

# COMP9315 DBMS Implementation

## Final Exam

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### Question 3 (6 marks)

Consider the following SQL statements to create three tables:

```
create table Students (  
    id        integer primary key,  
    name      text not null  
);  
  
create table Courses (  
    id        integer primary key,  
    code      char(8),  
    title     text not null  
);  
  
create table Enrolments (  
    stude     integer references Students(id),  
    course    integer references Courses(id),  
    mark      integer check (mark between 0 and 100),  
    grade     char(2) check (grade in ('FL','PS','CR','DN','HD')),  
    primary key (stude,course)  
);
```

Consider also that you insert 1000 tuples into each of the `Students` and `Courses` tables, and insert exactly 4 `Enrolments` tuples for each student.

The `pg_class` catalog table has a field `reltuples` that indicates the total number of tuples stored in the pages of the relation. This includes tuples that have been deleted, but not yet vacuum'd.

For each parts (a), (b) and (c), what values will be produced from the queries:

```
select count(*) from Enrolments;  
select reltuples from pg_class where relname='enrolments';
```

- after all the tuples are initially inserted (as above)
- after the SQL statement `delete from Enrolments where stude = 1234567;` (but before any vacuuming)
- after the SQL statement `delete from Enrolments;` (but before any vacuuming)
- if the SQL statement `drop table Enrolments;` is executed, which of the following tables in the PostgreSQL catalog will be modified:

```
pg_aggregate, pg_attrdef, pg_attribute, pg_class, pg_collation,  
pg_constraint, pg_conversion, pg_database, pg_depend, pg_enum,  
pg_foreign_table, pg_index, pg_proc, pg_range, pg_rewrite,  
pg_sequence, pg_transform, pg_tablespace, pg_trigger, pg_type
```

Note: incorrect table names are penalised; just writing them all scores zero.

The PostgreSQL catalog tables are described in detail in [Chapter 48](#) of the PostgreSQL documentation.

**Instructions:**

- Type your answer to this question into the file called `q3.txt`
- Submit via: **give cs9315 exam\_q3 q3.txt**  
or via: Webcms3 > exams > Final Exam > Submit Q3 > Make Submission

*End of Question*