THE ART OF HIBERNATE OPTIMIZATION

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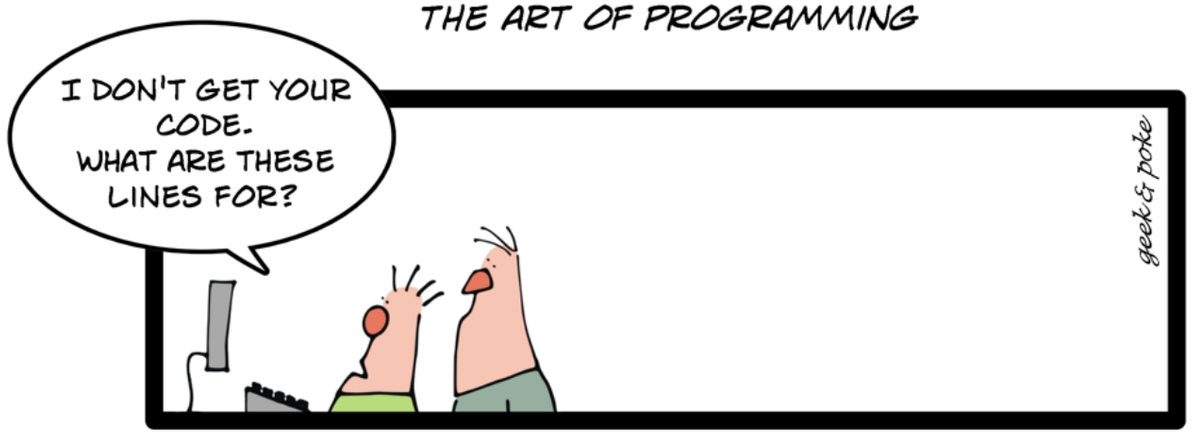
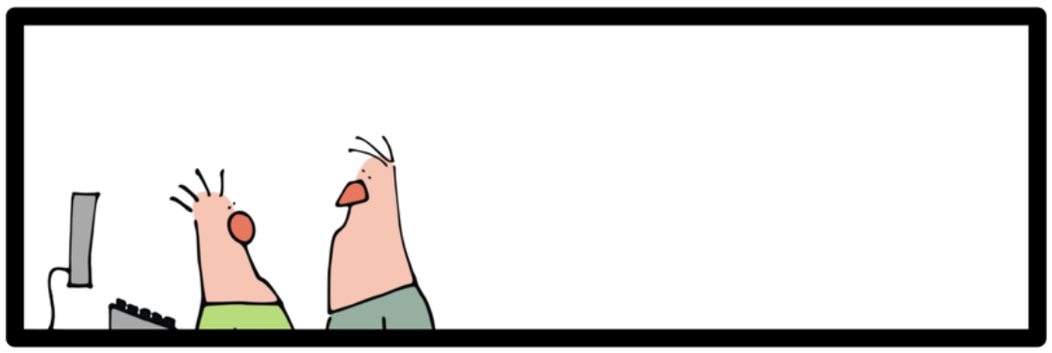
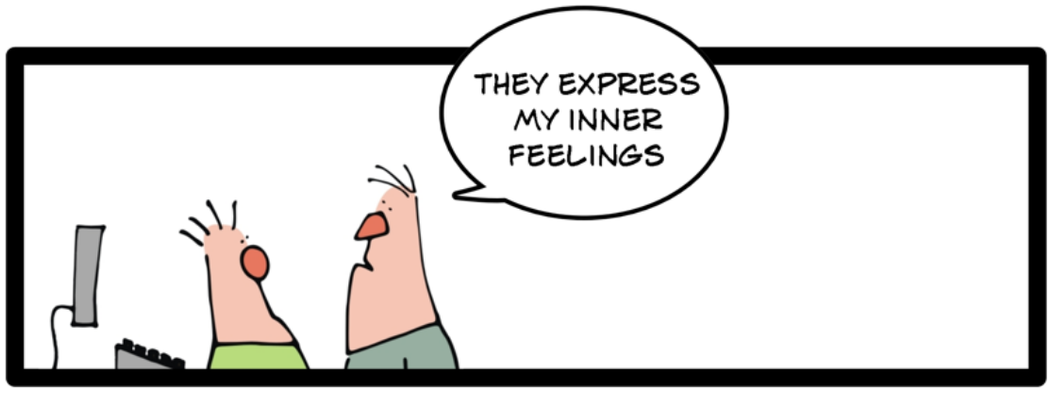
THE ART OF PROGRAMMING







PROGRAMMERS ARE ARTISTS

MISCONCEPTIONS

- I don’t have control over SQL commands
- Hibernate generates too many queries
- Populating my domain objects will make my app too slow

REALITY

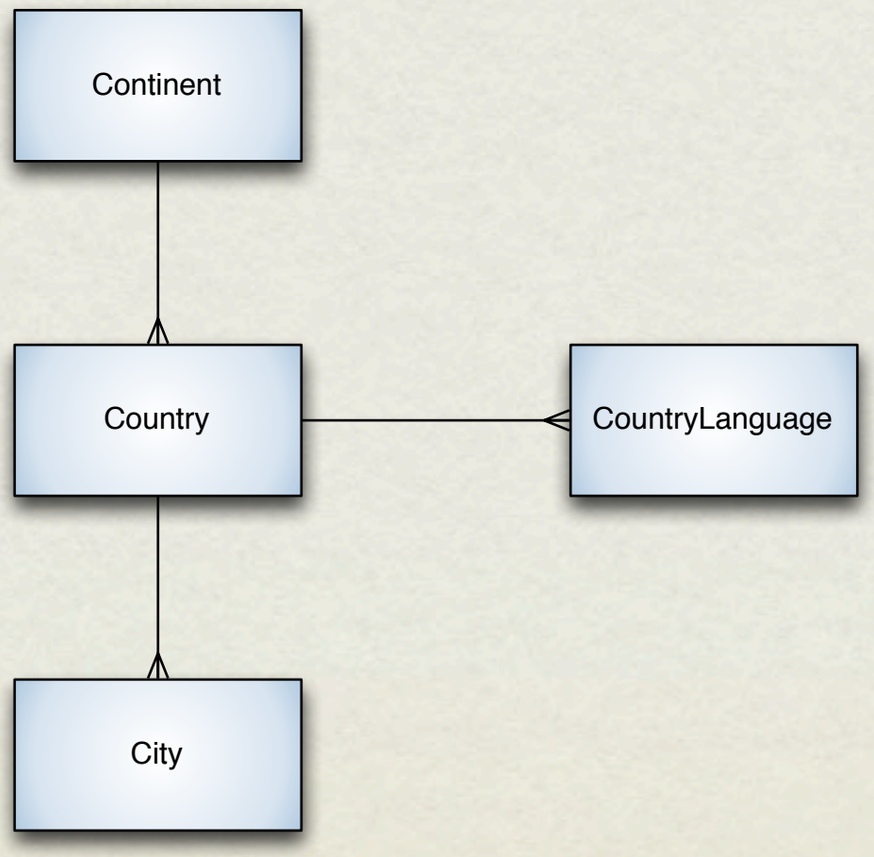
- Many optimizations exist that most people don't take advantage of.
- Some optimizations can be done with little to no code changes.
- Hibernate is designed to work best if you're using Object Oriented design.

PREPARATION

- Install / Set up your favorite IDE
- If you want to use Eclipse, install eGit & m2e plugins
- Example code can be found on GitHub: https://github.com/brycep/world-example

EXAMPLE DATABASE

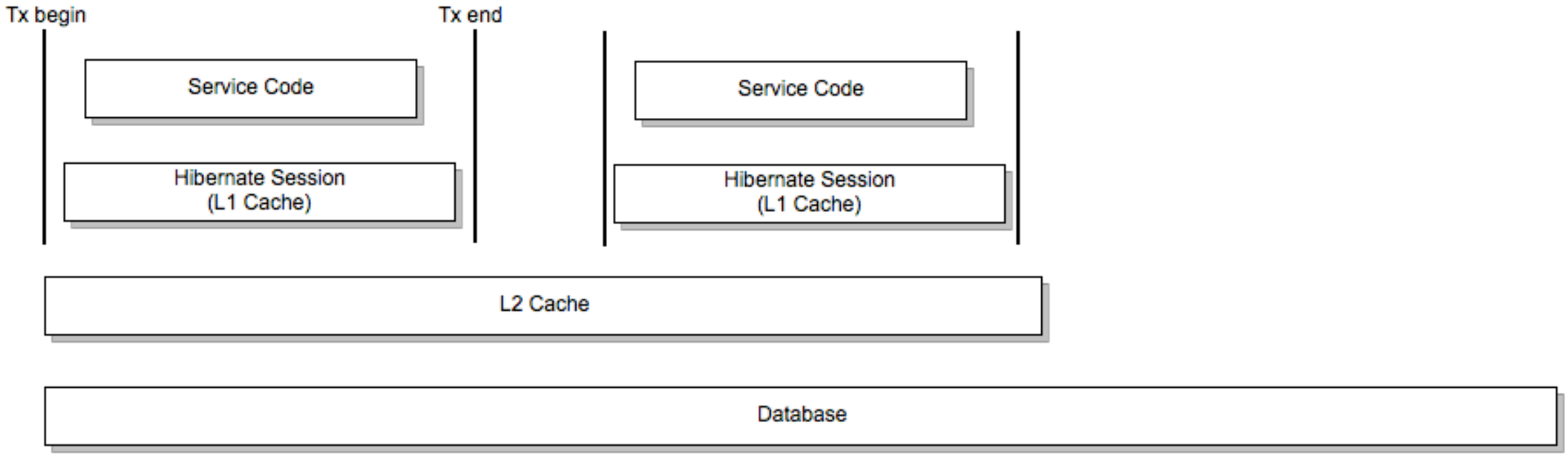
- MySQL world database example / Converted to HSQL
  http://dev.mysql.com/doc/world-setup/en/world-setup.html



FIRST STEPS
HOLD ON TO YOUR DATA WITH BOTH HANDS

- Turn on SQL output
- Hibernate statistics are your friend
- Be careful your data doesn't get too stale!

OBJECT CACHE



- Hibernate Session cache remembers objects in the same transaction
- L2 Cache remembers objects across requests
- Database remembers objects indefinitely

L2 CACHE IMPLEMENTATIONS

Cache	Type	Cluster Safe	Query Cache Supported
EHCache	Memory, Disk		Yes
OSCache	Memory, Disk		Yes
SwarmCache	Clustered	Yes	
JBoss Cache 1.x	Clustered	Yes (Replication)	Yes
JBoss Cache 2	Clustered	Yes (Replication or invalidation)	Yes

*Hibernate Documentation Table 19.1

http://docs.jboss.org/hibernate/core/3.3/reference/en/html/performance.html#performance-cache

OPTIMIZING FOR THE CACHE

- Rely on lazy loading for cached objects
- HQL Queries don’t utilize the L2 cache
- Use Query Caching carefully

SETTING UP L2 CACHE

Persistence.xml (or Hibernate config)

```
<property name="hibernate.cache.region.factory_class"
          value="net.sf.ehcache.hibernate.EhCacheRegionFactory" / >
<property name="hibernate.cache.use_second_level_cache" value="true" />
<property name="hibernate.generate_statistics" value="true" />
<property name="hibernate.cache.use_query_cache" value="true" />
```

EHCACHE CONFIGURATION

```
<ehcache>

    <defaultCache
        maxEntriesLocalHeap="10000"
        eternal="false"
        timeToIdleSeconds="120"
        timeToLiveSeconds="120"
        overflowToDisk="true"
        maxEntriesLocalDisk="1000000"
        diskPersistent="false"
        diskExpiryThreadIntervalSeconds="120"
        memoryStoreEvictionPolicy="LRU"
        />

    <cache name="com.servolabs.world.domain.Continent"
            maxEntriesLocalHeap="1000"
            eternal="false"
            timeToIdleSeconds="300"
            timeToLiveSeconds="600"
            overflowToDisk="false"
    />
...
```

USING QUERY CACHE

ehcache.xml

```
<!--  This is an example of a named query cache -->
<cache name="countryQueryCache"
       maxEntriesLocalHeap="100"
       eternal="false"
       timeToLiveSeconds="86400"
       overflowToDisk="true"
/>
```

```
Query query = entityManager
        .createQuery("from Country country where country.region = :regionName")
        .setParameter("regionName", regionName);
 // If you're using the Hibernate API directly, use setCachable(true) and
 //   setCacheRegion("countryQueryCache") calls
query.setHint("org.hibernate.cacheable", true);
query.setHint("org.hibernate.cacheRegion", "countryQueryCache");
return query.getResultList();
```

THAT'S ALL FOR NOW!

- Get my sample code from https://github.com/brycep/world-example. Feel free to play around with it, use it for your own apps, presentations or anything you want. Have fun!

- Any Questions?