

# **CSCI-585: Assignment # 4**

Due on Monday, July 27, 2015

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## 1 Question # 1

### 1.1 1a

To enforce the primary key constraint we can use an artificial primary key, an 'ID' which is auto incremented.

### 1.2 1b

Query that is definitely faster with an indexed gpa: 'SELECT studentID FROM Student WHERE Student.gpa = 3';

### 1.3 1c

Any INSERT operation if indexing is on gpa.

### 1.4 1d

i'0';

Any SELECT operation when the query when the index is based on majorID is uncertain, since majorID is supposed to have high sparsity. And hence any access will require same number of row accesses irrespective of whether majorID is indexed or not.

## 2 Question #2

### 2.1 1a

(v) No index. Since the query is going to access all the records anyway, there is little use of an index specific for this query.

### 2.2 1b

(iv) Clustered B+ tree index on (schoolID, budget) allows scan in order, so the search can stop at school 3 followed by all budget lesser than \$150000

## 3 Question # 3