

Homework #7 S14

Functional Dependencies and Normalization, CSC3287 Database Systems Concepts

Due by email in pdf format to debra.parcheta@ucdenver.edu by the beginning of class on Thursday, April 17th, 2014

At an orthodontist's office, an engineer from the NeverStudied School of Database Design created a database that is not working very well. Each time a patient comes in to one of their offices (they have several offices to choose from), the staff must be able to record the treatment given and the costs for billing. Given the engineer's schema and functional dependencies shown below:

1. determine if the relation is 1NF. (If it is, tell how you know. If not put it in 1NF form.)
2. then, determine if the relation is 2NF. (If it is, tell how you know. If not put it in 2NF form.)
3. then, determine if the relation is 3NF. (If it is, tell how you know. If not put it in 3NF form.)
4. What is the key of the original ORTHODONTIST_VISIT table?

ORTHODONTIC_VISITS

Doc#	DocName	Office#	TreatmentGiven	OAddress	PName	PAddress	TCost	Treatment#	Patient#
ApptDate	ApptTime	DocDeg							

Office# → {Doc#, OAddress}

Patient# → {PName}

Doc# → {DocName, DocDeg}

Treatment# → {TCost, TreatmentGiven}

{Office#, Treatment#, Patient#} → {ApptDate, ApptTime}

TCost is a composite attribute that accounts for LaborCosts and SuppliesCosts.

Visit is a multivalued, composite attribute that consists of the atoms ApptDate, ApptTime, TreatmentGiven, Treatment# and TCost.

Make assumptions and follow them if necessary.

Full credit will not be given unless you show all Functional dependency diagrams for all normal forms.