



Final Exam

M312 Final Exam, Question 1

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The following are correct:

- `db.currentOp()` can be used to find long-running processes.
 - A long-running process, by definition, is going to stick around for awhile. `db.currentOp()` is likely to find it, unless it ends before the command can be run, and it's also possible to find the number of seconds the process has been running.
- Background index builds may result in a drop in performance.
 - Background index builds involve allocation of resources away from standard database operations. They yield to allow reads and writes to come through, but they can still be expensive operations. This is why a rolling index build can be preferable in production.

The following are incorrect:

- If the `.explain()` plan is showing that a query is using an index, then that query has definitely been fully optimized.
 - This is false. A good example would be the following, which uses an index, but (1) 99% of the documents the server touches to fulfill this query are not returned by the query, and (2) performs an in-memory sort that would have been avoided with a better index:

```
use m312;
db.poorlyUsedIndex.drop();
for (k=1; k<=100; k++) { for (j=1; j<=100; j++) { docs = []; for
(i=1; i<=100; i++) { docs.push( { a : i, b : j, c : k } ) };
db.poorlyUsedIndex.insertMany(docs) } };
db.poorlyUsedIndex.createIndex( { a : 1 } );
db.poorlyUsedIndex.explain("executionStats").find( { a : { $gte : 7,
$lte : 10 }, b : 15 } ).sort( { c : -1 } );
```

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