Documentation

Beanframework

Thank you so much for using beanframework project. 100% open source project under MIT license.

Version: 3.0.0

Created: 2 May, 2021

Github: Beanframework

Update: 11 May, 2021

If you have any questions that are beyond the scope of this help file, Please feel free to post via Github Discussion Page .

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```
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```

Installation

Create a new database:

1. By default, this project supported unicode character such as Chinese language, therefore the database must use CHARACTER SET utf8 COLLATE utf8_unicode_ci

```
CREATE SCHEMA `beanframework` DEFAULT CHARACTER SET utf8 COLLATE utf8_unicode_ci
```

2. Configure project by copy and remove **.template** suffix:
   - `beanframework/bin/` pom.xml.template
   - `beanframework/bin/install/` server.bat.template
   - `beanframework/bin/install/` server.sh.template
   - `beanframework/bin/platform/` pom.xml.template
   - `beanframework/config/` pom.xml.template
   - `beanframework/config/src/main/resources/` *.template
   - `beanframework/config/src/main/resources/import/dev.template`

- Optional: `beanframework/bin/install/` app.xml.template

3. Open command prompt and navigate to `beanframework/bin` directory run:

```
mvnw clean install
```

4. Navigate to `beanframework/bin/install` directory and run:

```
server.bat
```

5. Access application endpoints:
   - Console: http://localhost:8080/console
   - Backoffice: http://localhost:8080/backoffice
   - Documentation: http://localhost:8080/documentation
6. Import sample data:
   - Access Console: http://localhost:8080/console
   - Login with default admin account: username: **admin** , password: **admin**
   - Goto menu `Platform->Update` , check all and update.
7. You are good to go for run your project now!

Project Structure

1. Below is the `beanframework` folder structure:
   - `bin` - Source files
     - `custom` - Create a custom modules and put in this folder, best practice for not mixing with original project structure and codes, and easily to upgrade software in future.
     - `install` - Install/Run application manually or install as windows service.
     - `modules` - Project default modules.
     - `platform` - Platform that startup this application with configured modules.
   - `config` - Mainly use for application properties and configurations for different environments.
   - `data` - Data storage for this application
     - `media` - All the media stored in this directory.
     - `integration` - Spring Integration. Can be used for import data.
   - `log` - Application logging files, with archived and rotated logging files.
   - `temp` - Application temporary files.

Platform

Platform Configuration and Import Data

Configuration

`beanframework/bin/config/src/main/resources/`

- Configure environment:
  - `application.properties`
    - **spring.profiles.active=dev**
- Configure configurations and import data for environment:

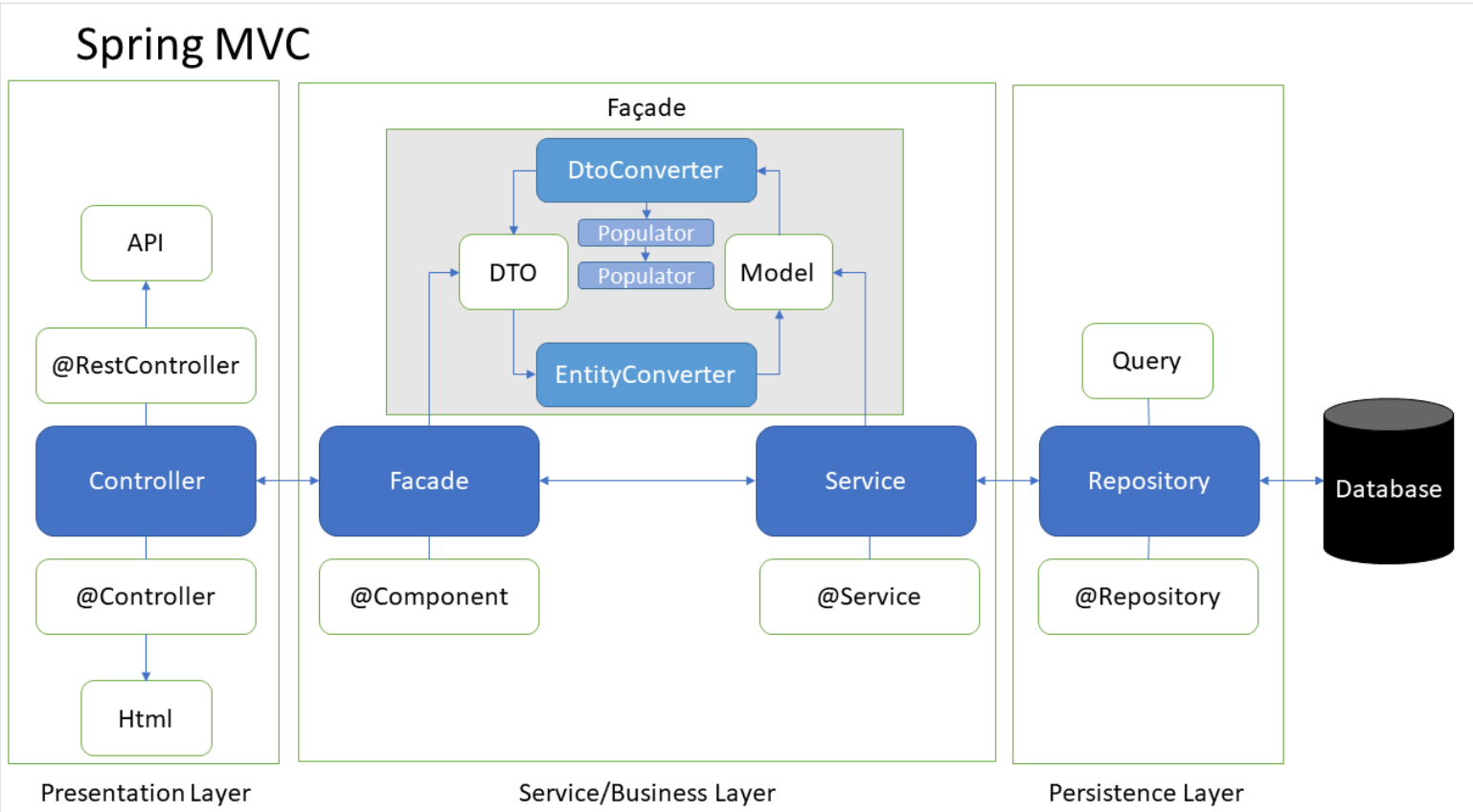
- `application-dev.properties` - Environment properties.
- `ehcache-dev.xml` - Cache configuration.
- `logback-dev.xml` - Logback configuration.
- `import/dev` - Contains data to import

Architecture

Architecture for development

Spring MVC

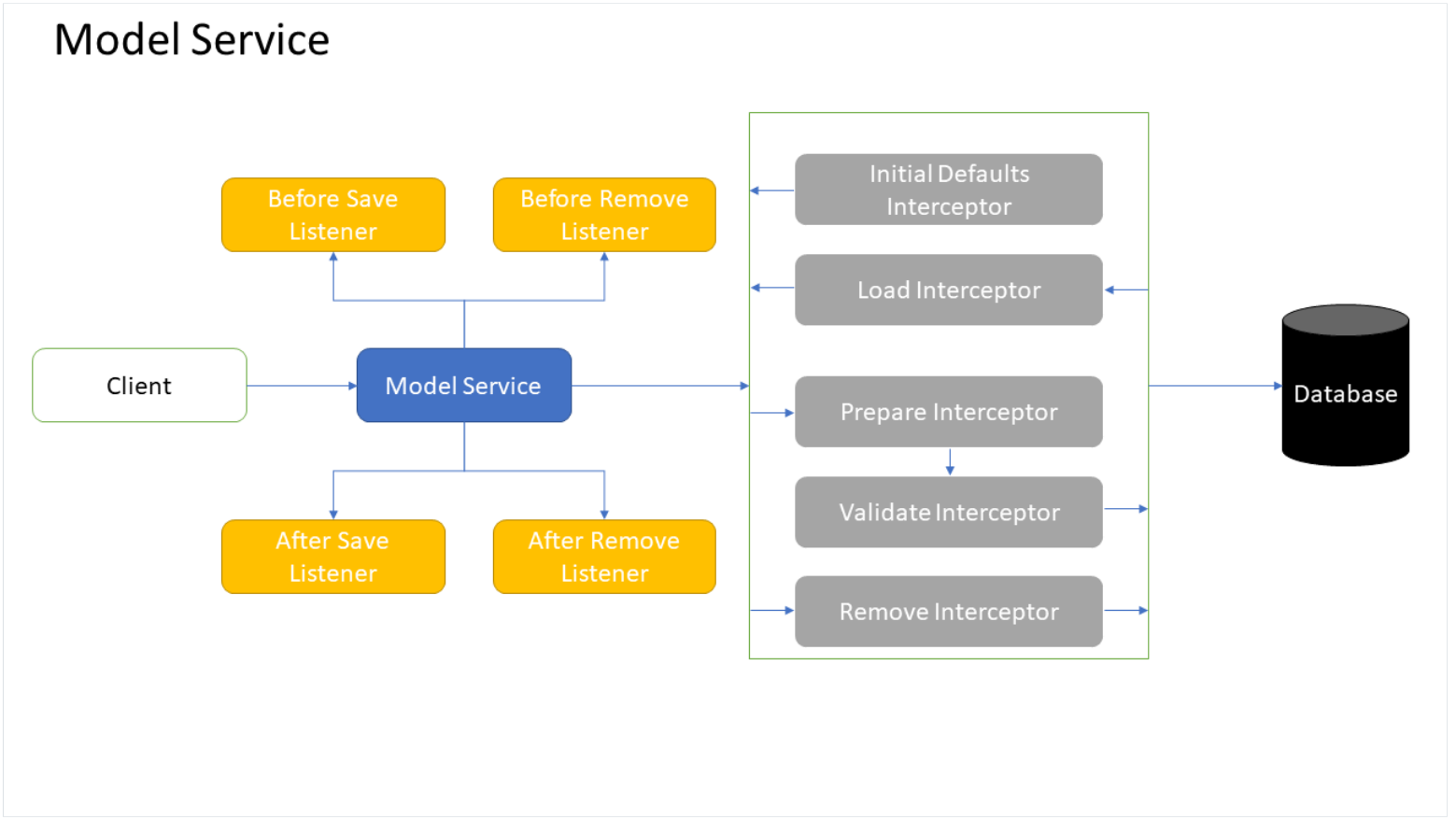
Design Pattern used in this platform.



- Presentation Layer
  - **Controller** :
    `@Controller` - Render view html
    `@RestController` - Response for web services
- Service/Business Layer
  - **Facade** : `@Component` - To mark the beans as Spring's managed components.
    - **DtoConverter** - Convert Model to DTO
      - **Populator** - Multiple populators to populate data from source Model to target DTO
    - **EntityConverter** - Convert DTO to Model
  - **Service** : `@Service` - To indicate that it's holding the business logic
- Persistence Layer
  - **Repository** : `@Repository` - To catch persistence specific exceptions and rethrow them as one of Spring's unified unchecked exception.

Model Service

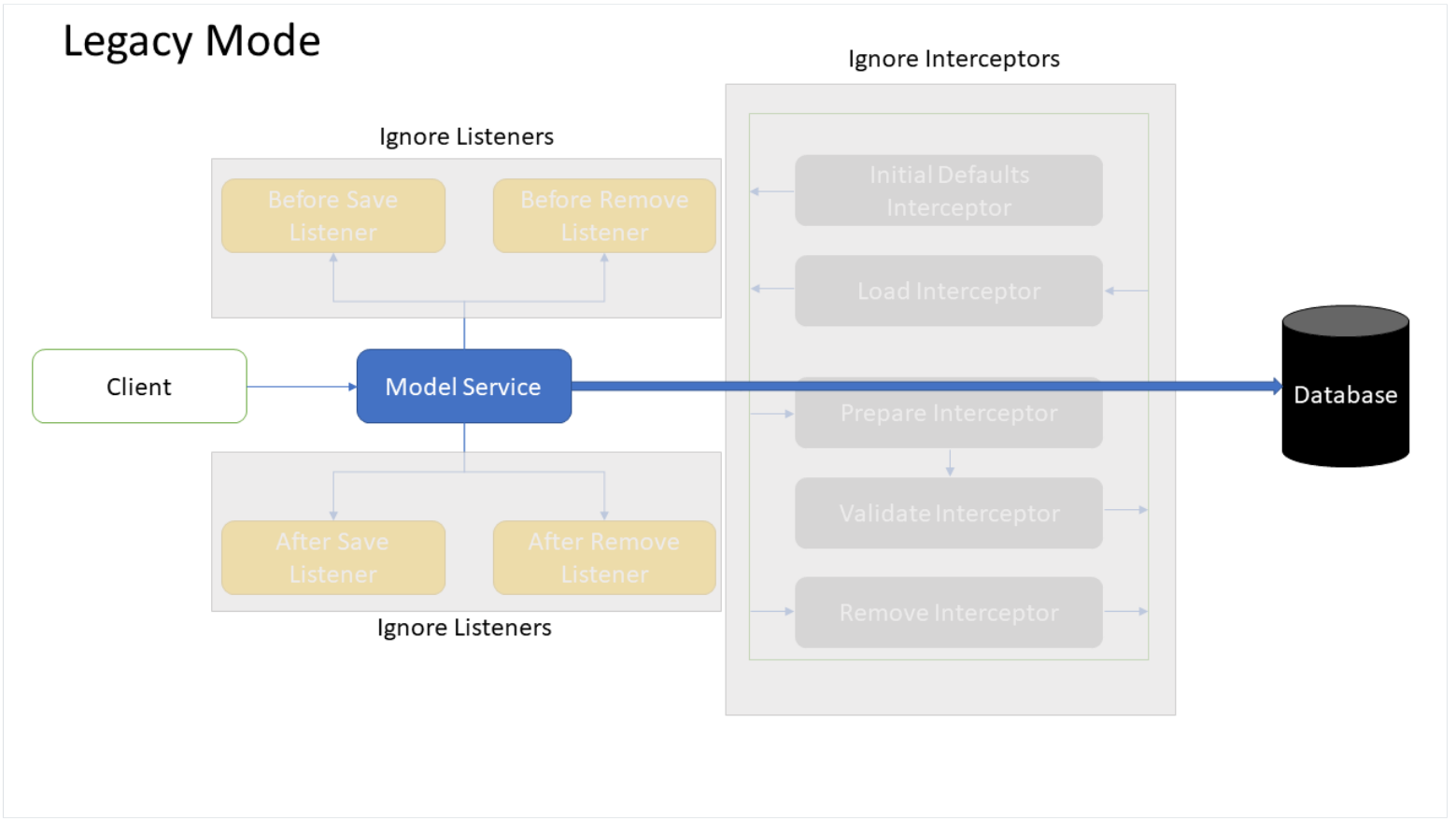
Model's life cycle involving listeners and interceptors.



- Initial a new entity object operation in model service:
  - `modelService.create(...)`
  - **Initial Defaults Interceptor** - To create an new object with defaults attributes.
- Find entity operation in model service:
  - `modelService.find...(...)`
  - **Database**
  - **Load Interceptor** - To modify an object loaded from database.
- Create/update entity operation in model service:
  - `modelService.saveEntity(...)`
  - **Prepare Interceptor** - To modify an object before save to database.
  - **Validate Interceptor** - To validate an object before save to database. (Do not modify attached model)
  - **Before Save Listener** - Perform business logic. (Do not modify attached model)
  - **Database**
  - **After Save Listener** - Perform business logic. (Do not modify attached model)
- Delete entity operation in model service:
  - `modelService.deleteEntity(...)`
  - **Remove Interceptor** - To modify an object before remove from database.
  - **Before Remove Listener** - Perform business logic. (Do not modify attached model)
  - **Database**
  - **After Remove Listener** - Perform business logic. (Do not modify attached model)

Legacy Mode

Performing model service with legacy mode ignoring listeners and interceptors.



Development

Development guide for Spring Boot developer

Module Gen

`beanframework/bin/module/modulegen/`

- Set module configuration `src/main/resources/application.properties`
- Run `src/main/java/com/beanframework/modulegen/ModulegenApplication.java`
- Generated module output: `beanframework/bin/module/custom/`

Configure new module in project:

- Add new module in `beanframework/bin/pom.xml`
- Add new dependency in `beanframework/config/pom.xml`
- Add new profile and packages in `beanframework/config/src/main/resources/application.properties`
  - **spring.profiles.include=platform,console,backoffice,documentation,training**
  - **spring.scanBasePackages=com.beanframework,com.sample**
  - **jpa.domain.packagetoscans=com.beanframework.*.domain,com.sample.*.domain**

Model Attribute

Example of adding new attribute in Model

- `Training.java` - Add new attribute
- `TrainingDto.java` - Add new attribute
- `TrainingPopulator.java` - Add new attribute
- `TrainingEntityConverter.java` - Add new attribute
- `trainingForm.html` - Add new input

```
...

<div class="col-md-3">
        <div class="form-group">
                <label for="name" th:text="#{module.training.name}"></label>
                <input type="text" class="form-control" name="name" th:value="*{name}">
        </div>
</div>

...
```

Datatable

Example of adding new column in datatable

- `training.html` - Add new attribute, for example "name":

```
...

<th:block th:insert="~{backoffice/adminlte/common/fragment/content-datatable :: datatable (title=#
{module.training}, tableId='trainingTable', columnsi18n=${#strings.arraySplit(id+','+name, ',')},
selectAuthority=true )}"></th:block>

...

<th:block th:insert="~{backoffice/adminlte/common/fragment/content-datatable :: js (tableId='trainingTable',
columns=${#strings.arraySplit('id,name', ',')}, pageUrl=@{${@environment.getProperty('path.api.training')}},
formUrl=@{${@environment.getProperty('path.training.form')}}, addAuthority=${addAuthority}, selectAuthority=true
)}"></th:block>


...
```

- `Training.java` - Add new attribute, for example "name":

```
...

public Training(UUID uuid, String id, String name) {
                super();
                setUuid(uuid);
                setId(id);
                setName(name);
        }
...
```

- `TrainingSpecification.java` - Add new attribute, for example "name":

```
...

@Override
public Predicate toPredicate(Root<T> root, CriteriaQuery<?>; query, CriteriaBuilder cb) {
                List<Predicate> predicates = new ArrayList<Predicate>();

                String search = clean(dataTableRequest.getSearch());

                if (StringUtils.isNotBlank(search)) {
                        predicates.add(cb.or(cb.like(root.get(TRAINING.ID), convertToLikePattern(search))));
                        predicates.add(cb.or(cb.like(root.get(TRAINING.NAME), convertToLikePattern(search))));
                }

                if (predicates.isEmpty()) {
                        return cb.and(predicates.toArray(new Predicate[predicates.size()]));
                } else {
                        return cb.or(predicates.toArray(new Predicate[predicates.size()]));
                }
}
```

```
...

@Override
public List<Selection<?>> toSelection(Root<T> root) {
                List<Selection<?>> multiselect = new ArrayList<Selection<?>>();
                multiselect.add(root.get(Training.UUID));
                multiselect.add(root.get(Training.ID));
                multiselect.add(root.get(Training.NAME));
                return multiselect;
}
...
```

- `TrainingDataTableResponseData.java` - Add new property, for example "name"
- `TrainingResource.java` - Add new data, for example "name":

```
...

for (TrainingDto dto : pagination.getContent()) {

                TrainingDataTableResponseData data = new TrainingDataTableResponseData();
                data.setUuid(dto.getUuid().toString());
                data.setId(StringUtils.stripToEmpty(dto.getId()));
                data.setName(StringUtils.stripToEmpty(dto.getName()));
                dataTableResponse.getData().add(data);
}
...
```

Dynamic Attributes

*Please check example of dynamic attributes used in UserGroup module in project.

Example of creating Dynamic Field for a Training Model:

- Create/Reuse a new entry in DynamicField:
  name_en
- Create a new entry in DynamicFieldSlot:
  training_name_en

- Create a new entry in DynamicFieldTemplate:
  training.dynamicfield.template

Example of creating Attributes for a Training model:

- `TrainingAttribute.java` - Create new entity
- `Training.java` - Insert attributes property
- `TrainingAttributeDto.java` - Insert attributes property
- `TrainingDto.java` - Insert attributes property
- `TrainingPopulator.java` - Insert attributes property
- `TrainingEntityConvTraining.java` - Insert attributes property
- `TrainingServiceImpl.java` - Create generateTrainingAttribute(...)
- `TrainingLoadInterceptor.java` - Insert trainingService.generateTrainingAttribute(...)
- `TrainingInitialDefaultsInterceptor.java` - Insert trainingService.generateTrainingAttribute(...)
- `trainingForm.html` - Insert:

```
...

<li class="nav-item">
        <a class="nav-link" id="custom-tabs-attribute-tab" data-toggle="pill" href="#custom-tabs-attribute"
role="tab" aria-controls="custom-tabs-attribute" aria-selected="false" th:text="#{module.common.attribute}"></a>
</li>

...

<div class="tab-pane fade" id="custom-tabs-attribute" role="tabpanel" aria-labelledby="custom-tabs-attribute-
tab">
        <th:block th:insert="~{backoffice/adminlte/common/fragment/content-form-attribute :: form(attributes=*
{attributes})}"></th:block>
</div>

...
```

Import Data

`beanframework/bin/config/src/main/resources/import/`

- `dev/initdata/**/*.csv` - Contains data to import every time when application startup.
  - `module.imex.import.init.locations=classpath*:import/dev/initdata/**/*.csv`
- `dev/initsql/**/*.sql` - Contains sql to execute every time when application startup.
  - `platform.import.startup.enabled=true`
  - `platform.import.sql.locations=classpath*:import/dev/initsql/**/*.sql`
- `dev/updatedata` - Contains data to import when manually performing platform update.
  - `module.imex.import.update.locations=classpath*:import/dev/updatedata`

- Data Syntax in CSV:
  - `INSERT` - To create new data only, no data created if exists in database,
  - `UPDATE` - To modify existing data only, no data updated if not exists in database.
  - `INSERT_UPDATE` - To create or modify data in database.
  - `REMOVE` - To remove existing data in database.

  Example:

```
INSERT_UPDATE Training,id      ,name
                      ,training,Training
```

- To add more data column in CSV:

- `TrainingCsv.` - Add new data attribute.
- `TrainingEntityCsvConverter.java` - Add new data attribute.
- `TrainingImportListener` - Optional: To customizing a new import logic.