Technical Instruction of EMA

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Content

1. Running environment

1.1 Front-end

- Nodejs, version >= 14
- vscode or websorm
- vscode plugins: Vue Language Features(Volar), Vue3 Support, Vue Volar extension Pack, Vue VSCode Snippets, Prettied Code formatter, eslint, DotENV

1.2 Back-end

- Java (Java 8+, include Java8)
- Mysql (Mysql 5.7+, include 5.7)
- Maven (Maven 3+)
- Redis
- Idea or eclipse
- Lombok

1.3 Redis

Install it if you do not have it.

Linux: https://redis.io/download

Windows: https://github.com/microsoftarchive/redis/releases

2. Project structure

Back-end: **/smart-admin-api** (Maven project)

Front-end: **/smart-admin-web/javascript-ant-design-vue3**

Database file: **/smart-admin-api/database**

Run the **smart-admin-v2.sql** to create the database

3. Import the back-end project

Import the **smart-admin-api** as Maven. Encoding style of Idea should be utf8

4. Modify the back-end config file.

Modify the **src/main/resources/dev/sa-common.yaml** in sa-common project.

4.1 Modify data source information

```
user:
  url:
jdbc:p6spy:mysql://localhost:3306/smart_admin_v2?autoReconnect=true&useServerPreparedStmts=false&rewriteBatchedStatements=true&characterEncoding=UTF-8&useSSL=false&allowMultiQueries=true&serverTimezone=Asia/Shanghai
  username: root
  password: zyc992329
  driver-class-name: com.p6spy.engine.spy.P6SpyDriver
ema:
  url: jdbc:sqlite:database/smart_admin_v2.db
  driver-class-name: org.sqlite.JDBC
  connection-init-sql: PRAGMA journal_mode=DELETE
```

Only change the username and password to your Mysql **username** and **password** of the user datasource. The ema datasource is a Sqlite datasource, do not change the url or the project might not be able to run.

4.2 Modify redis parameter

```
# redis Configuration
redis:
  database: 1
```

```
host: 127.0.0.1
lettuce:
  pool:
    max-active: 5
    min-idle: 1
    max-idle: 3
    max-wait: 30000ms
port: 6379
timeout: 10000ms
```

4.3 Check idea file coding style

First step: Ensure that your IDEA file encoding is set to utf8. You can check this by navigating to: `IDEA -> File -> Settings -> Editor -> File Encodings`. In this configuration, all the encodings should be set to utf8. If not, please change them to utf8.

Second step: After changing the encoding to utf8 as per the first step, navigate to the `**/smart-admin-api**` directory and run `**mvn clean**`. If you're not familiar with this command, you can alternatively delete the `**/smart-admin-api/sa-common/target**` and `**/smart-admin-api/sa-admin/target**` directories. Remember to do this carefully!

5. Run the back-end

Run the SmartAdminApplication in sa-admin project folder.

6. Run the front-end

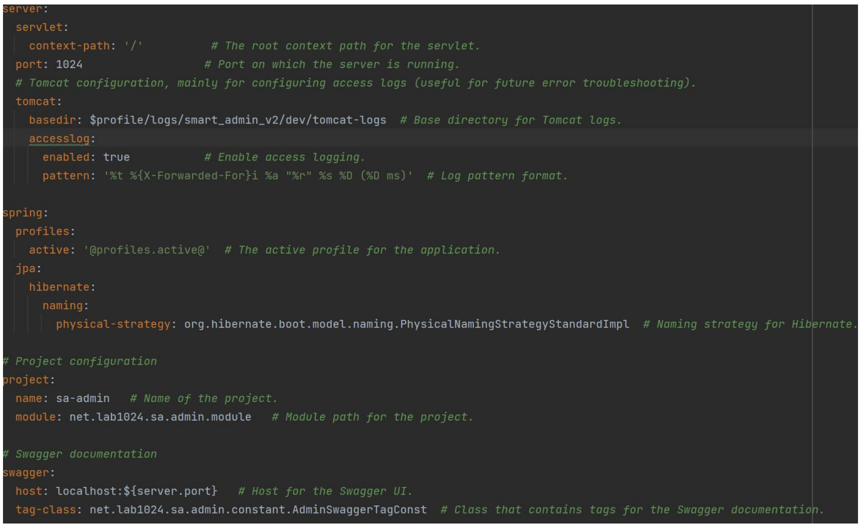
1) Navigate to the directory `**smart-admin-web/javascript-ant-design-vue3**` and run the `npm install` command to install dependencies.
2) Enter the directory `**smart-admin-web/javascript-ant-design-vue3**` and execute

the `**npm run dev**` command to launch the development environment.

3) Visit http://localhost:8080 (opens in a new window). Login using the credentials: Username: `admin` / Password: `123456`.

7. Sa-admin project

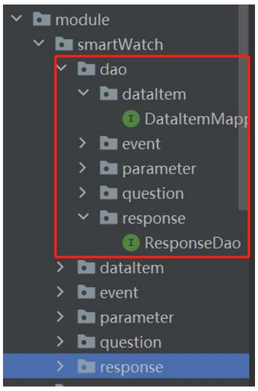
This project contains all the main functions of the website. **Role, User, Permission,Menu, and File** functions are in the **/module/system**, the five tables for smartwatch are in the **/module/smartwatch**. There is also an **application.yml** file in **sa-admin**.



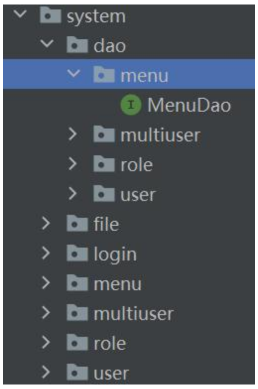
```yaml
server:
  servlet:
    context-path: '/'          # The root context path for the servlet.
  port: 1024                  # Port on which the server is running.
  # Tomcat configuration, mainly for configuring access logs (useful for future error troubleshooting).
  tomcat:
    basedir: $profile/logs/smart_admin_v2/dev/tomcat-logs  # Base directory for Tomcat logs.
    accesslog:
      enabled: true           # Enable access logging.
      pattern: '%t %{X-Forwarded-For}i %a "%r" %s %D (%D ms)'  # Log pattern format.

spring:
  profiles:
    active: '@profiles.active@'  # The active profile for the application.
  jpa:
    hibernate:
      naming:
        physical-strategy: org.hibernate.boot.model.naming.PhysicalNamingStrategyStandardImpl  # Naming strategy for Hibernate.

# Project configuration
project:
  name: sa-admin   # Name of the project.
  module: net.lab1024.sa.admin.module   # Module path for the project.

# Swagger documentation
swagger:
  host: localhost:${server.port}   # Host for the Swagger UI.
  tag-class: net.lab1024.sa.admin.constant.AdminSwaggerTagConst  # Class that contains tags for the Swagger documentation.
```

You can assign the back-end api port or url by changing the port and context-path.

8. Implement the back-end function



```
module
  smartWatch
    dao
      dataItem
        DataItemMapp
      event
      parameter
      question
      response
        ResponseDao
    dataItem
    event
    parameter
    question
    response
```



```
system
  dao
    menu
      MenuDao
    multiuser
    role
    user
  file
  login
  menu
  multiuser
  role
  user
```

Create the dao layer in dao folder. This is due to the double-datasource configuration.

You can have a better understanding by checking the file **PrimaryDataSourceConfig** and **SecondaryDataSourceConfig** in the **/config** folder of **sa-common** project.

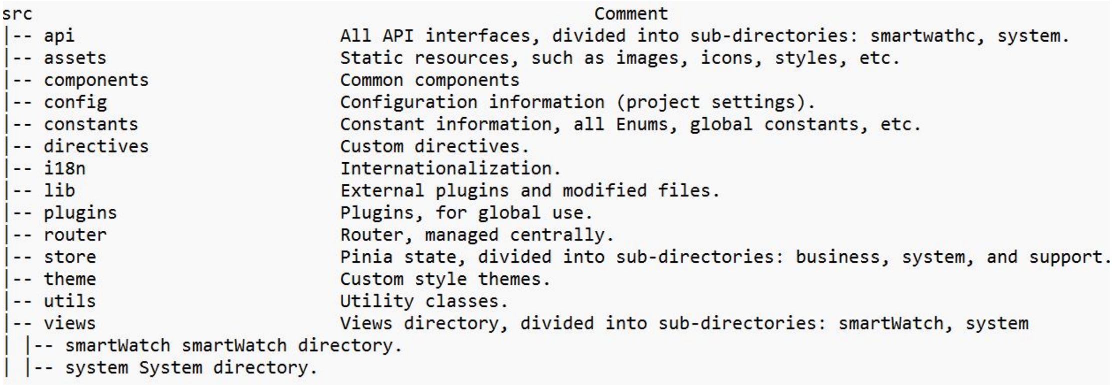
8.1 Sqlite

If you want to implement function about the EMA on smart watch or it should use Sqlite database. Implement in the smartWatch folder.

8.2 Mysql

If you want to implement some system layer functions like login, register or mysql based functions. Implement them in the system folder.

9. Implement the front-end function



```
src                                                     Comment
|-- api                         All API interfaces, divided into sub-directories: smartwathc, system.
|-- assets                      Static resources, such as images, icons, styles, etc.
|-- components                  Common components
|-- config                      Configuration information (project settings).
|-- constants                   Constant information, all Enums, global constants, etc.
|-- directives                  Custom directives.
|-- i18n                        Internationalization.
|-- lib                         External plugins and modified files.
|-- plugins                     Plugins, for global use.
|-- router                      Router, managed centrally.
|-- store                       Pinia state, divided into sub-directories: business, system, and support.
|-- theme                       Custom style themes.
|-- utils                       Utility classes.
|-- views                       Views directory, divided into sub-directories: smartWatch, system
| |-- smartWatch smartWatch directory.
| |-- system System directory.
```

9.1 Modify the project configuration

The default configuration of the project is located in the `` `src/config/app-config.js` `` file.

9.2 Modify the API configuration

The project supports configurations for five different environments. You only need to change the `` `VITE_APP_API_URL` `` and `` `VITE_APP_PROJECT_TITLE` `` in the environment files.

Specifically, the five environment files are:

- `**.env.localhost**` Local environment, run with the command `npm run localhost`.

- `**.env.development**` Development environment, run with the command `npm run dev`.

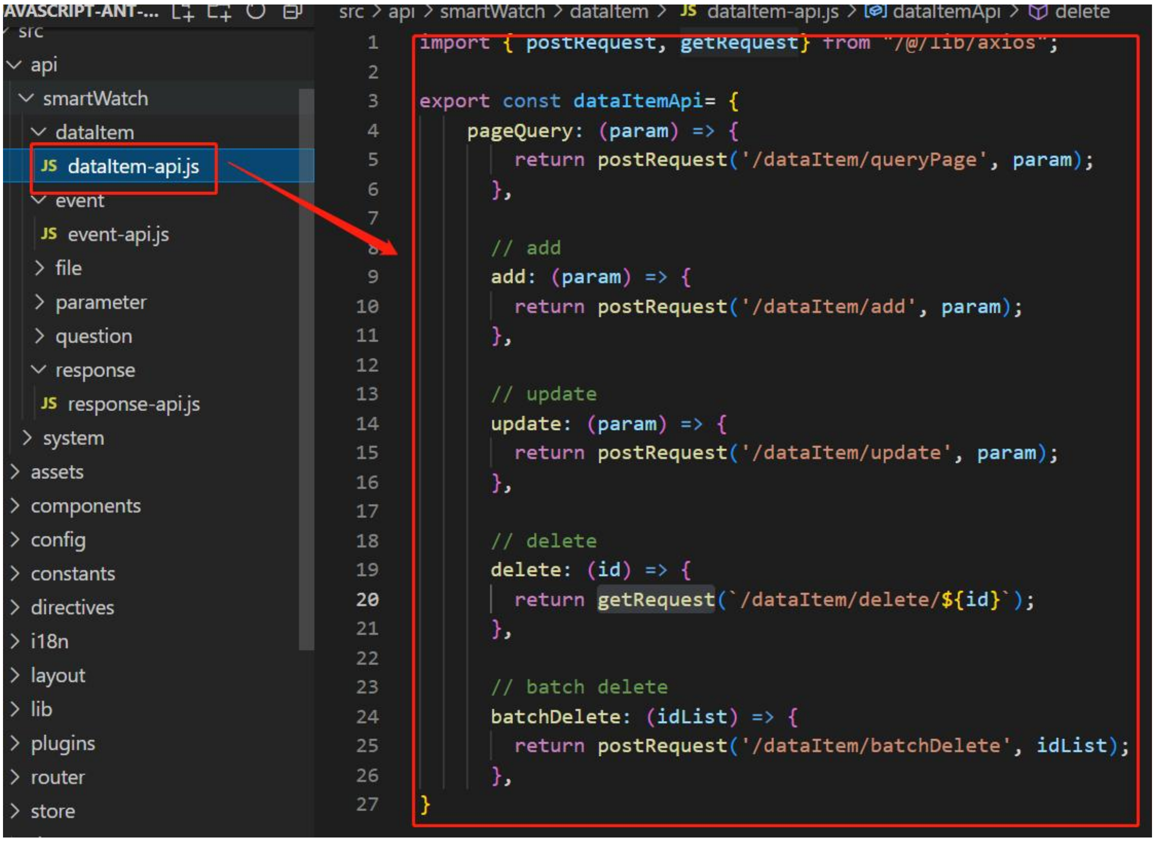
- `**.env.test**` Testing environment build, run with the command `npm run build:test`.

- `**.env.pre**` Pre-release environment build, run with the command `npm run build:pre`.

- `**.env.prod**` Production (online) environment build, run with the command `npm run build:prod`.

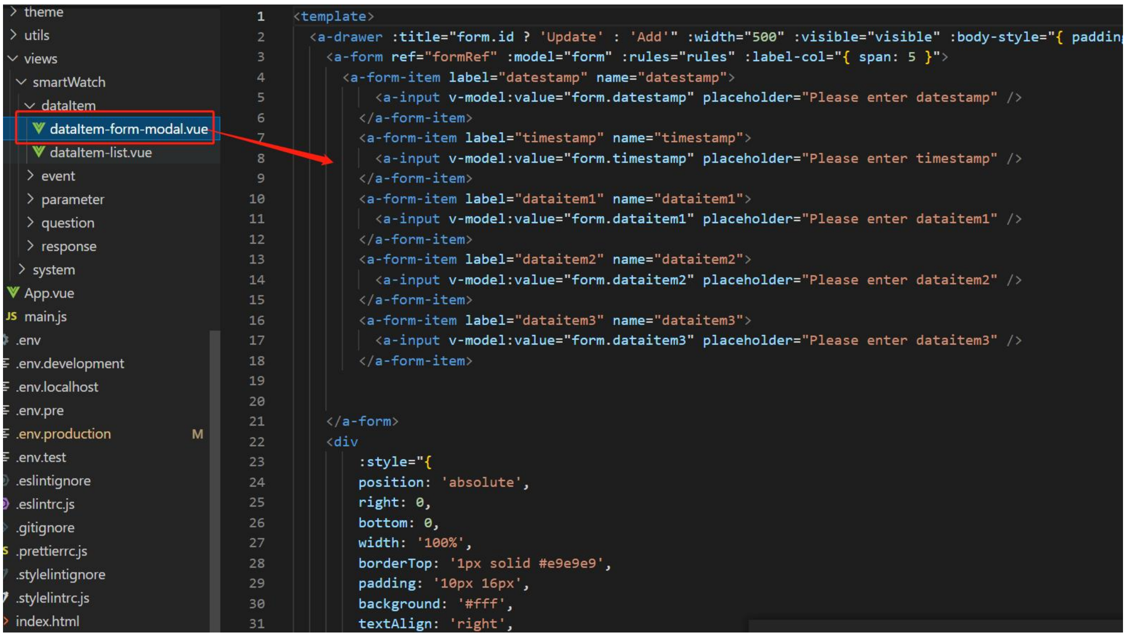
9.3 Web page implementation

1) Design the api interface



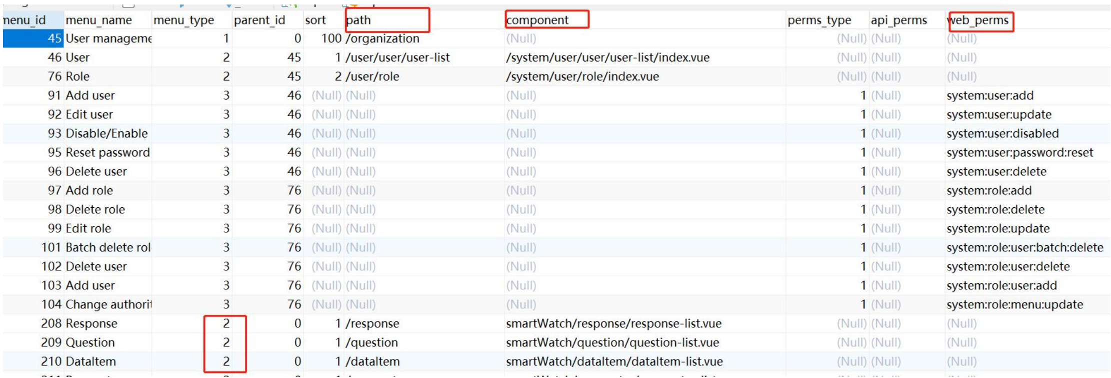
```
import { postRequest, getRequest} from "/@/lib/axios";

export const dataItemApi= {
  pageQuery: (param) => {
    return postRequest('/dataItem/queryPage', param);
   },

   // add
   add: (param) => {
    return postRequest('/dataItem/add', param);
   },

   // update
   update: (param) => {
    return postRequest('/dataItem/update', param);
   },

   // delete
   delete: (id) => {
    return getRequest(`/dataItem/delete/${id}`);
   },

   // batch delete
   batchDelete: (idList) => {
    return postRequest('/dataItem/batchDelete', idList);
   },
}
```

2) Design the layout



```
<template>
  <a-drawer :title="form.id ? 'Update' : 'Add'" :width="500" :visible="visible" :body-style="{ paddin
    <a-form ref="formRef" :model="form" :rules="rules" :label-col="{ span: 5 }">
      <a-form-item label="datestamp" name="datestamp">
          <a-input v-model:value="form.datestamp" placeholder="Please enter datestamp" />
        </a-form-item>
        <a-form-item label="timestamp" name="timestamp">
          <a-input v-model:value="form.timestamp" placeholder="Please enter timestamp" />
        </a-form-item>
        <a-form-item label="dataitem1" name="dataitem1">
          <a-input v-model:value="form.dataitem1" placeholder="Please enter dataitem1" />
        </a-form-item>
        <a-form-item label="dataitem2" name="dataitem2">
          <a-input v-model:value="form.dataitem2" placeholder="Please enter dataitem2" />
        </a-form-item>
        <a-form-item label="dataitem3" name="dataitem3">
          <a-input v-model:value="form.dataitem3" placeholder="Please enter dataitem3" />
        </a-form-item>


    </a-form>
    <div
        :style="{
        position: 'absolute',
        right: 0,
        bottom: 0,
        width: '100%',
        borderTop: '1px solid #e9e9e9',
        padding: '10px 16px',
        background: '#fff',
        textAlign: 'right',
```

3) Configure page routing



nenu_id	menu_name	menu_type	parent_id	sort	path	component	perms_type	api_perms	web_perms
45	User manageme	1	0	100	/organization	(Null)	(Null)	(Null)	(Null)
46	User	2	45	1	/user/user/user-list	/system/user/user/user-list/index.vue	(Null)	(Null)	(Null)
76	Role	2	45	2	/user/role	/system/user/role/index.vue	(Null)	(Null)	(Null)
91	Add user	3	46	(Null)	(Null)	(Null)	1	(Null)	system:user:add
92	Edit user	3	46	(Null)	(Null)	(Null)	1	(Null)	system:user:update
93	Disable/Enable	3	46	(Null)	(Null)	(Null)	1	(Null)	system:user:disabled
95	Reset password	3	46	(Null)	(Null)	(Null)	1	(Null)	system:user:password:reset
96	Delete user	3	46	(Null)	(Null)	(Null)	1	(Null)	system:user:delete
97	Add role	3	76	(Null)	(Null)	(Null)	1	(Null)	system:role:add
98	Delete role	3	76	(Null)	(Null)	(Null)	1	(Null)	system:role:delete
99	Edit role	3	76	(Null)	(Null)	(Null)	1	(Null)	system:role:update
101	Batch delete rol	3	76	(Null)	(Null)	(Null)	1	(Null)	system:role:user:batch:delete
102	Delete user	3	76	(Null)	(Null)	(Null)	1	(Null)	system:role:user:delete
103	Add user	3	76	(Null)	(Null)	(Null)	1	(Null)	system:role:user:add
104	Change authori	3	76	(Null)	(Null)	(Null)	1	(Null)	system:role:menu:update
208	Response	2	0	1	/response	smartWatch/response/response-list.vue	(Null)	(Null)	(Null)
209	Question	2	0	1	/question	smartWatch/question/question-list.vue	(Null)	(Null)	(Null)
210	DataItem	2	0	1	/dataItem	smartWatch/dataItem/dataItem-list.vue	(Null)	(Null)	(Null)

Change the data in **t_menu** table of Mysql database. The **menu_type** for a normal webpage should be 2. The **path** would control how the **website url** would be for this website. The **component** should be the path to vue page file. Therefore, the dataItem component is **smartWatch/dataItem/dataItem-list.vue**. The **web_perms** is designed for some buttons or functions of one page

10.Back-end deployment

10.1 Software Environment

Java (Java 8+ including Java 8)

Mysql (Mysql 5.7+ including 5.7)

Maven (Maven 3+)

Redis

Nginx / Opresty / Tengine

10.2 Modify Configuration Files

Java uses maven profile. Therefore, when deploying, we need to pay attention to which environment is being deployed. For instance, if deploying to the testing environment, modify the configuration file in the `**src/main/resource/test**` directory. If deploying to the production environment, modify the file in `**src/main/resource/prod**`.

10.2.1 Modify sa-common.yaml

First, modify the configuration file in the **sa-common** project, namely **sa-common.yaml**. The specifics to modify are:

- Database connection details and Druid login information
- Redis connection details
- Cache implementation: using in-memory caffine or Redis
- Tomcat log directory
- Token configurations, expiration time (in days)
- Cross-domain configuration

Please modify according to the points listed above.

10.2.2 Modify application.yaml

Open the configuration file in the **sa-admin** project, `` `src/main/resource/` ``, find the environment you need to modify: **dev/test/pre/prod**, and open `` `application.yaml` ``. The modifications are as follows:

- Port number
- Project access path, i.e., `` `server.servlet.context-path` ``

10.2.3 Modify log4j2.xml

Open the configuration file in the **sa-admin** project, `` `src/main/resource/` ``, find the environment you need to modify: **dev/test/pre/prod**, and open `` `log4j2.xml` ``. The modifications include:

- `` `log-path` `` directory
- `` `root` `` level

For development, testing, and pre-release environments, you can use: debug, info (recommended to use info). For the production environment, use: info, warn, error (recommended to use warn).

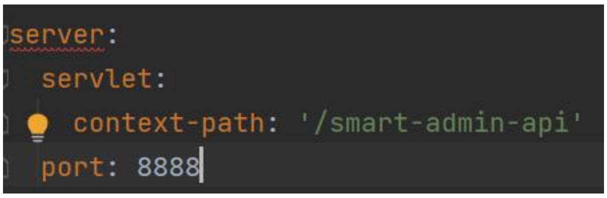
10.3 Packaging

In the **sa-admin** directory, execute the mvn command:

- Development environment: `` `mvn clean package -Dmaven.test.skip=true -P dev` ``
- Testing environment: `` `mvn clean package -Dmaven.test.skip=true -P test` ``
- Pre-release environment: `` `mvn clean package -Dmaven.test.skip=true -P pre` ``
- Production environment: `` `mvn clean package -Dmaven.test.skip=true -P prod` ``

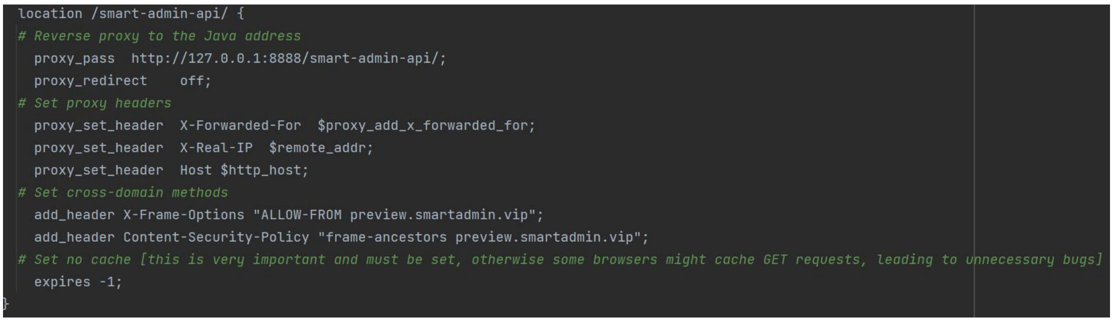
10.4 Configure nginx

Assuming in the sa-admin's prod configuration `` `application.yaml` `` is set as follows:



```
server:
  servlet:
    context-path: '/smart-admin-api'
  port: 8888
```

Then modify the nginx configuration file as:



```
location /smart-admin-api/ {
# Reverse proxy to the Java address
  proxy_pass  http://127.0.0.1:8888/smart-admin-api/;
  proxy_redirect    off;
# Set proxy headers
  proxy_set_header  X-Forwarded-For  $proxy_add_x_forwarded_for;
  proxy_set_header  X-Real-IP  $remote_addr;
  proxy_set_header  Host $http_host;
# Set cross-domain methods
  add_header X-Frame-Options "ALLOW-FROM preview.smartadmin.vip";
  add_header Content-Security-Policy "frame-ancestors preview.smartadmin.vip";
# Set no cache [this is very important and must be set, otherwise some browsers might cache GET requests, leading to unnecessary bugs]
  expires -1;
}
```

11. Front-end deployment

11.1 Software Environment

NodeJs, requires node version >= 14 (you can check using the command `node -v`)

Nginx / Opresty / Tengine

11.2 Modify URL

Depending on the build environment, make the following changes:

```
.env.test Testing environment

.env.pre    Pre-release environment

.env.prod Production environment
```

Only need to modify **VITE_APP_API_URL** and **VITE_APP_PROJECT_TITLE** in the file as follows:

```
VITE_APP_API_URL = 'http://127.0.0.1:8888/smart-admin-api'

VITE_APP_PROJECT_TITLE = 'Smart Fixed Asset Management System'
```

11.3 Modify Front-end Access Path

Open the `**vite.config.js**` file:

Modify the `base` variable as follows:

```
export default {
  base: process.env.NODE_ENV === 'production' ? '/' : '/',
  root: process.cwd(),
  resolve: {
    alias: [
```

11.4 Execute the Build Command

For the production environment, you need to execute the production build command:

npm run build:prod

After successful packaging, a **/dist** directory will be generated.

For testing environment packaging, execute **`npm run build:test`**

For pre-release environment packaging, execute **`npm run build:pre`**

11.5 Nginx Configuration

Copy the **/dist** directory created in step 4 to the server, and then configure nginx as follows:

11.5.1 With Cache Configuration

```
   location / {
  alias /home/smart-admin/smart-admin-v2-preview/;
  try_files $uri $uri/ /index.html last;
  index   index.html;
  # Don't cache the index.html homepage
  expires -1;
  # Cache static resource files (excluding the index.html homepage) for 30 days
  if ($request_filename
~* .*\.(?:jpg|jpeg|gif|png|ico|cur|gz|svg|svgz|mp4|ogg|ogv|webm|css|js)$){
        expires 30d;
  }
}
```

11.5.2 No Cache Configuration

```
   location / {
  alias /home/smart-admin/smart-admin-v2-preview/;
  try_files $uri $uri/ /index.html last;
  index   index.html;
  expires -1;
}
```