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CMPE 138 HW #3

1. A. To find the names of all borrowers in the Downtown branch and that have a loan for $20,000.

S customer\_name (borrower \* loan)

F branch\_name = Downtown

AND amount > 20000

B. For each customer name, find the number of loans and the average loan amount

S num\_loan, avg\_amount

(COUNT(loan\_number)(loan \* borrower) (R AS num\_load)

AND

AVG(amount) R AS avg\_amount)

2. Picture



3.

A. 1NF: Yes, there are 2 PK and none of the PK columns depend on the PK.

2NF: No, the 2 PK and each individual column are the the ones that are functionally dependent on each PK. This is due to a potential partial dependence issue.

3NF: No, the 2NF does not meet the fulfilling requirements of transitive dependency with the following columns Discount\_amt.

B. 1NF: It is already in 1NF.

2NF: T1(Car# (PK), Date\_sold, Discount\_amt)

Date\_sold->Discount\_amt AND Car#->Date\_sold

T2(Salesperson#(PK), Commission%)

Salesperson#->Commision%

3NF: 3NF contains T2, but there is no T1 due to the transitive dependency.

Possible Solutions are:

T1(Date\_sold (PK), Discount\_amt)

T3(2NF: T1(Car# (PK), Date\_sold)