THE ART OF HIBERNATE OPTIMIZATION

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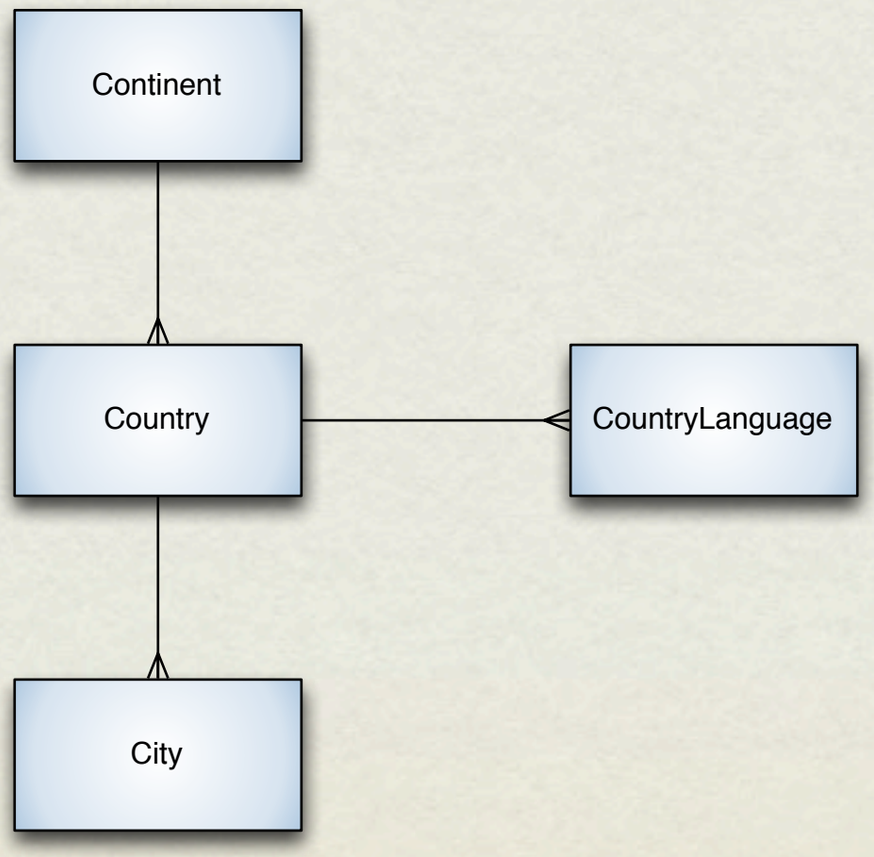
PREPARATION

- 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

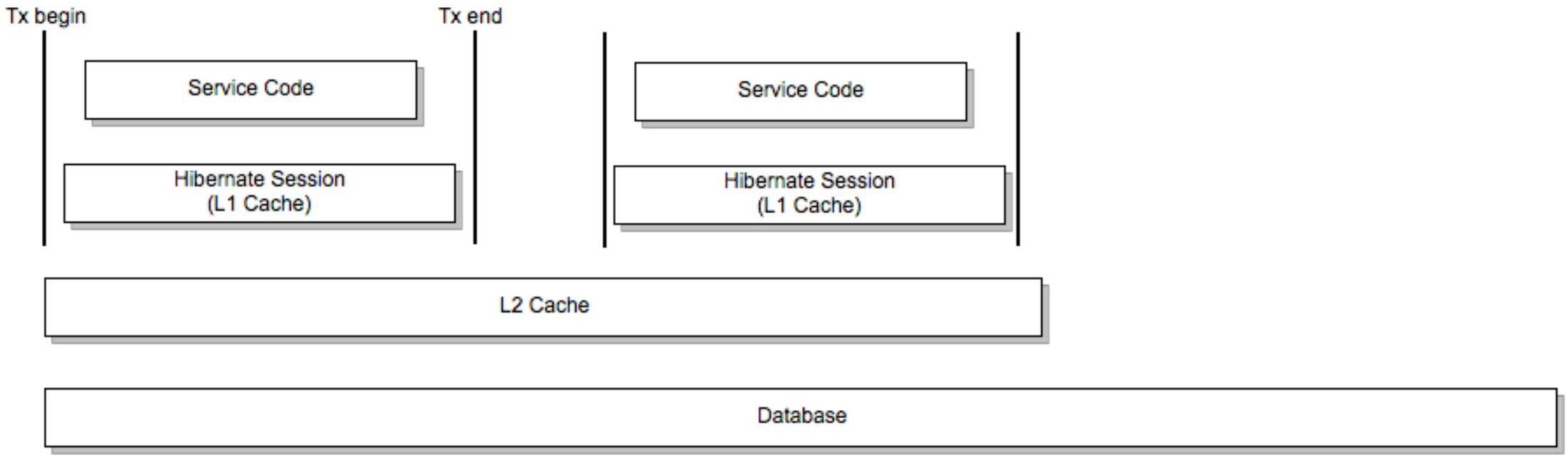
- MySQL world database example / Converted to HSQL
  http://dev.mysql.com/doc/world-setup/en/world-setup.html



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"
    />
...
```

CACHABLE OBJECTS

```
@Cacheable
@Cache(usage=CacheConcurrencyStrategy.READ_ONLY )
public class Continent {
```

- Mappings can give your application hints to Hibernate about how to cache domain objects.

- This is especially useful for objects that encapsulate reference data or data that doesn't change much

EXAMPLE

- CountryDaoImplTest: findAllCountriesInContinentLoadsTheCorrectContinent

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();
```

EXAMPLE

- CountryDaoImplTest: findCountriesForRegion_QueryCacheTest

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?