Database Systems Laboratory Lab 8 : Database Programming

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Question 1

Each insertion of professor information, the data are inserted into not only `professor` table but also into `faculty_insurance` table that `credit_limit` value is calculated from 300% of his/her `salary` and `ins_plan` is "Group Insurance for Instructor". (**trigger name: new_professor_added)

SQL

```
CREATE TRIGGER new_professor_added
AFTER INSERT ON Professor
FOR EACH ROW
INSERT INTO faculty_insurance (
    ref_id,
    ins_plan,
    credit_limit,
    duedate,
    s_timestamp,
    status
)
VALUES (
    new.pid,
    "Group Insurance for Instructor",
    3 * new.salary,
    DATE_ADD(SYSDATE(),INTERVAL 4, YEAR),
    SYSDATE(),
    'A'
);

INSERT INTO Professor (pid, pname, salary)
VALUES ('1238212', 'Elon Musk', 800);

SELECT * FROM faculty_insurance;
```

Results

Professors Table

After Insert new professor

pid	pname	salary
001	Michael	35000
002	Simon	40000
003	William	25000
004	Ken	40000
005	Steve	50000
1238212	Elon Musk	800
NULL	NULL	NULL

Faculty Insurance Table

After Trigger

ref_id	ins_plan	credit_limit	duedate	s_timestamp	status
001	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
002	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
003	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
004	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
005	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
1238212	Group Insurance for Instructor	2400.00	2024-03-31	2020-03-31 17:00:10	A
55489317	initial value by system	20000.00	2024-03-31	2020-03-31 16:34:59	A
55748896	initial value by system	20000.00	2024-03-31	2020-03-31 16:34:59	N
56717931	initial value by system	20000.00	2024-03-31	2020-03-31 16:34:59	A

Question 2

Convert the number declared in a numerical data type to other currencies using function named `fn_currency(input_number, exchange_rate, currency_name)` and return the result as `string` .
For example:

```
SELECT fn_currency (70,35.00 USD)
```

or try to test on professor table using

```
SELECT *, fn_currency (70,35.00 USD) FROM Professor”
```

Expected result of fn_currency must be 2 USD

SQL

```
DELIMETER $$
CREATE FUNCTION fn_currency(
    input_number DECIMAL(65),
    exchange_rate DECIMAL(65),
    currency_name VARCHAR(20)
)
RETURNS VARCHAR(99)
DETERMINISTIC
BEGIN
DECLARE res varchar(50);
SET res = CONCAT(
    input_number / exchange_rate,
    ' ',
    currency_name
);
RETURN res;
END$$
DELIMITER ;

SELECT *, fn_currency(salary,35,"USD") from Professor;
```

Results

After apply fn_currency

```
SELECT *, fn_currency(70,35,"THB") from Professor
```

pid	pname	salary	fn_currency(70,35,"TH...
001	Michael	35000	2.0000 THB
002	Simon	40000	2.0000 THB
003	William	25000	2.0000 THB
004	Ken	40000	2.0000 THB
005	Steve	50000	2.0000 THB
1238212	Elon Musk	800	2.0000 THB

After applying fn_currency to salary (I believe this would make more sense when selecting professor)

```
SELECT *, fn_currency(salary,35,"USD") from Professor
```

pid	pname	salary	fn_currency(salary,35,"US...
001	Michael	35000	1000.0000 USD
002	Simon	40000	1142.8571 USD
003	William	30250	864.2857 USD
004	Ken	40000	1142.8571 USD
005	Steve	50000	1428.5714 USD
1238212	Elon Musk	1172	33.4857 USD

Question 3

Update salary of all professors who earns `salary` less than 30,000 up to 10% and update `credit_limit` of insurance up to 400 % of new salary and also insert log into `system_log` table that stores the old salary, new salary, old credit limit and new credit limit. Finally, the data stored procedure has to print the name, old salary, new salary and credit limit of all professor information that are updated. (procedure name: Proc_cal_professor_upvel)

```
DELIMETER $$
CREATE PROCEDURE Proc_cal_professor_upvel()
DETERMINISTIC
BEGIN
IF
(SELECT count(*) FROM Professor WHERE salary < 30000) > 0
THEN
# Create new temp table storing ID, old salary and old credit_limit
CREATE TEMPORARY TABLE IF NOT EXISTS TEMP_PROF_OLD (
    PID varchar(16),
    salary INT,
    credit_limit decimal(10,2)
);
TRUNCATE TABLE TEMP_PROF_OLD;

INSERT INTO TEMP_PROF_OLD (PID,salary, credit_limit)
SELECT pid,salary, faculty_insurance.credit_limit
FROM Professor
INNER JOIN faculty_insurance ON ref_id = pid
WHERE salary < 30000;
# Update professors incresing salary by 10%
UPDATE Professor SET salary = salary * 1.1
WHERE pid IN (SELECT PID FROM TEMP_PROF_OLD);
# Update insurance credit_limit by 400% of new salary
UPDATE faculty_insurance
INNER JOIN Professor ON ref_id = pid
SET credit_limit = 4 * salary
WHERE ref_id IN (SELECT PID FROM TEMP_PROF_OLD);
# Insert all the values into system log
INSERT INTO system_log (user_log, remark, timestamp)
SELECT o.PID, CONCAT(
    'old salary: ', o.salary,
    ' new salary: ', p.salary,
    ' old credit limit:', o.credit_limit,
    ' new credit limit: ', f.credit_limit
    ),  SYSDATE()
FROM TEMP_PROF_OLD o
INNER JOIN Professor p ON p.pid = o.PID
INNER JOIN faculty_insurance f on p.pid = f.ref_id;
# Select values to show
SELECT o.PID, p.pname,
    o.salary as old_salary,
    p.salary as new_salary,
    o.credit_limit as old_credit_limit,
    f.credit_limit as new_credit_limit,
    SYSDATE()
FROM TEMP_PROF_OLD o
INNER JOIN Professor p ON p.pid = o.PID
INNER JOIN faculty_insurance f on p.pid = f.ref_id;

ELSE

SELECT 'Professor < 30000 is empty';

END IF;
END$$

CALL Proc_cal_professor_upvel();
```

Results

Before `Proc_cal_professor_upvel()`

Professors table

pid	pname	salary
001	Michael	35000
002	Simon	40000
003	William	25000
004	Ken	40000
005	Steve	50000
1238212	Elon Musk	800
NULL	NULL	NULL

After `Proc_cal_professor_upvel()`

Results from `Proc_cal_professor_upvel()`

PID	pname	old_salary	new_salary	old_credit_limit	new_credit_limit	SYSDATE()
003	William	25000	27500	40000.00	110000.00	2020-03-31 18:28:18
1238212	Elon Musk	800	880	2400.00	3520.00	2020-03-31 18:28:18

`system_log` table

id	user_log	remark	timestamp
1	55748896	get F	2020-03-31 16:44:13
2	55748896	get F	2020-03-31 16:44:22
7	003	old salary: 25000 new salary: 27500 old credit limit:40000.00 new credit limit: 11000…	2020-03-31 18:28:18
8	1238212	old salary: 800 new salary: 880 old credit limit:2400.00 new credit limit: 3520.00	2020-03-31 18:28:18
NULL	NULL	NULL	NULL

`Professor` table

pid	pname	salary
001	Michael	35000
002	Simon	40000
003	William	27500
004	Ken	40000
005	Steve	50000
1238212	Elon Musk	880
NULL	NULL	NULL

`faculty_insurance` table

ref_id	ins_plan	credit_limit	duedate	s_timestamp	status
001	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
002	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
003	initial value by system	110000.00	2024-03-31	2020-03-31 16:34:47	A
004	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
005	initial value by system	40000.00	2024-03-31	2020-03-31 16:34:47	A
1238212	Group Insurance for Instructor	3520.00	2024-03-31	2020-03-31 17:00:10	A
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