

Assignment 2
Normalization
100 points

For each question, part b refers to the results of part a, part c refers to the results of part b. You may add additional fields, like making up a key when there is no good existing field. Put your answers in a pdf with your name and section at the top of each page and turn the pdf in on Blackboard. Each question is worth 25 points.

1. Pharmacy(patient_id, patient_name, address, (Rx_num, trademark_name, generic_name, (date_filled, number_refills_left), number_of_refills))

Functional Dependencies

patient_id → patient_name, address

patient_id, Rx_num → trademark_name, generic_name

Rx_num → number_of_refills

Rx_num, date_filled → number_refills_left

a) is this relation in 1NF? If not, why not? And if not, put it in 1NF

b) is this relation in 2NF? If not, why not? And if not, put it in 2NF.

c) is this relation in 3NF? If not, why not? And if not, put it in 3NF.

2. Company(Emp_id, Emp_name, Emp_address, (Project_id, Project_name, Manager_id, Manager_name, hours_worked))

Functional Dependencies

Emp_id → Emp_name, Emp_address, Project_id

Project_id → Project_name, Manager_id, Manager_name

Emp_id, Project_id → hours

Manager_id → Manager_name

a) is this relation in 1NF? If not, why not? And if not, put it in 1NF

b) is this relation in 2NF? If not, why not? And if not, put it in 2NF.

c) is this relation in 3NF? If not, why not? And if not, put it in 3NF.

3. Property(Property_id, county, lot_num, lot_area, price, tax_rate, (date_paid, amount))

Functional Dependencies

Property_id \rightarrow count,lot_num, area, price, tax_rate, date_paid,amount

area \rightarrow price

county \rightarrow tax_rate

date_paid \rightarrow amount

a) is this relation in 1NF? If not, why not? And if not, put it in 1NF

b) is this relation in 2NF? If not, why not? And if not, put it in 2NF.

c) is this relation in 3NF? If not, why not? And if not, put it in 3NF.

4. invoice (invoice_no, invoice_date, cust_name, cust_addr, (pet_name, procedure, amount))

Functional Dependencies

invoice_no \rightarrow invoice_date, cust_name, cust_addr, pet_name

invoice_no, pet_name \rightarrow procedure

cust_name \rightarrow cust_addr

procedure \rightarrow amount

a) is this relation in 1NF? If not, why not? And if not, put it in 1NF

b) is this relation in 2NF? If not, why not? And if not, put it in 2NF.

c) is this relation in 3NF? If not, why not? And if not, put it in 3NF.