</> Using JHipster in development

Please check our video tutorial (http://www.jhipster.tech/video-tutorial/) on creating a new JHipster application!

Summary

General configuration

IDE configuration

If you haven't configured your IDE yet, please go to the Configuring your IDE (http://www.jhipster.tech/configuring-ide/) page.

Application configuration

By default, JHipster uses the "development" profile, so you don't have to configure anything.

If you want more information on the available profiles, please go the section titled "Profiles (http://www.jhipster.tech/profiles/)".

If you want to configure some specific JHipster properties, have a look at the common application properties (http://www.jhipster.tech/common-application-properties/) page.

Running the Java server

As a "main" Java class

From your IDE, right-click on the "Application" class at the root of your Java package hierarchy, and run it directly. You should also be able to debug it as easily.

The application will be available on http://localhost:8080 (http://localhost:8080).

This application will have "hot reload" enabled by default, so if you compile a class, the Spring application context should refresh itself automatically, without the need to restart the server.

As a Maven project

You can launch the Java server with Maven. JHipster provides a Maven wrapper, so you don't need to install Maven, and you have the guarantee that all project users have the same Maven version:

`./mvnw` (on Mac OS X/Linux) of `mvnw` (on Windows)

(this will run our default Maven task, `spring-boot:run`)

The application will be available on http://localhost:8080 (http://localhost:8080).

Alternatively, if you have installed Maven, you can launch the Java server with Maven:

```
mvn
```

If you want more information on using Maven, please go to http://maven.apache.org (http://maven.apache.org)

(Optional) As a Gradle project

If you selected the Gradle option, JHipster provides a Gradle wrapper, so you don't need to install Gradle, and you have the guarantee that all project users have the same Gradle version:

`./gradlew` (on Mac OS X/Linux) of `gradlew` (on Windows)

(this will run our default Gradle task, `bootRun`)

Alternatively, if you have installed Gradle, you can launch the Java server with Gradle:

```
gradle
```

The application will be available on http://localhost:8080 (http://localhost:8080).

If you want more information on using Gradle, please go to https://gradle.org (https://gradle.org)

Working with AngularJS 1

Using the Java server and Gulp together

We highly recommend you use this feature, as it allows to have live reloading of your client-side code.

You can use Gulp to work on the client-side JavaScript application:

```
gulp
```

(this will run our default Gulp task, `serve`)

This should open up your Web browser, with live reload enabled, on http://localhost:9000 (http://localhost:9000). This works thanks to BrowserSync (http://www.browsersync.io/), and you can access its administration screen on http://localhost:3001 (http://localhost:3001).

This provides very impressive features:

- As soon as you modify one of your HTML/CSS/JavaScript file, your browser will refresh itself automatically
- As soon as you add/remove a javascript file it will be added to the `index.html` , your browser will refresh itself automatically
- When you test your application on several different browsers or devices, all your clicks/scrolls/inputs should be automatically synchronized on all screens

This Gulp task has a proxy to the REST endpoints on the Java server which we just launched (on http://localhost:8080/api (http://localhost:8080/api)), so it should be able to do live REST requests to the Java back-end.

If you have generated your application with the Sass option, your templates should also be automatically compiled into CSS.

Tips'n tricks

- In some browsers (like Chrome), your HTML/CSS/JS resources can be cached, and hence can have some trouble getting live-reloaded. To force them to be reloaded, open up the "developer console" and select "Disable cache (while DevTools is open)".
- As the Gulp server proxies request to the Java server, all REST requests will fail if the Java server is down. So if your Gulp server shows a blank screen, the first thing to check is if the Java server is running at `http://127.0.0.1:8080` .

Other Gulp tasks

We use eslint for AngularJS javascript linting, you can run `gulp eslint` to lint your AngularJS files. You can also run `gulp eslint:fix` if you want eslint to fix some minor issues like formatting etc,.

You can run `gulp install` to run all bootstrapping tasks in one go

You can run `gulp build` to build an optimized version of your client side files under the targetbuild/www folder
By default you will get onscreen notifications for any errors or failures during gulp tasks, pass an argument `--no-notification` to disable notifications.

If you want more information on using Gulp, please go to http://gulpjs.com (http://gulpjs.com).

Using Bower to install and update JavaScript, CSS and Sass dependencies

You can use bower to update your JavaScript, CSS and Sass dependencies:

```
bower update
```

Or if you want to install a new JavaScript, CSS or Sass dependency:

```
bower install <package> --save
```

Your JavaScript, CSS or Sass dependencies will be stored in your `src/main/webapp/bower_components` folder, and we believe it is a good idea to store them in your Git repository (but JHipster does not force you to do so).

If the installed dependency contains JavaScript files they will automatically be injected into your `index.html` and `karma.conf.js` files. Likewise the CSS files will be injected into the `index.html` file, and the SCSS files into the `main.scss` .

However this will only work if the Gulp server is running. If it is not running they will be injected next time you run `gulp` .

Or, if you want to trigger the injection manually, just run:

```
gulp inject:dep
```

If you want more information on using Bower, please go to http://bower.io (http://bower.io). For more information on using Gulp Inject, please go to https://github.com/klei/gulp-inject (https://github.com/klei/gulp-inject).

Working with Angular

Running Webpack

This step is required to see changes in your TypeScript code and have live reloading of your client-side code.

Running Webpack is the default task in the `package.json` file, so you just need to run:

```
yarn start
```

(or, if you use NPM, `npm start`).

This provides very impressive features:

- As soon as you modify one of your HTML/CSS/TypeScript file, your browser will refresh itself automatically
- When you test your application on several different browsers or devices, all your clicks/scrolls/inputs should be automatically synchronized on all screens

This will launch:

- A Webpack task that will automatically compile TypeScript code into JavaScript
- A Webpack "hot module reload" server that will run on http://localhost:9060/ (http://localhost:9060/) (and has a proxy to http://127.0.0.1:8080/api (http://127.0.0.1:8080/api) to access the Java back-end)

- A BrowserSync task that will run on http://localhost:9000/ (http://localhost:9000/), which has a proxy to http://localhost:9060/ (http://localhost:9060/) (the Webpack "hot module reload" server), and which will synchronize the user's clicks/scrolls/inputs
- The BrowserSync UI, which will be available on http://localhost:3001/ (http://localhost:3001/)

Running Yarn

Direct project dependencies are configured into `package.json` , but transitive dependencies are defined into the `yarn.lock` file, that get generated when `yarn install` is run.

It is advised to check `yarn.lock` into source control (https://yarnpkg.com/en/docs/yarn-lock#toc-check-into-source-control), so that all team members of a project have the same versions of all dependencies. Running `yarn install` again will regenerate the `yarn.lock` with the latest versions of transitive dependencies.

Other Yarn/NPM tasks

Those tasks are the same whether you use Yarn or NPM, we use the `yarn` command as an example but you can replace it with `npm` .

- `yarn lint` : check for code style issues in the TypeScript code
- `yarn lint:fix` : try to automatically correct TypeScript lint issues
- `yarn tsc` : compile the TypeScript code
- `yarn test` : run unit tests with Karma
- `yarn test:watch` : keep the karma unit tests running, for live feedback when code is changed
- `yarn e2e` : run "end to end" tests with Protractor (only works if the Protractor option has been selected when the project was generated)

Using a database

Running a database

If you use a non-embedded database, like MySQL, MariaDB, PostgreSQL, MSSQL, MongoDB or Cassandra, you will need to install and configure that database.

The easiest and recommended way with JHipster is to use Docker Compose. Follow our Docker Compose guide here. (http://www.jhipster.tech/docker-compose/)

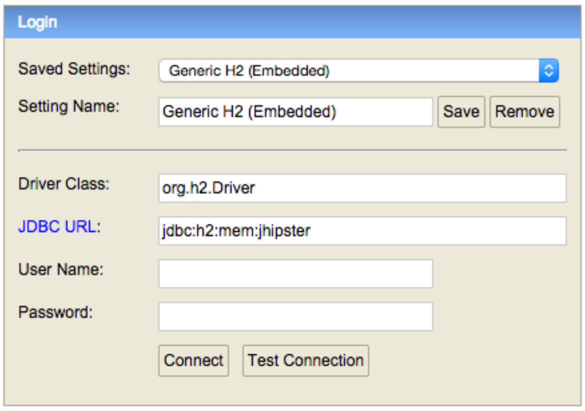
If you prefer to install and configure your database manually, don't forget to configure your Spring Boot properties accordingly in your `src/main/resources/config/application-*.yml` files (for example your database URL, login and password).

Using the H2 database in development

If you choose the H2 database, you will have an in-memory database running inside your application, and you can access its console at http://localhost:8080/h2-console (http://localhost:8080/h2-console) by default.

To connect to the database, select the pre-configured options:

- Driver Class: org.h2.Driver
- JDBC URL: jdbc:h2:mem:jhipster
- User name:
- Password:



Saved Settings: Generic H2 (Embedded)
Setting Name: Generic H2 (Embedded)
Driver Class: org.h2.Driver
JDBC URL: jdbc:h2:mem:jhipster
User Name:
Password:

Using MySQL, MariaDB or PostgreSQL in development

This option is bit more complex than using H2, but you have a some important benefits:

- Your data is kept across application restarts
- Your application starts a little bit faster
- You can use the great `./mvnw liquibase:diff` goal (see below)

Database updates

If you add or modify a JPA entity, you will need to update your database schema.

JHipster uses Liquibase (http://www.liquibase.org) to manage the database updates, and stores its configuration in the `/src/main/resources/config/liquibase/` directory. There are 3 ways to work with Liquibase: use the entity sub-generator, use the liquibase:diff Maven goal, or update the configuration files manually.

Database updates with the entity sub-generator

If you use the entity sub-generator (http://www.jhipster.tech/creating-an-entity/), here is the development workflow:

- Run the entity sub-generator (http://www.jhipster.tech/creating-an-entity/)
- A new “change log” is created in your `src/main/resources/config/liquibase/changelog` directory, and has been automatically added to your `src/main/resources/config/liquibase/master.xml` file
- Review this change log, it will be applied the next time you run your application

Database updates with the Maven liquibase:diff goal

If you have choosen to use MySQL, MariaDB or PostgreSQL in development, you can use the `./mvnw liquibase:diff` goal to automatically generate a changelog.

If you are running H2 with disk-based persistence, this workflow is not yet working perfectly, but you can start trying to use it (and send us feedback!).

Liquibase Hibernate (https://github.com/liquibase/liquibase-hibernate) is a Maven plugin that is configured in your pom.xml, and is independant from your Spring application.yml file, so if you have changed the default settings (for example, changed the database password), you need to modify both files.

Here is the development workflow:

- Modify your JPA entity (add a field, a relationship, etc.)
- Compile your application (this works on the compiled Java code, so don’t forget to compile!)
- Run `./mvnw liquibase:diff` (or `./mvnw compile liquibase:diff` to compile before)
- A new “change log” is created in your `src/main/resources/config/liquibase/changelog` directory
- Review this change log and add it to your `src/main/resources/config/liquibase/master.xml` file, so it is applied the next time you run your application

If you use Gradle instead of Maven, you can use the same workflow by running `./gradlew liquibaseDiffChangelog`, and change the database configuration in `liquibase.gradle` if required.

Database updates by manually editing the change log

If you prefer (or need) to do a database update manually, here is the development workflow:

- Modify your JPA entity (add a field, a relationship, etc.)
- Create a new “change log” in your `src/main/resources/config/liquibase/changelog` directory. The files in that directory are prefixed by their creation date (in yyyyMMddHHmmss format), and then have a title describing what they do. For example, `20141006152300_added_price_to_product.xml` is a good name.
- Add this “change log” file in your `src/main/resources/config/liquibase/master.xml` file, so it is applied the next time you run your application

If you want more information on using Liquibase, please go to http://www.liquibase.org (http://www.liquibase.org).

Internationalization

Internationalization (or i18n) is a first-class citizen in JHipster, as we believe it should be set up at the beginning of your project (and not as an afterthought).

Usage is really easy:

- With AngularJS 1, thanks to Angular Translate (https://github.com/PascalPrecht/angular-translate), which provides a simple AngularJS directive for i18n
- With Angular 2+, thanks to NG2 translate (https://github.com/ocombe/ng2-translate) and a specific JHipster component, which works the same way as Angular Translate, and uses the same files

For example, to add a translation to the “first name” field, just add a “translate” attribute with a key: `<label translate="settings.form.firstname">First Name</label>`

This key references a JSON document, which will return the translated String. Angular will then replace the “First Name” String with the translated version.

If you want more information on using languages, read our Installing new languages documentation (http://www.jhipster.tech/installing-new-languages/).

- Team (http://www.jhipster.tech/team/)
- Artwork (http://www.jhipster.tech/artwork)
- Policies (http://www.jhipster.tech/policies/)
- Thanks (http://www.jhipster.tech/thanks/)
- Meetups (http://www.jhipster.tech/meetups/)
- Archives (http://www.jhipster.tech/documentation-archive/)

(https://github.com/jhipster/generator-
(https://twitter.com/java_hipster)

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