examples of insertion, deletion, and modification anomalies.

3. Choose a key and write the dependencies for the following GRADES relation: GRADES (Student_ID, Course#, Semester#, Grade)
4. Choose a key and write the dependencies for the following SOFTWARE relation (assume all of the vendor's products have the same warranty):

SOFTWARE (SoftwareVendor, Product, Release, SystemReq, Price, Warranty)

5. Normalize the above SOFTWARE relation into 4NF.
6. What normal form is the following relation in
(only H,I can act as the key):

STUFF (H, I, J, K, L, M, N, O)

H, I -> J, K, L

J -> M

K -> N

L -> O

7. What normal form is the following relation in:
MORE_STUFF (D, O, N, T, C, R, Y)

D, O -> N, T, C, R, Y

D -> N

8. Given the following relation and example data:

PartNumber	Description	Supplier	SupplierAddress	Price
10010	20 GB Disk	Seagate	Cupertino, CA	\$100
10010	20 GB Disk	IBM	Armonk, NY	\$90
10220	256 MB RAM card	Kensington	San Mateo, CA	\$220
10220	256 MB RAM card	IBM	Armonk, NY	\$290
10220	256 MB RAM card	Sun Microsystems	Palo Alto, CA	\$310
10440	17" LCD Monitor	IBM	Armonk, NY	\$2,100

List the functional dependencies and normalize this relation.