University of Glasgow
Dip / MSc Information Technology
Information Systems and Databases

Tutorial Week 8 – More SQL

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1. **The following is the schema of the bank account database:**

customer(ID, forename, surname, sex, address, occupation)
account(accountno, type, balance, dateOpened, *inBranch*)
owner(*accno, custID*)
branch(branchNo, braddress, *manager*)
employee(staffNo, forename, surname, *empbranch, supervisor*)

Give relational algebra programs and SQL queries to retrieve the following:

h) The types of account for which there is at least one instance with a negative balance.

i) The types of account for which there are no instances with a negative balance.

i) The branch number and address of all branches except those which have deposit accounts with a negative balance.

j) The types of account that occur at every branch.

k) The staff number and name of all the employees including, for managers, the branch number and address of the branch that they manage (one query).

2. Write and run SQL queries to perform the following:

a) Find the full names and addresses of all customers who have accounts which have a negative balance
   (i) in name order.
   (ii) In overdraft order (largest first)
   (iii) In overdraft order (lowest first)

b) Find out how many current accounts owned by students have positive balances. Also, find how many have negative balances.

c) For each branch, find the total number of accounts held at the branch and the total sum of money contained in those accounts.

d) Find the average number of employees associated with each branch.

e) Find the average balance in accounts for each branch which has more than 3 accounts.

f) Find the average balance in current accounts for each branch in which there is more than one current account.

g) Create a View which shows the account number, customer names, and type of account. Then use the view to find the names of customers with a deposit account.

h) Create a View which shows the staff number and name of each employee together with the staff number and name of their supervisor.. (see (g))

i) Write queries b & c as parameterised queries.

j) Transfer £200 from the deposit account 23507 to the current account 23505.

k) Transfer the member of staff number 287 from branch 6 to branch 3.

l) Close account number 23524.

m) Close branch number 6 and move all of its staff and accounts to branch number 5.

n) Remove all mention of customer 193 from the database.

o) Find full details of any account for which there is no registered owner.