

Quiz 4 Solution

Quiz 4.1 Solution

1. Suppose a new table called CustomerBill has been added to the Library database. The create table statement for the table is shown below.

```
create table CustomerBill(billNum serial primary key, amount money, billDate date, cid int not null, foreign key(cid) references Customer(cid))
```

Write a stored procedure called makeBill that is passed a customer id, a start date and an end date. The procedure calculates the total fines the customer owes between the start date and the end date inclusive and generates a new CustomerBill row for that customer. The billDate value for the new row is the current date. For example if a call to makeBill is passed customer id 10 and the dates 2021-02-01 (February 1, 2021) and 2021-02-28 and customer 10 has fines of \$1.00, \$0.75 and \$2.25 for books returned on 2021-02-01, 2021-02-12 and 2021-02-28 respectively then the procedure inserts a row into the CustomerBill table containing the values (4.00, 2021-03-05, 10) (assuming March 5, 2021 is the current date). Remember since billNum is of type serial a value will be assigned to the billNum attribute of the new row by the database.

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```
create or replace procedure makeBill(custId integer, startDate Date, endDate Date) AS $$
Declare
    f money;
    total money;
Begin
    total = 0.0;
    for f in select fine from Loan where ret >= startDate and ret <= endDate and cid = custId loop
        total = total + f;
    end loop;
    insert into CustomerBill (amount, billDate, cid) values (total, current_date, custId);
End;
$$ Language plpgsql;
```

Quiz 4.2 Solution

2. Let the Universal table be $R = \{A, B, C, D, E, F, G, H\}$

Let $FD = \{AE \rightarrow B, B \rightarrow C, C \rightarrow D, CF \rightarrow DE, CH \rightarrow D, D \rightarrow E, DE \rightarrow F, EFG \rightarrow D, F \rightarrow G, FH \rightarrow C\}$ be the functional dependency set

A. What is the closure of ABH?

$ABH^+ = ABH C D E F G$

B. Is ABH a super key?

Yes, the closure of ABH includes all the attributes in R

C. Is ABH a key? Why?

Yes, because no subset of ABH is a super key.

Quiz 3 Comments

- No OLD in trigger on insert
- Queries that return multiple rows need to be handled differently than queries which return 0 rows or 1 row. Use the for loop.
- Record data type

Homework 2 Comment

```
select cnum, year, semester, grade from enroll
order by cnum ASC,
        year DESC,
        case semester
          when 'Spring' then 1
          when 'Summer' then 2
          when 'Fall' then 3
        end DESC;
```