

COMP 3311

DATABASE MANAGEMENT

SYSTEMS

LECTURE 10 EXERCISES

STRUCTURED QUERY LANGUAGE (SQL)

EXAMPLE BANK RELATIONAL SCHEMA

Branch(branchName, branchCity, assets)

Client(clientName, clientStreet, clientCity)

Loan(loanNo, amount, *branchName*)

Account(accountNo, balance, *branchName*)

Borrower(*clientName*, *loanNo*)

Depositor(*clientName*, *accountNo*)

Attribute names in
italics are foreign
key attributes.

EXERCISE 1

Construct a PL/SQL procedure to calculate the interest payable to a client holding an account and update the account balance with the interest payable according to the following schedule.

0% if balance < \$10,000

2% if $\$10,000 \leq \text{balance} < \$100,000$

4% if balance $\geq \$100,000$

Additionally, if the balance is greater than or equal to \$100,000 and the client has a loan, then give an additional 1% interest.



EXERCISE I (CONT'D)

```
create or replace procedure L10CalculateInterest as
  currentAccountNo Account.accountNo%type;
  interestPayable   Account.balance%type;
  percentInterest   number;
  -- Declare the cursor for the Account table
  cursor accountCursor is select accountNo, balance from Account;
  -- Declare the cursor for the join of the Borrower and Depositor tables
  cursor loanCursor is select count(loanNo) numLoans from Borrower natural join
    Depositor where accountNo=currentAccountNo;
begin
  for accountRecord in accountCursor loop
    currentAccountNo := accountRecord.accountNo;
    -- Determine the percent interest to pay
    percentInterest := 0;
    if (accountRecord.balance >= 10000 and accountRecord.balance < 100000) then
      percentInterest := 0.02;
```

EXERCISE 1 (CONT'D)

```
elsif (accountRecord.balance >= 100000) then percentInterest := 0.04;
  -- Give an additional 1% interest if the client has a loan
  for loanRecord in loanCursor loop
    if (loanRecord.numLoans <> 0) then
      percentInterest := percentInterest + 0.01;
    end if;
  end loop;
end if;
-- Calculate the interest payable
interestPayable := accountRecord.balance * percentInterest;
-- Update the client's account balance
update Account set balance = balance + interestPayable where
  accountNo=currentAccountNo;
end loop;
end L10CalculateInterest;
```