

# JHipster Side-by-side Blueprint for Multiple Human-Readable Foreign Key Attributes in Angular Client's User Interface

In this article, the word attribute is equivalent to the word field as they relate to entities. Both the words field and attribute will be used interchangeably.

This is a side-by-side JHipster 7 blue print showing how to put human-readable foreign key field in place of UUIDs into the user interface where entities have relationships with other entities. Sometimes having a UUID makes it difficult for the human in the loop to figure out what the entity on the other side actually is (without clicking on the UUID link). This solution makes it easier for the user to see what the other related entity actually is. Furthermore, this solution is based on adding `@customAnnotation`'s to entity field(s), in the JDL file, that would be shown in replacement of UUIDs. If multiple entity fields are necessary to replace the UUID, the fields can be delimited via a specified delimiter using a `@customAnnotation`, as well.

There is a solution in the JDL syntax to display a field is documented here: <https://www.jhipster.tech/jdl/relationships>. The JDL syntax to display a field is:

```
relationship (OneToMany | ManyToOne | OneToOne | ManyToMany) {  
  <from entity>[{{<relationship name>[(<display field>)]}}] to <to  
entity>[{{<relationship name>[(<display field>)]}}]+  
}
```

An example of the above built-in syntax is (from Matt Raible's "Micro Frontends for Java Microservices" article / [github.com](https://github.com) code is below):

```
entity Blog {  
  name String required minlength(3)  
  handle String required minlength(2)  
}  
  
entity Post {  
  title String required  
  content TextBlob required  
  date Instant required  
}  
  
relationship ManyToOne {  
  Blog{user(login)} to User  
  Post{blog(name)} to Blog
```

```
}
```

In the above example, the blog's UUID will be replaced by the blog's name in the user interface where the post will be displayed.

However, the built-in JDL syntax does not provide the ability to display multiple fields to further distinguish a complex entity. For example, if multiple blogs can have the same name, we would not be able to tell which blog is in the relationship with the post. If we could display the blog's name and handle (assuming no 2 blogs can have the same handle), then we would be able to tell which blog is related to the post. Consequently, this blueprint serves the purpose of replacing UUIDs with multiple attributes/fields of the other-side relationship with a given entity to help differentiate the entity's relationship on the user interface.

This example also shows how to create a JHipster 7 blueprint.

#### Prerequisites:

- [Java 11+](#)
- [Node.js 16+](#)
- [Docker Desktop](#)
- [JHipster 7.9.3](#)

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## Setup for Generating JHipster Blueprints

1. Install JHipster 7.9.3:

```
npm i -g generator-jhipster@7.9.3
```

2. There is a bug, at least on macOS Ventura 13.1, that requires a slight change to the yeoman-environment's package.json file. You will see an error when running the command:

```
jhipster --version
```

3. If you see the following error, there is an easy fix below:

```
INFO! Using bundled JHipster
node:internal/modules/cjs/loader:556
  throw e;
  ^
```

```
Error [ERR_PACKAGE_PATH_NOT_EXPORTED]: Package subpath './lib/util/namespace' is
not defined by "exports" in /usr/local/lib/node_modules/generator-
jhipster/node_modules/yeoman-environment/package.json
    at new NodeError (node:internal/errors:399:5)
    at exportsNotFound (node:internal/modules/esm/resolve:266:10)
    at packageExportsResolve (node:internal/modules/esm/resolve:602:9)
    at resolveExports (node:internal/modules/cjs/loader:550:36)
    at Module._findPath (node:internal/modules/cjs/loader:619:31)
    at Module._resolveFilename (node:internal/modules/cjs/loader:1046:27)
    at Module._load (node:internal/modules/cjs/loader:905:27)
    at Module.require (node:internal/modules/cjs/loader:1127:19)
    at require (node:internal/modules/helpers:112:18)
    at Object.<anonymous> (/usr/local/lib/node_modules/generator-
jhipster/utis/blueprint.js:19:25) {
  code: 'ERR_PACKAGE_PATH_NOT_EXPORTED'
}
```

```
Node.js v19.6.0
```

4. Add the line `"/lib/util/namespace": "/lib/util/namespace.js"` to the global `yeoman-environment`'s `package.json` at the end of the `"exports"` section as follows. You will need to add a `","` after `"/package.json"`.

```
vi /usr/local/lib/node_modules/generator-jhipster/node_modules/yeoman-
environment/package.json
```

```
"exports": {
  ".": "/lib/environment.js",
  "./cli/": "/cli/",
  "./lib/": "/lib/",
  "./lib/util/": "/lib/util/",
  "./adapter": "/lib/adapter.js",
  "./conflicter": "/lib/util/conflicter.js",
  "./log": "/lib/util/log.js",
  "./transform": "/lib/util/transform.js",
  "./package.json": "/package.json",
  "/lib/util/namespace": "/lib/util/namespace.js"
},
```

5. Now run the `jhipster version` command again and you will see the version as below.

```
jhipster --version
INFO! Using bundled JHipster
7.9.3
```

## Build JHipster Blueprint for Multiple Human-readable Foreign Key Fields.

1. To generate a JHipster blueprint, run the following command:

```
cd ~
mkdir generator-jhipster-multiple-human-readable-foreign-key-fields
cd generator-jhipster-multiple-human-readable-foreign-key-fields
jhipster generate-blueprint
```

INFO! Using bundled JHipster

[illegible]

<https://www.jhipster.tech>

Welcome to JHipster v7.9.3

```

? Welcome to the JHipster Project Name ?
? What is the base name of your application? multiple-human-readable-foreign-key-
fields
? What is the project name of your application? Multiple Human Readable Foreign Key
Fields Application
? Do you want to generate a local blueprint inside your application? No
? Which sub-generators do you want to override? cypress, entity-client
? Comma separated additional sub-generators.
? Add a cli? Yes
? Is cypress generator a side-by-side blueprint? Yes
? Is cypress generator a cli command? No
? What task do you want to implement at cypress generator? initializing
? Is entity-client generator a side-by-side blueprint? Yes
? Is entity-client generator a cli command? No
? What task do you want to implement at entity-client generator? initializing
? What is the default indentation? 2
  create .prettierrc.yml
  create package.json
  create .eslintrc.json

```

```

    force .yo-rc.json
  create .mocharc.cjs
  create README.md
  create test/utls.mjs
  create cli/cli.mjs
  create .github/workflows/generator.yml
  create .prettierignore
  create .gitignore
  create .gitattributes
  create .editorconfig
  create generators/cypress/index.mjs
  create generators/cypress/generator.spec.mjs
  create generators/cypress/generator.mjs
  create generators/entity-client/generator.mjs
  create generators/entity-client/index.mjs
  force .yo-rc.json

```

2. If you see the following error, there is an easy fix below:

```

Error [ERR_PACKAGE_PATH_NOT_EXPORTED]: Package subpath './lib/util/namespace' is
not defined by "exports" in ~/workspace/generator-jhipster-multiple-human-readable-
foreign-key-fields/node_modules/generator-jhipster/node_modules/yeoman-
environment/package.json
    at new NodeError (node:internal/errors:399:5)
    at exportsNotFound (node:internal/modules/esm/resolve:266:10)
    at packageExportsResolve (node:internal/modules/esm/resolve:602:9)
    at resolveExports (node:internal/modules/cjs/loader:550:36)
    at Module._findPath (node:internal/modules/cjs/loader:619:31)
    at Module._resolveFilename (node:internal/modules/cjs/loader:1046:27)
    at Module._load (node:internal/modules/cjs/loader:905:27)
    at Module.require (node:internal/modules/cjs/loader:1127:19)
    at require (node:internal/modules/helpers:112:18)
    at Object.<anonymous> (/Users/amarppatel/workspace/generator-jhipster-multiple-
human-readable-foreign-key-fields/node_modules/generator-
jhipster/utls/blueprint.js:19:25)
    at Module._compile (node:internal/modules/cjs/loader:1246:14)
    at Module._extensions..js (node:internal/modules/cjs/loader:1300:10)
    at Module.load (node:internal/modules/cjs/loader:1103:32)
    at Module._load (node:internal/modules/cjs/loader:942:12)
    at Module.require (node:internal/modules/cjs/loader:1127:19)
    at require (node:internal/modules/helpers:112:18)
    at Object.<anonymous> (/Users/amarppatel/workspace/generator-jhipster-multiple-
human-readable-foreign-key-fields/node_modules/generator-jhipster/cli/environment-
builder.js:27:82)
    at Module._compile (node:internal/modules/cjs/loader:1246:14)
    at Module._extensions..js (node:internal/modules/cjs/loader:1300:10)
    at Module.load (node:internal/modules/cjs/loader:1103:32)
    at Module._load (node:internal/modules/cjs/loader:942:12)
    at Module.require (node:internal/modules/cjs/loader:1127:19)
    at require (node:internal/modules/helpers:112:18)

```

```
at Object.<anonymous> (/Users/amarppatel/workspace/generator-jhipster-multiple-
human-readable-foreign-key-fields/node_modules/generator-
jhipster/cli/program.js:26:28)
at Module._compile (node:internal/modules/cjs/loader:1246:14)
at Module._extensions..js (node:internal/modules/cjs/loader:1300:10)
at Module.load (node:internal/modules/cjs/loader:1103:32)
at Module._load (node:internal/modules/cjs/loader:942:12)
at ModuleWrap.<anonymous> (node:internal/modules/esm/translators:168:29)
at ModuleJob.run (node:internal/modules/esm/module_job:193:25)
```

3. Add the line `"/lib/util/namespace": "/lib/util/namespace.js"` to the local project `yoeman-environment` `package.json` at the end of the "exports" section as follows. You will need to add a `","` after `"/package.json"`.

```
vi ~/workspace/generator-jhipster-multiple-human-readable-foreign-key-
fields/node_modules/generator-jhipster/node_modules/yoeman-environment/package.json
```

4. This is what the `package.json` should look like:

```
"exports": {
  ".": "./lib/environment.js",
  "./cli/": "./cli/",
  "./lib/": "./lib/",
  "./lib/util/": "./lib/util/",
  "./adapter": "./lib/adapter.js",
  "./conflicter": "./lib/util/conflicter.js",
  "./log": "./lib/util/log.js",
  "./transform": "./lib/util/transform.js",
  "./package.json": "./package.json",
  "./lib/util/namespace": "./lib/util/namespace.js"
},
```

5. Then run the blueprint command again, to finish generating the blueprint

```
cd ~/workspace/generator-jhipster-multiple-human-readable-foreign-key-fields
jhipster generate-blueprint
```

6. You should see success message now:

```
Application successfully committed to Git from ~/workspace/generator-jhipster-
multiple-human-readable-foreign-key-fields.
Congratulations, JHipster execution is complete!
Sponsored with ☑ by @oktadev.
```

# Use the Blueprint Locally to Generate Code

1. Link the blueprint locally

```
cd ~/workspace/generator-jhipster-multiple-human-readable-foreign-key-fields
npm link
```

## Modify the Blueprint to Enable Multiple Human-readable Foreign key Fields.

1. Added the following files:

```
generators/constants-saathratri.js
generator/utils-saathratri.js
generators/entity-
client/templates/angular/src/main/webapp/app/entities/entity.model.ts.ejs
generators/entity-
client/templates/angular/src/main/webapp/app/entities/detail/entity-management-
detail.component.html.ejs
generators/entity-
client/templates/angular/src/main/webapp/app/entities/list/entity-
management.component.html.ejs
generators/entity-
client/templates/angular/src/main/webapp/app/entities/update/entity-management-
update.component.html.ejs
```

## Have Fun with Creating JHipster Blueprints!

I hope you enjoyed this demo, and it helped you understand how to build blueprints with JHipster.

☐ Find the code on GitHub: <https://github.com/amarpatel-xx/generator-jhipster-multiple-human-readable-foreign-key-fields>

☐ Read the README.md post at <https://github.com/amarpatel-xx/jhipster-multiple-human-readable-foreign-key-fields-example> to see a working example of a microservices architecture using an Angular client that was generated using this blueprint. You will see how multiple foreign key fields are displayed when a relationship's fields are shown.