1. Write a SQL function that takes course ID and a letter grade ( ‘A’, ‘B’, ‘C’ etc) as parameters and returns the number of students who received that grade in the given course. [ 20 points]

DELIMITER //

create function *grade\_count* (*course\_id* varchar(20), grade varchar(2))  
 returns integer  
 begin  
 declare *g\_count* integer;  
 select count (*grade* ) into *g\_count* from *takes* where takes.course\_id=course\_id *and takes.grade=grade;* return *g\_count;* end//

DELIMITER ;

2. Suppose you have a table in the university database called gradesummary which is created as follows [30 points] a. create the table: create table gradesummary( LetterGrade varchar(2), gradecount int);

b. Insert summary records: insert into gradesummary SELECT grade, COUNT(\*) from takes group by grade;

If you observe the table, you will see that the table stores the number of records for each grade category. Now create a trigger on the update of takes table that will detect the change of grade column of takes table (say B is changed to A, or NULL is changed to B) and modify the gradesummary table accordingly.

DELIMITTER //

CREATE TRIGGER gradecheck AFTER UPDATE OF takes on (grade)

referencing new row as newr

referencing old row as oldr

FOR EACH ROW

when newr.grade = ‘F’ and oldr.grade<>’F’

begin atomic

update gradesummary

set gradecount= gradecount+1

where newr.grade=summary.grade;

set gradecount= gradecount-1

where oldr.grade=summary.grade;

end;

when newr.grade = ‘D’ and oldr.grade<>’D’

begin atomic

update gradesummary

set gradecount= gradecount+1

where newr.grade=summary.grade;

set gradecount= gradecount-1

where oldr.grade=summary.grade;

end;

when newr.grade = ‘C’ and oldr.grade<>’C’

begin atomic

update gradesummary

set gradecount= gradecount+1

where newr.grade=summary.grade;

set gradecount= gradecount-1

where oldr.grade=summary.grade;

end;

when newr.grade = ‘B’ and oldr.grade<>’B’

begin atomic

update gradesummary

set gradecount= gradecount+1

where newr.grade=summary.grade;

set gradecount= gradecount-1

where oldr.grade=summary.grade;

end;

when newr.grade = ‘A’ and oldr.grade<>’A’

begin atomic

update gradesummary

set gradecount= gradecount+1

where newr.grade=summary.grade;

set gradecount= gradecount-1

where oldr.grade=summary.grade;

end;

3. Write a SQL query to show the instructors by ascending order of their ranking over the salary. ( Please show ID, name and the ranking) [ 10 points]

select ID, name, rank() over(order by salary) sal\_rank from instructor;

4. Complete and submit the file “Homework4.py”. [ 40 points]