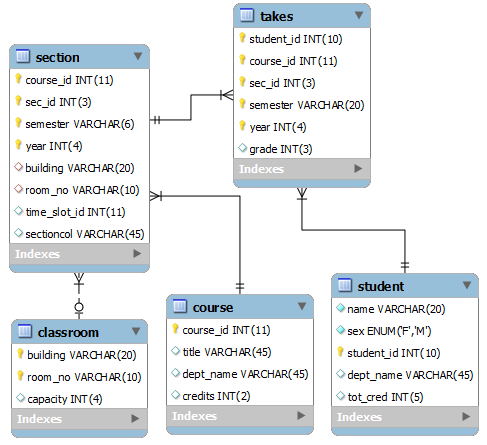
Optimization Worksheet

**Assumptions**

1. DB has info for just one semester, Fall 2016
2. There are 25,000 sections in the DB (i.e. 25,000 rows/tuples in section)
3. There are 20 buildings on campus
4. Each building has 50 classrooms
5. Only 5 buildings on campus have high capacity classrooms and just one such classroom per building
6. Every room has the same number of sections scheduled in it (=25)
7. There are 30 students in each section
8. There is no short-circuit evaluation of predicates (analysis will therefore provide an upper bound)

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|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  |  |  |  |  |  |
| # | Contains order of operation | | 5 | classrooms w capacity>30 | |
|  |  |  | 25 | sections / classroom |  |
|  |  |  | 30 | students / section |  |
|  |  |  | 3750 | students (takes) |  |

**Query 1:** Display how many students are taking a class in a large capacity classroom using subqueries

**Query 2:** Display how many students are taking a class in a large capacity classroom using natural joins

**Query 3:** Display how many students are taking a class in a large capacity classroom using no joins, but just WHERE clauses.

For these queries show the memory utilization and the processing requirements.