Hibernate: JPA (Java Persistence API).

An ORM tool: object relational mapping tool. Maps Java classes to database tables.

HQL (hibernate Query Language): Use hibernate query language, like SQL, but database agnostic dialect.

Can use Hibernate with an existing DB or use hibernate mappings to create tables & other DB entities.

Important interfaces in the Hibernate API

* Session: Represents your session with a database. Methods: save, get, update, delete, beginTransaction, createQuery, createCriteria.

Session session = sessionFactory.openSession();

session.close();

* SessionFactory: Used to create session objects, Only need one sessionFactory
* Configuration: used to create a sessionFactory, configured via XML -> hibernate.cfg.xml
* Criteria can only retrieve from database, cannot modify anything
* Transaction: manages ACID – compliant interactions with DB. i.e. tx.commit();
* Query: Can do more complicated CRUD than the session method., Use hibernate query language (HQL)

Hibernate object states: describe the state of an object in Java with relation to a row in DB.

Transient: no session associated with this object. Just instantiate using “new” keyword. No persisted representation in DB no PK value. Dereferenced transient objects are eligible for garbage collection.

Persistent: object has representation in DB (and has a unique identifier). Hibernate will depict any changes made to an object in this state and will reflect changes at the end of the transaction.

Detached: object was once persisted, but session has been closed, still has representation in DB, but changes to this object will not be reflected in DB, unless it is reattached to a session.

Hbm2ddl

* + Update: updates schema
  + Create: creates schema, destroys previous data
  + Validate: makes no changes, validates data
  + Create-drop: Drop the schema when session factory is closed

Session Methods:

Retrieve Data:

Get: immediately hits DB, eager fetching, returns null if obj not found.

Load: “lazily fetches” object from DB returns a proxy until a method is called on the object (in session).

Proxy – hibernate term for a sort of placeholder objects. Has correct ID. Only useful within session. Throws exception if attempting to retrieve object that does not exist.

Inserting Data:

Save – immediately return ID of object. Can execute insert statement outside of transaction.

Persist – make a transient object persistent. Void return type.

Insert executes within transaction. Good when you don’t immediately need the ID.

Changing Data:

Update: update object in DB, bring detached object into persistent state.

Can throw NotUniqueObjectException if you provide a transient / detached obj with the same ID as the persistent obj.

MERGE – checks whether persistent obj with given IO exists.

Creates new persistent obj if none is present, copies over data from object provided to persistent object.

Save or Update() – generally brings object into persistent state, regardless of initial state.

Automatic dirty checking: when session is closed, hibernate checks for changes in any persistent objects and puts them into the detached state.

Transactional write behind in the context of a transaction, changes made to an object in the persistent state are not immediately propagated to the DB.

Transitive persistent (cascades): No default cascading of state between related entities.

Available cascade styles: create, merge, save – update, delete, lock, refresh, evict, replicate

Typically cascade one to many, many to one, not one to one or many to many.

Hibernate Caching: improves the performance of the application by pooling objects in the cache.

Level 1: default, bysession

Level 2: must configure with vendor, session factory.

Concurrency strategies: transactional, read-write, non-strict read-write, read-only.

Devops

DevOps is a set of practices that automates the processes between software development and IT teams, in order that they can build, test, and release software faster and more reliably.

**IAS:** infrastructure as service

PAS: platform as service: EC2

SAS: software as service

Continuous integration is the focus on merging and testing your code frequently.

Continuous delivery: when a merge to your remote repository results in a deliverable artifact, such as a WAR file.

Continuous deployment: when a merge to the remote repository results in your code being deployed to production.

Jenkins is an open source automation server written in Java. Jenkins helps to automate the non-human part of the software development process, with continuous integration and facilitating technical aspects of continuous delivery.