FINAL PROJECT REPORT

- **Student Name 1: Nguyen Le Gia Hung**

I. Introduction

- Furniture website

```
CREATE TABLE `products` (
  `id_sp` int(10) UNSIGNED NOT NULL,
  `ten_sp` varchar(255) NOT NULL,
  `gia_sp` int(255) DEFAULT NULL,
  `trangthai` tinyint(1) UNSIGNED NOT NULL,
  `avatar` varchar(255) DEFAULT NULL,
  `id_loaisp` int(50) NOT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;

--
--
CREATE TABLE `products_type` (
    `id_loaisp` int(10) UNSIGNED NOT NULL,
    `ten_loaisp` varchar(255) NOT NULL,
    `dvt` varchar(255) NOT NULL
    ) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_general_ci;
```

Task:

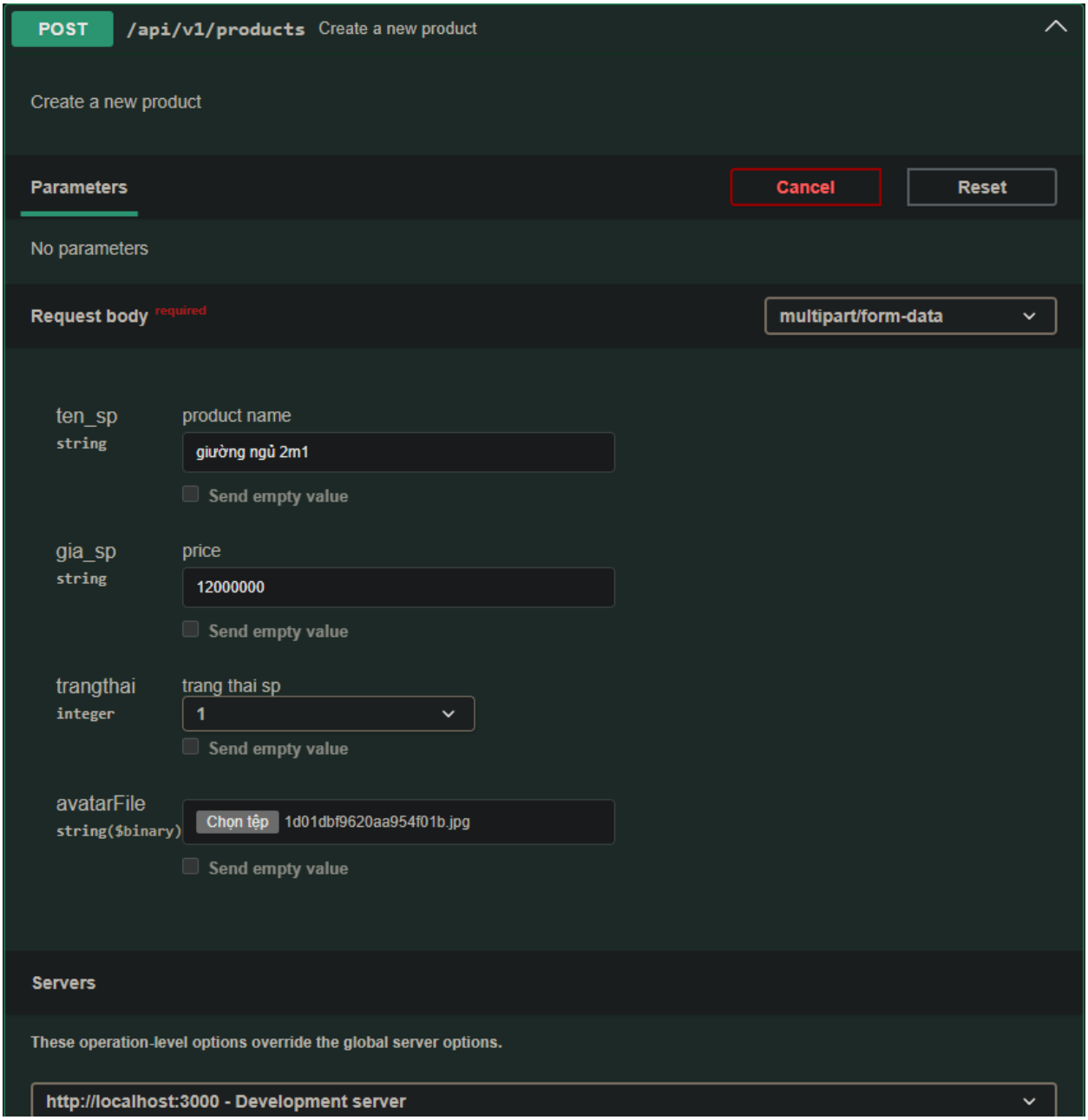
Nguyen Le Gia Hung: Design: GET, POST, PUT, DELETE feature

Phan Văn Sang: database, login register feature,word

II. Details of implemented features

1. Feature / Application page 1:

- **Description:** Get product by filter : Search for product information by product status or product name.
- **Screenshots:**


POST
/api/v1/products
Create a new product
Create a new product
Parameters
Cancel
Reset
No parameters
Request body
required
multipart/form-data
ten_sp
string
product name
giường ngủ 2m1
Send empty value
gia_sp
string
price
12000000
Send empty value
trangthai
integer
trang thai sp
1
Send empty value
avatarFile
string($binary)
Chọn tệp
1d01dbf9620aa954f01b.jpg
Send empty value
Servers
These operation-level options override the global server options.
http://localhost:3000 - Development server

Responses

Curl

```
curl -X 'POST' \
  'http://localhost:3000/api/v1/products' \
  -H 'accept: application/json' \
  -H 'Content-Type: multipart/form-data' \
  -F 'ten_sp=giường ngủ 2m1' \
  -F 'gia_sp=12000000' \
  -F 'trangthai=1' \
  -F 'avatarFile=@1d01dbf9620aa954f01b.jpg;type=image/jpeg'
```

Request URL

```
http://localhost:3000/api/v1/products
```

Server response

Code	Details
201	Response body

```
{
  "status": "success",
  "data": {
    "product": {
      "id_sp": 9,
      "ten_sp": "giường ngủ 2m1",
      "gia_sp": "12000000",
      "trangthai": "1",
      "avatar": "/public/uploads/1728832574884-183535890.jpg"
    }
  }
}
```

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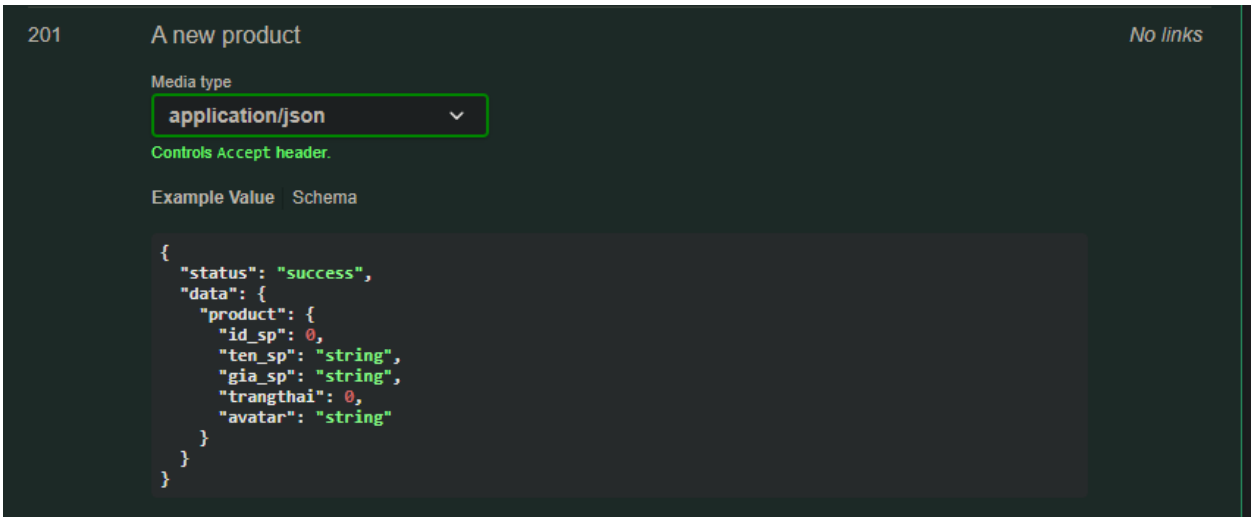
Response headers

```
access-control-allow-origin: *
connection: keep-alive
content-length: 173
content-type: application/json; charset=utf-8
date: Sun,13 Oct 2024 15:16:15 GMT
etag: W/"ad-VgG9GWOCwhSrHUtNJ+uq7Wc84I0"
keep-alive: timeout=5
location: /api/v1/products/9
x-powered-by: Express
```

Responses

Code	Description	Links
201	A new product	*No links*



	id_sp	ten_sp	gia_sp	trangthai	avatar	id_loaisp
Sửa Chép Xóa bỏ	9	giường ngủ 2m1	12000000	1	/public/uploads/1728832574884-183535890.jpg	0

- **Implementation details:**
  - + Does this feature use any libraries other than those introduced in the class (if so, list and state the roles of these new libraries, in both frontend and backend)?
  - + Endpoint: ”POST **/api/v1/products**” This is the endpoint that the **createProduct** function in the controller calls to create a new product. This function will receive data from **req.body** and may receive a file from **req.file** if available (for example, a product image).
  - + When making a POST request to create a new product, the client sends data in multipart/form-data format. This is commonly used when a file (such as an image) needs to be uploaded along with other data from a form. The expected data structure includes:
    - Parameters in the request body:
    - ten_sp (string): The name of the product.
    - gia_sp (string): The price of the product.
    - trangthai (integer): The status of the product (0 or 1).
    - avatarFile (file, binary): Optional image file for the product
  - + When the POST request is successful, the server will respond with a JSON object, usually structured as follows:

```
{
  "status": "success",
  "data": {
    "product": {
      "id_sp": 1,
      "ten_sp": "Tên sản phẩm ví dụ",
      "gia_sp": "100",
      "trangthai": 1,
      "avatar": "/public/uploads/image.png"
    }
  }
}
```


+ 1. Data Storage
    - Table name: products
    - Data Fields: When creating a new product via the POST request, the following fields are stored in the products table: id_sp, ten_sp, gia_sp, trangthai, avatar.

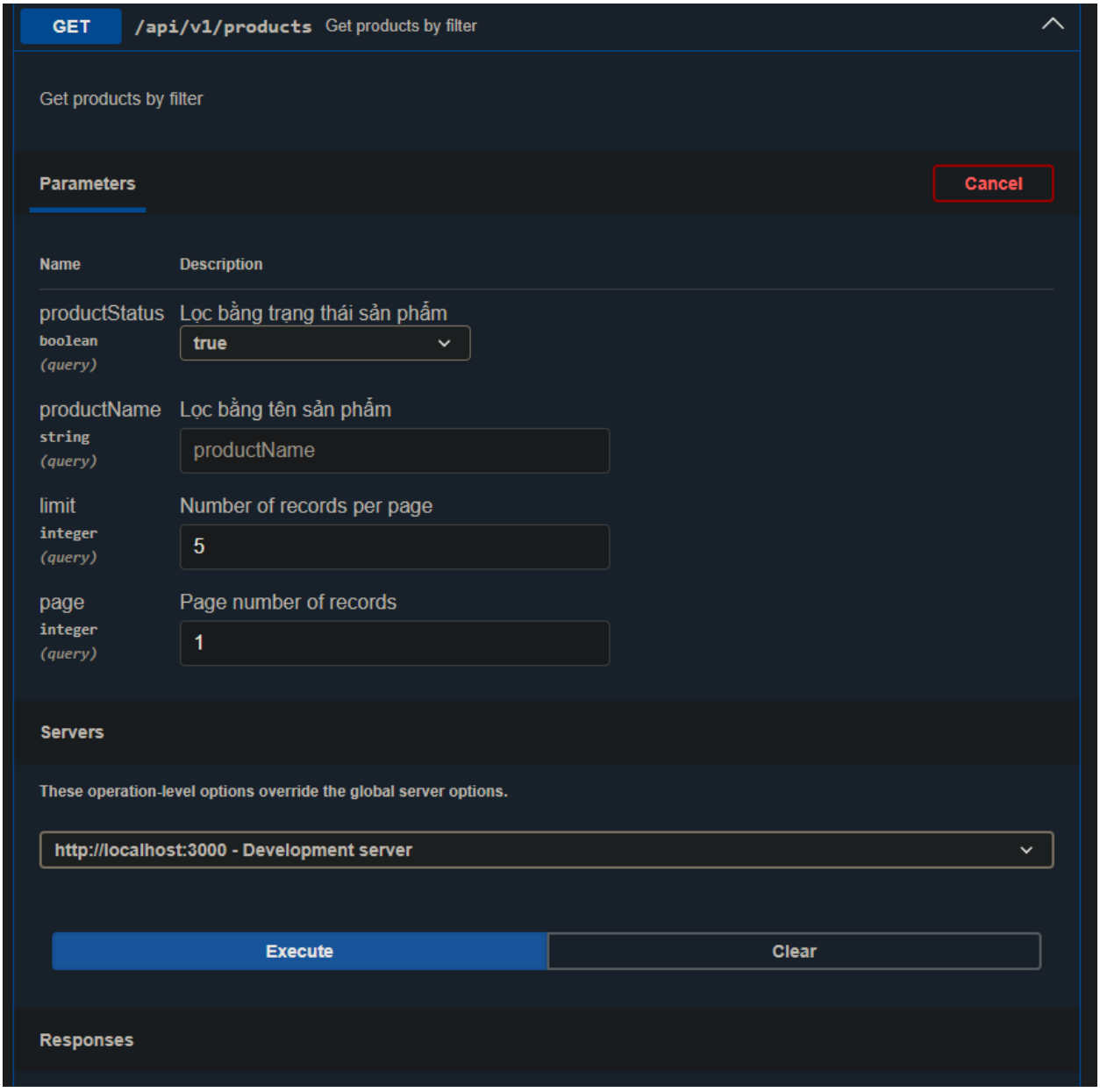
+ 2. Read Data

  While the primary function of a POST request is to store data, the system can also read data from the same table to validate or send back a confirmation.
  For example, after successfully storing a new product, the details of the created product (including id_sp) can be retrieved from the products table and sent back to the client as part of the response.

+ Client-side States Needed to Implement the POST Feature
    - Input State
    - Validation State
    - Loading State
    - Response State
    - Navigation State

2. Feature / Application page 2

- **Description:** Get product by filter : Search for product information by product status or product name.
- **Screenshots:**


GET
/api/v1/products
Get products by filter
Get products by filter
Parameters
Cancel
Name
Description
productStatus
boolean
(query)
Lọc bằng trạng thái sản phẩm
true
productName
string
(query)
Lọc bằng tên sản phẩm
productName
limit
integer
(query)
Number of records per page
5
page
integer
(query)
Page number of records
1
Servers
These operation-level options override the global server options.
http://localhost:3000 - Development server
Execute
Clear
Responses

Responses

Curl

```
curl -X 'GET' \
  'http://localhost:3000/api/v1/products?productStatus=true&limit=5&page=1' \
  -H 'accept: application/json'
```

Request URL

```
http://localhost:3000/api/v1/products?productStatus=true&limit=5&page=1
```

Server response

Code	Details
200	Response body

```
{
  "status": "success",
  "data": {
    "products": [
      {
        "id_sp": 9,
        "ten_sp": "giường ngủ 2m1",
        "gia_sp": 12000000,
        "trangthai": 1,
        "avatar": "/public/uploads/1728832574884-183535890.jpg"
      }
    ],
    "metadata": {
      "totalRecords": 1,
      "firstPage": 1,
      "lastPage": 1,
      "page": 1,
      "limit": 5
    }
  }
}
```

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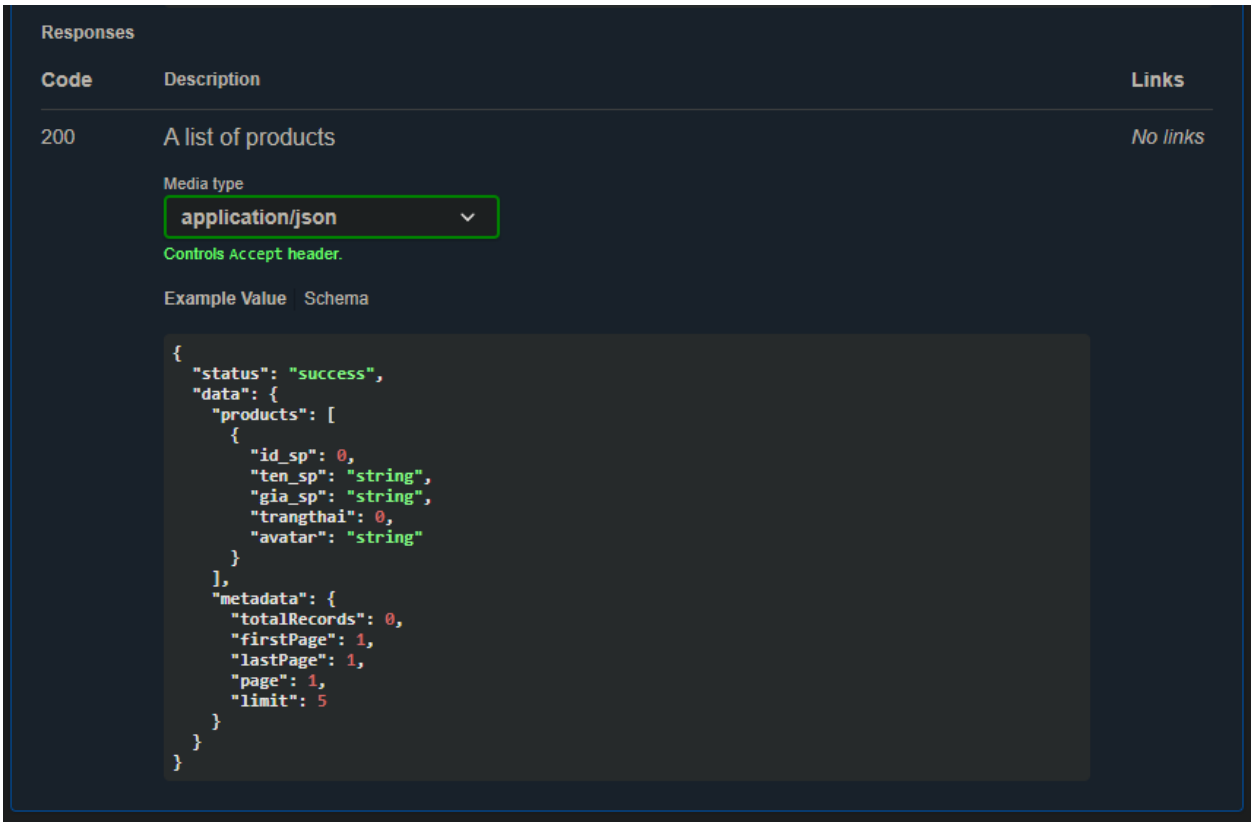
Response headers

```
access-control-allow-origin: *
content-length: 248
content-type: application/json; charset=utf-8
date: Sun,13 Oct 2024 16:25:17 GMT
etag: W/"f8-yXL8i0fPr2YxMe1bphdNoP3VEfk"
x-powered-by: Express
```

Responses



- **Implementation details:**
  - The GET feature typically retrieves data from the server without modifying it.
  - Query Parameters:
    - ten_sp, gia_sp, trangthai
    - limit (The number of records to return per page. Default can be set in the backend)
    - page (The specific page number to retrieve, useful for paginated results.)
  - Data Format/Structure Sent
    - When the client makes a request to the API, the query parameters will be sent as part of the URL. For example: *GET /api/v1/products?name=ProductA&trangthai=1&limit=10&page=2*
  - Expected Response Format:

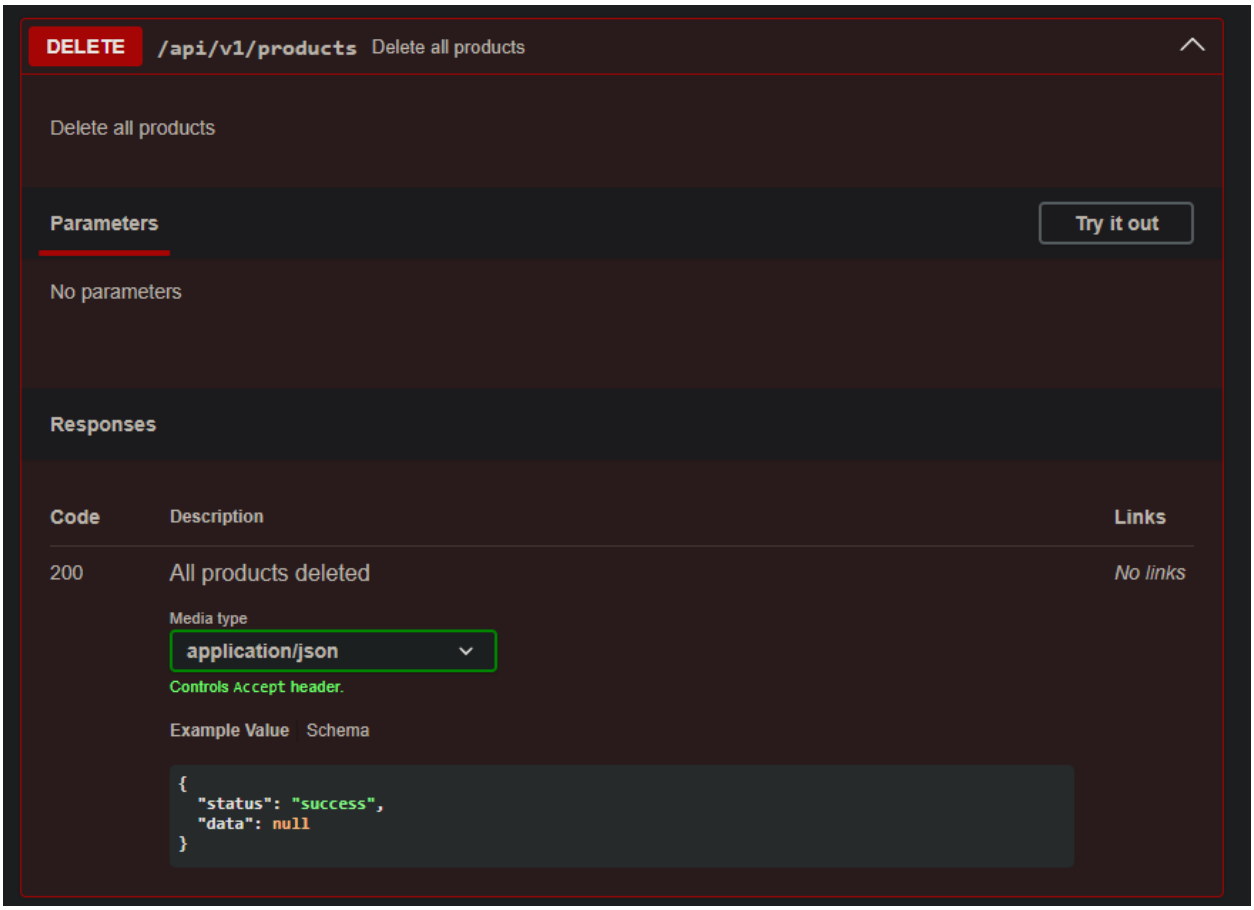
```
{
  "status": "success",
  "data": {
    "products": [
      {
        "id_sp": 1,
        "ten_sp": "Product A",
        "gia_sp": "20.00",
        "trangthai": 1,
        "avatar": "/public/uploads/product_a.jpg"
      },
      {
        "id_sp": 2,
        "ten_sp": "Product B",
        "gia_sp": "25.00",
        "trangthai": 1,
        "avatar": "/public/uploads/product_b.jpg"
      }
    ],
    "metadata": {
      "totalRecords": 50,
      "firstPage": 1,
      "lastPage": 5,
      "page": 2,
      "limit": 10
    }
  }
}
```


+ Breakdown of the Response Structure
  - status: Indicates the response status (e.g., "success").
  - data: Contains the actual data returned by the API:
  - products: An array of product objects that match the filter criteria.
  - metadata: Provides additional information about the pagination:
  - totalRecords: Total number of products that match the filter.
  - firstPage: The first page number.
  - lastPage: The last page number based on the total records and limit.
  - page: The current page number requested.

        - limit: The number of records per page.
    + Read Data
        - The GET by filter feature is primarily responsible for reading data from the database rather than storing it. This feature allows clients to query and retrieve specific product records based on various filtering criteria, such as ten_sp, gia_sp, and trangthai.
    + Data Source
        - The data is typically read from a products table in the database. This table would include various fields representing the attributes of the products, which may include:
        - id_sp: Unique identifier for each product (Primary Key).
        - ten_sp: Name of the product.
        - gia_sp: Price of the product.
        - trangthai: Status of the product (active, inactive, etc.).
        - avatar: File path for the product's image.
    + Client-Side States Needed to Implement GET by Filter Feature
        - Filter Criteria State
        - Product List State
        - Pagination State
        - Loading State
        - Error State
        - Sorting State

3. **Feature / Application page 3**

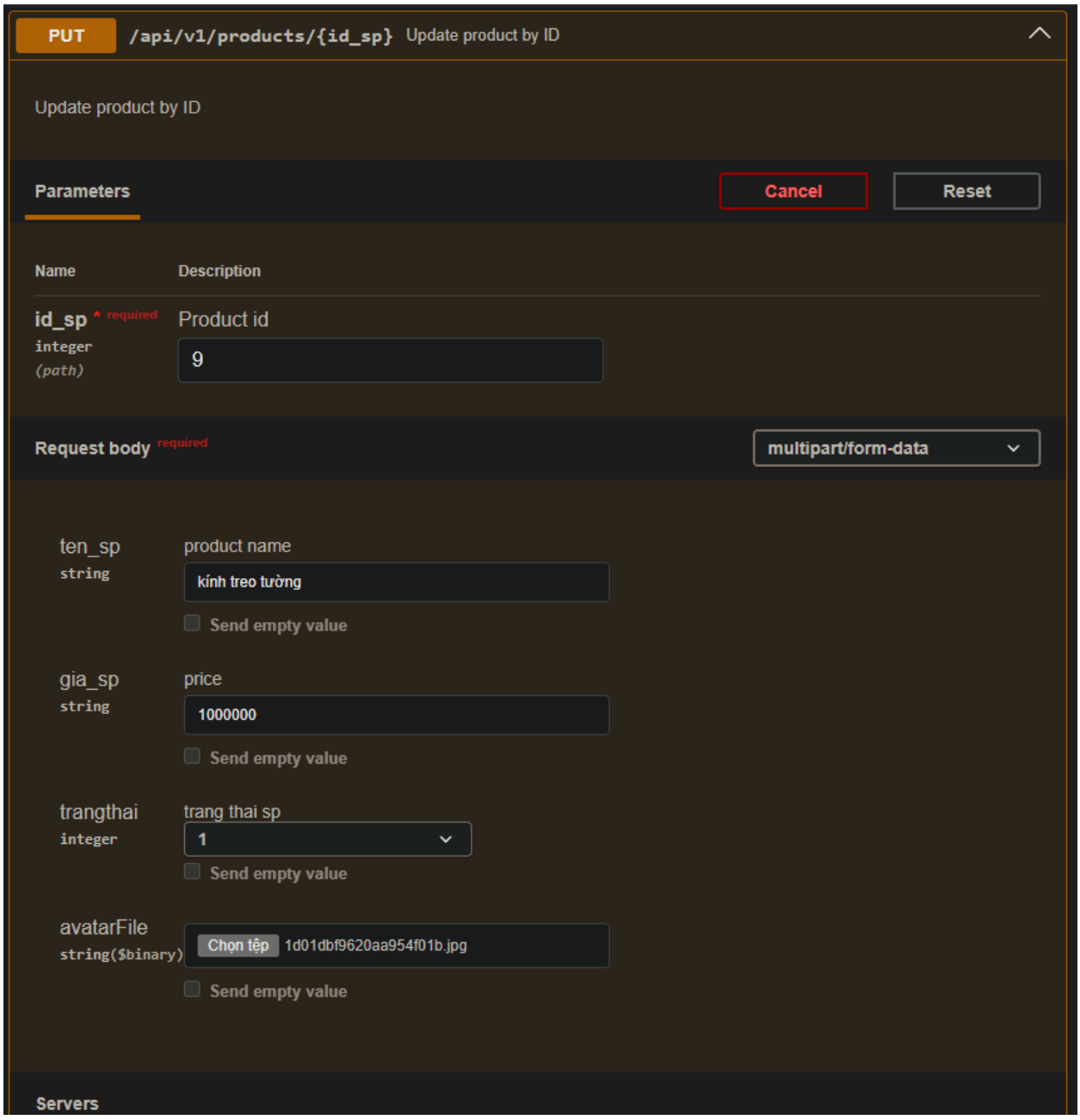
- **Description:** Delete all products : delete all products in database
- **Screenshot:**

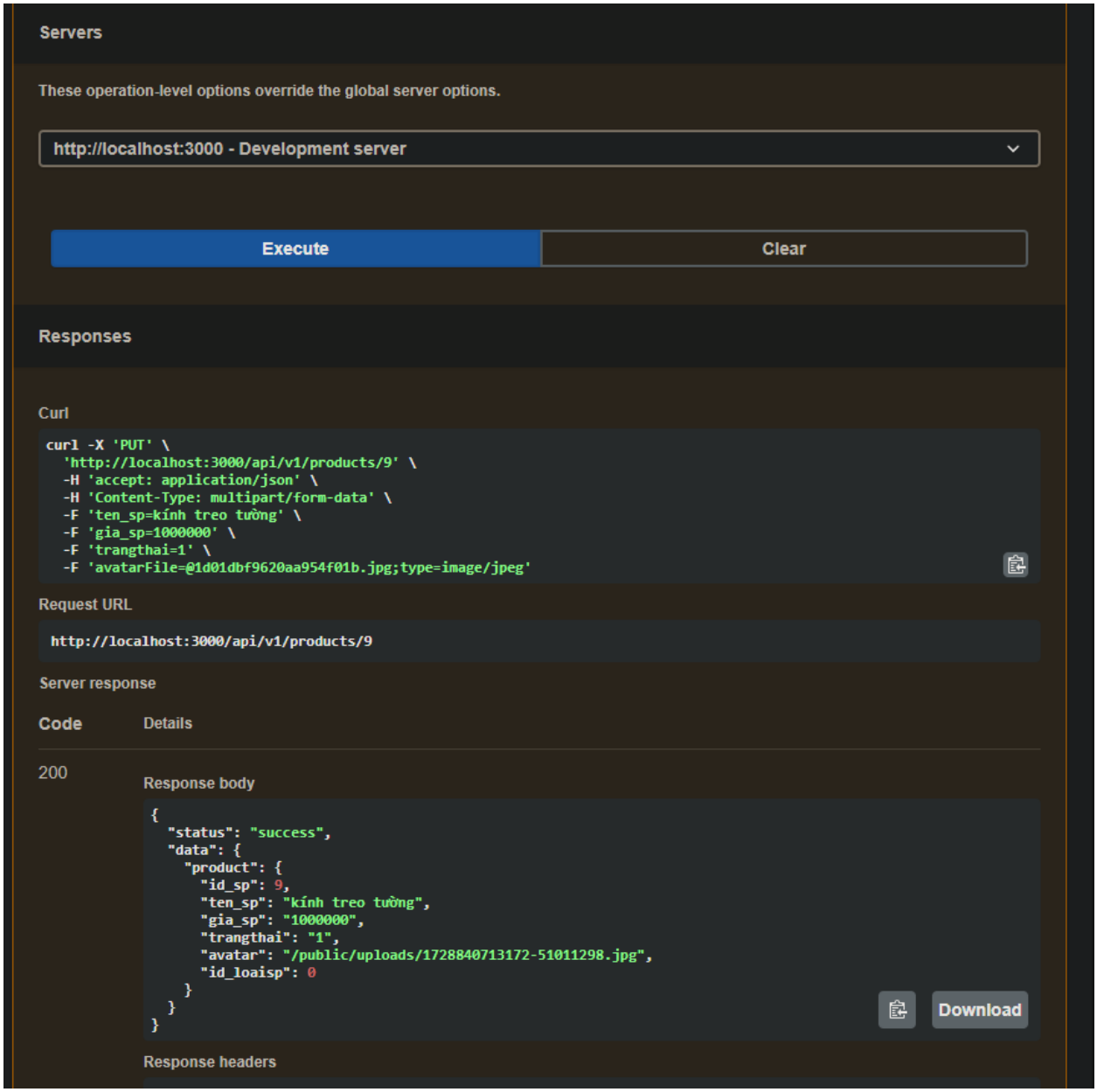


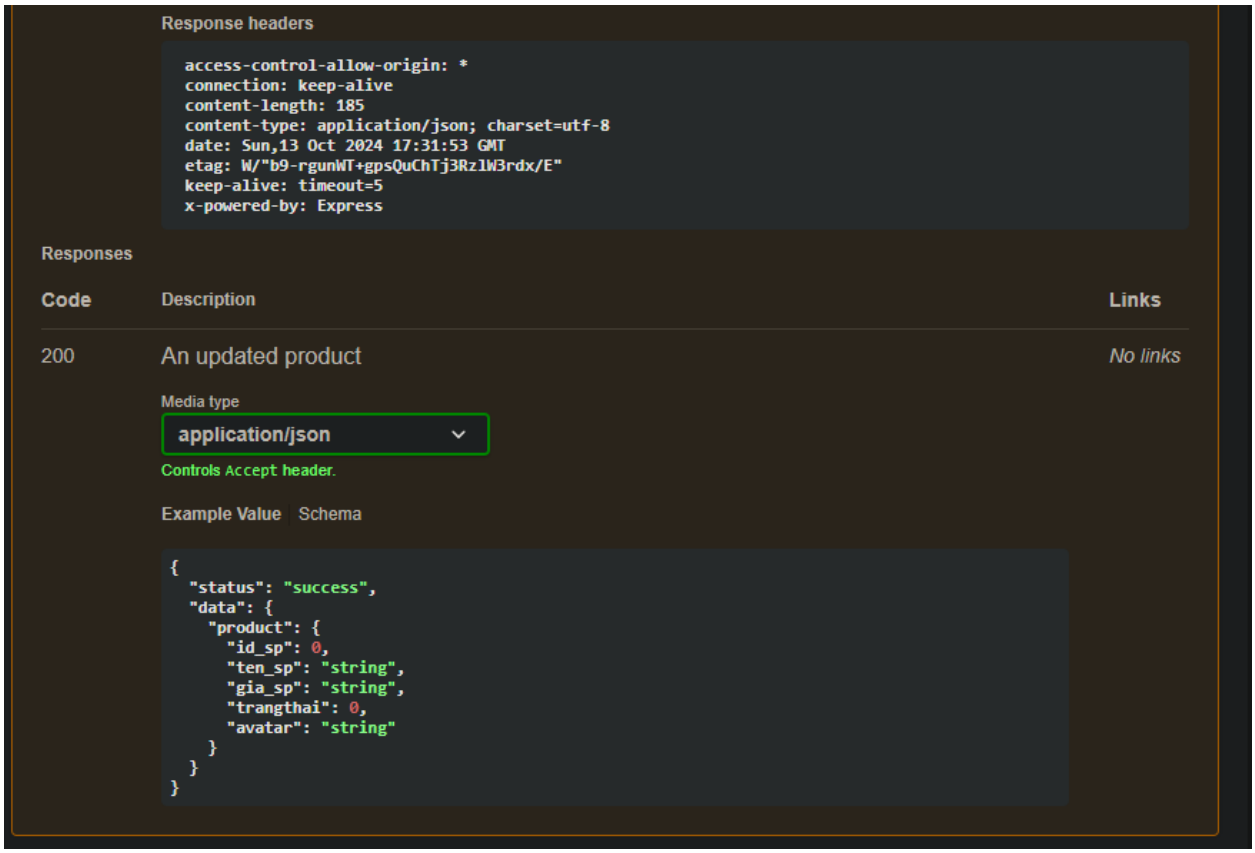
- **Implementation details:**
  - + The Delete All Products feature interacts with a specific API endpoint on the server side to remove all products from the database. Here's a detailed description of the relevant API:
    - Endpoint: /api/v1/products
    - Method: DELETE
  - + Data Format/Structure Sent
    - Request Body: Generally, for a DELETE operation that removes all products, you might not need to send a request body. However, some implementations might require an empty body to specify that all products should be deleted. : *DELETE /api/v1/products*
  - + Data Format/Structure Received
    - Response Body: The server responds with a JSON object indicating the result of the operation. The structure of the response typically includes:
    - status: (string) indicates the status of the response (e.g., "success").
    - data: (object) which may be empty or contain a message confirming that all products have been deleted

+ Read Operation:
+ The feature does not read data before performing the deletion. It simply executes a command to remove all records from the products table.
+ Store Operation:
+ The feature does not store any new data in the database. Its sole purpose is to delete existing data.
+ Database Table Involved
    - Table: The operation directly affects the products table in the database, which contains all the product records. Once the DELETE operation is executed, all entries in this table are removed.
+ Client-side States Needed to Implement the DELETE all products Feature
    - Loading State
    - Confirmation State
    - Success State
    - Error State
    - Product List State

4. **Feature / Application page 4**
    - **Description: PUT by id: Update product by ID**
    - **Screenshot:**


PUT
/api/v1/products/{id_sp}
Update product by ID
Update product by ID
Parameters
Cancel
Reset
Name
Description
id_sp * required
integer
(path)
Product id
9
Request body required
multipart/form-data
ten_sp
string
product name
kính treo tường
Send empty value
gia_sp
string
price
1000000
Send empty value
trangthai
integer
trang thai sp
1
Send empty value
avatarFile
string($binary)
Chọn tệp
1d01dbf9620aa954f01b.jpg
Send empty value
Servers


Servers
These operation-level options override the global server options.
http://localhost:3000 - Development server
Execute
Clear
Responses
Curl
curl -X 'PUT' \
'http://localhost:3000/api/v1/products/9' \
-H 'accept: application/json' \
-H 'Content-Type: multipart/form-data' \
-F 'ten_sp=kính treo tường' \
-F 'gia_sp=1000000' \
-F 'trangthai=1' \
-F 'avatarFile=@1d01dbf9620aa954f01b.jpg;type=image/jpeg'
Request URL
http://localhost:3000/api/v1/products/9
Server response
Code
Details
200
Response body
{
"status": "success",
"data": {
"product": {
"id_sp": 9,
"ten_sp": "kính treo tường",
"gia_sp": "1000000",
"trangthai": "1",
"avatar": "/public/uploads/1728840713172-51011298.jpg",
"id_loaisp": 0
}
}
}
Download
Response headers



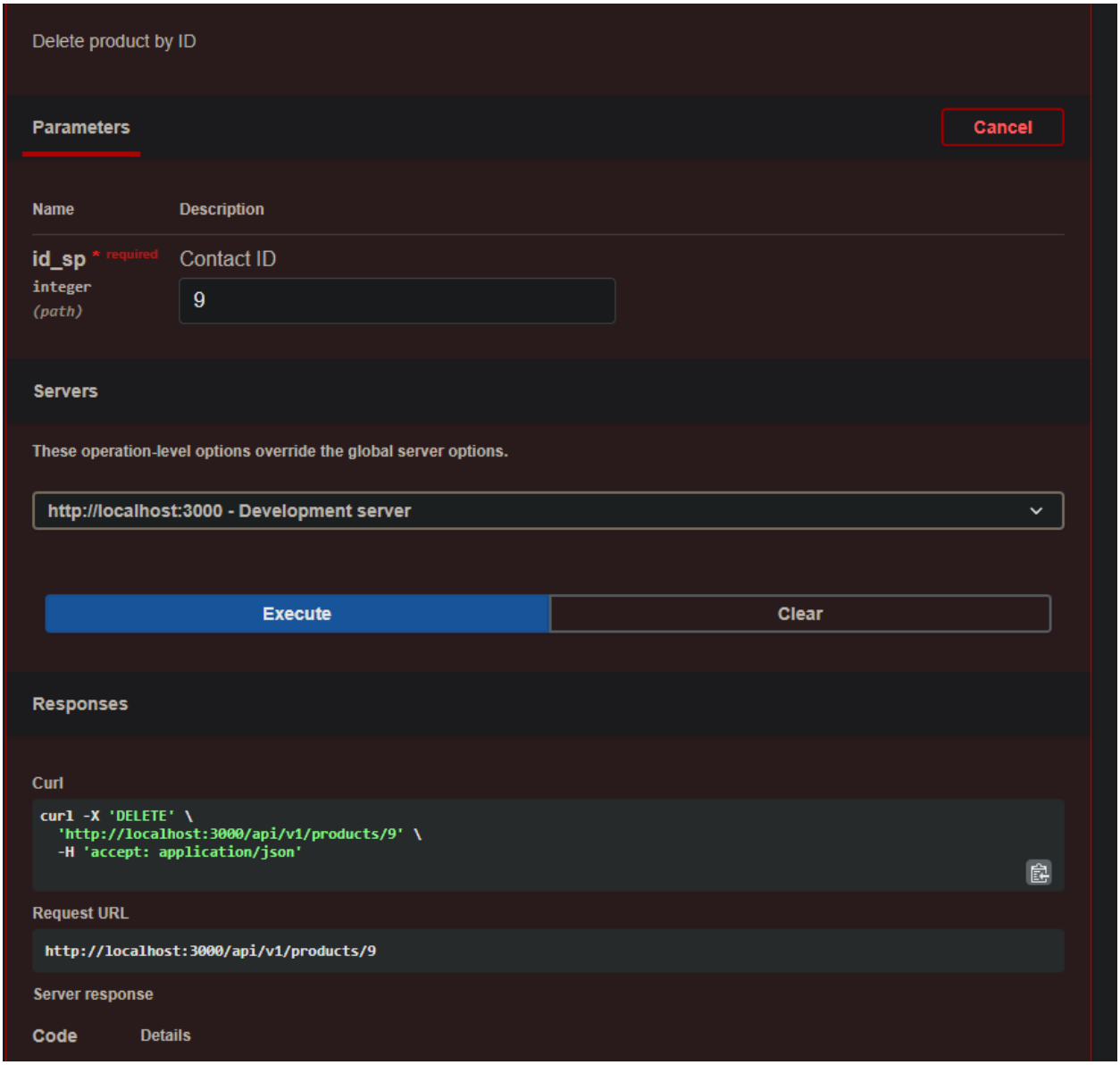
+ The PUT request typically used for updating a product in the server-side API can be described as follows:
    - API Endpoint: /api/v1/products/{id}
    - Method: PUT
    - Description: Updates the details of a specific product identified by its ID.
+ Data Format/Structure Sent
    - The data sent in the PUT request should typically be in the multipart/form-data format, especially if it includes file uploads (like an avatar).
+ Body Structure:
    - id_sp: (integer, required) The ID of the product to update.
    - ten_sp: (string, optional) The name of the product.
    - gia_sp: (string, optional) The price of the product.
    - trangthai: (integer, optional) The status of the product (0 or 1).
    - avatarFile: (file, optional) The new avatar file to upload.
+ Data Format/Structure Received : The response format after a successful update is usually in JSON format. Here's an example of what the response might look like:

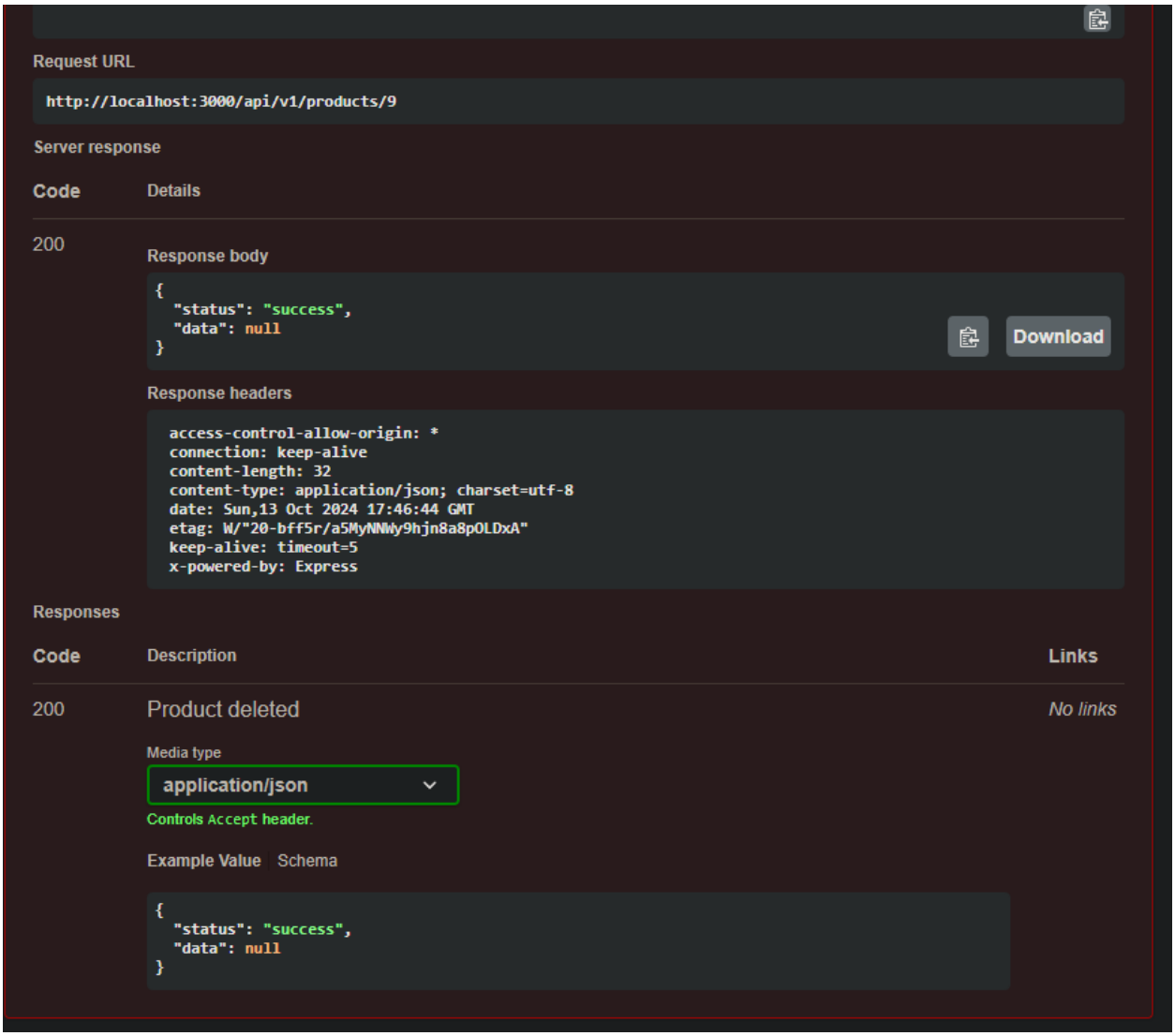
```
{
  "status": "success",
  "data": {
    "product": {
      "id_sp": 1,
      "ten_sp": "Updated Product Name",
      "gia_sp": "200.00",
      "trangthai": 1,
      "avatar": "/public/uploads/new-avatar.jpg"
    }
  }
}
```


+ Data Read/Store Operations
+ Reading Data:
    - When a PUT request is made to update a product, the server typically first reads the existing data of the product using its ID (id_sp). This is to ensure that the product exists and to retrieve the current information before making updates.
+ Storing Data:
    - After validating the incoming data, the server updates the existing product record in the database. This involves modifying the fields specified in the PUT request (such as ten_sp, gia_sp, trangthai, and possibly avatarFile).
+ Database Table
    - Table Name:
        - The data for products is usually stored in a database table named products or Products, depending on the naming convention used in the database schema.
+ Client-Side States:
    - Product ID (id_sp): This state holds the unique identifier of the product that is being updated. It is necessary to identify which product in the database should be modified.
    - Product Form Data
    - Validation States: States to track validation errors or success for the input fields, ensuring that the data entered meets the requirements (e.g., non-empty string for ten_sp, valid price format for gia_sp).
    - Loading State

- Error Handling State
- Success State:

5. **Feature / Application page 4**
   - **Description: DELETE by id: DELETE product by ID**
   - **Screenshot:**





- **Implementation details:**
  + Server-Side API for PUT Feature
    - Endpoint
      + URL: /api/v1/products/:id
      + Method: PUT
  + Description
    - This endpoint is used to update an existing product identified by its unique ID (id_sp). It expects to receive the product details in the request body and returns the updated product details in the response.
  + Data Format/Structure
    - Request Body: The data sent to the server for updating a product is typically formatted as multipart/form-data. Here's a breakdown of the expected structure:

        + Fields:
            - ten_sp (string, required): The name of the product.
            - gia_sp (string, required): The price of the product.
            - trangthai (integer, optional): The status of the product (0 or 1).
            - avatarFile (file, optional): The avatar image file for the product.

+ Response Structure: Upon successful update, the server responds with a JSON object indicating the status of the operation and the updated product details.
    - Response Format:
        + Status: success
        + Data:
            - product:
                - id_sp: (integer) The unique identifier of the product.
                - ten_sp: (string) The updated name of the product.
                - gia_sp: (string) The updated price of the product.
                - trangthai: (integer) The updated status of the product.
                - avatar: (string, optional) The file path of the updated avatar image.
+ Data Reading and Storage
    - Reading Data:
        + When a PUT request is made to update a product, the feature first reads the existing product details from the database using the product ID (id_sp) provided in the request URL. This ensures that the product exists before attempting to update it.
    - Storing Data:
        + After reading the current data, the feature then updates the product information in the database. The updated data is stored in the products table, which contains the relevant fields for each product

- Client-Side States
    - Product ID State (productId):
        + This state holds the unique identifier of the product that is being updated. It's used to construct the API endpoint for the PUT request (e.g., /api/v1/products/{id}).

+ Product Form State (productForm):
    - This state contains the data related to the product being updated. It usually includes fields such as:
        + ten_sp: Product name
        + gia_sp: Product price
        + trangthai: Product status
        + avatar: File upload for the product image (if applicable)
+ Loading State (isLoading)
    - A boolean state to indicate whether the PUT request is in progress. This can be used to show a loading spinner or disable the form while the update is being processed.
+ Error State (error):
+ Success State (success)
+ Avatar Preview State (avatarPreview) (optional):