SOFTENG 351 S1 C : Tutorial 7

Due Date: Sunday 17 May 2020 at 11:59pm
10 marks in total = 1% of the finalgrade

Recall the process of creating the COMPANY database in Assignment 2 (by importing the file of "COMPANY_DATA.sql" into the database). With the COMPANY database, we can now write PSM programs for the database. For example, the following PSM program illustrates how to return the scale ("huge", "large", "medium", or "small") of a department within a company based on the number of employees[1].

```
delimiter &
create procedure deptscale(in deptno int, out scale varchar(10))
begin
        declare x int;
        select count(*) into x from EMPLOYEE where dno = deptno;
        if x > 10 then set scale = "huge";
        elseif x > 5 then set scale = "large";
        elseif x > 2 then set scale = "medium";
        else set scale = "small";
        end if;
end
```

- Please put "delimiter &" as the first line of the procedure that you are writing when feeding it to the phpmyadmin query box.
- The coding is generally case-insensitive apart from the table name, e.g., EMPLOYEE.
- One can remove a procedure X from the database with statement "drop procedure X;".
- Due to the differences in versions, PSM in mysql declares local variables in the scope of BEGIN...END.

```
call deptscale(5, @a);
select @a
```

Calls the procedure and the result is 'medium'.

Write PSM procedures for two tasks (the schemas of the database are listed in Figure 5.5, page 161, the text book).

1. White a procedure named **init** which has

   ```
   Input Parameter: p, int(11);
   Output Parameter: None.
   ```

   Add to the relation of Project a new attribute Hours whose type is float if there is no such an attribute. Then initialize the value of attribute "Hours" with 0.0 for the tuple with Pnumber = p.

   Hint: to find o ut t he n umber o f a ttributes a r elation h as, query

   ```
   SELECT COUNT(*) FROM INFORMATION_SCHEMA.COLUMNS
          WHERE table_schema = 'database_name' -- the database
            AND table_name = 'table_name'
   ```

   [5 marks]

2. Note: this task uses loop but does NOT use cursor[2]. Write a procedure named **stat** (which has no parameter) to find out the minimum ($pmin$) and maximum ($pmax$) Pnumber of a project in table PROJECT. For each integer p in the range of $[pmin, pmax]$, calculate the total number of hours invested to the project by different employees and then update attribute "Hours" of the corresponding project with Pnumber p. Note that if there is no employee works on a specific project, the Hours should be set to 0.
   Hint: a variable x has condition "x is null" returning true only if x is null. [5 marks]

[1] Note that the student database does not support function so we use an out parameter to pass the result out.
[2] Please use aggregation when necessary https://dev.mysql.com/doc/refman/8.0/en/group-by-functions.html.