



**SCHOOL OF COMPUTING (SoC)**

**ST0503 Back-end Web Development**

**2021/2022 SEMESTER 2**

**ASSIGNMENT 1**

Admission Number: P2100803

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Course: Diploma in Applied AI and Analytics

Content Page:

1. Instructions on how to setup the project on the lecturer's laptop
2. MYSQL database tables created and their linkage (including foreign keys)
3. Screenshots as proof of all 12 successful APIs in chronological order as well as the remaining 5 APIs for the advanced features

**1. Instructions on how to set up the project:**

1. Open MYSql Workbench and open the .sql script file from the downloaded project folder in the workbench. Run the file by clicking the first lightning symbol in the workspace area and refresh the schemas on the left to see the new database
2. Double click on the database 'sp\_it' and then double click on 'Tables' to see the various table names. To view the actual tables double click on the table names and click the first lightning icon in the workspace on the left again
3. Open Postman and go to import to import the postman path collection file from the downloaded project folder. You can test all APIs from here more conveniently
4. Open VScode and right click on the main folder which was download and click integrated terminal
5. Once terminal is open type 'npm start' and press enter. The server will start running in the terminal.
6. From here you can test all the endpoints. I recommend that you have postman and mysql workbench open side by side so you can see the changes happening in real time for POST, PUT, GET and DELETE.

**2. Tables in the SQL Workbench to support functionalities such as user registration, publication of product info, insertion of products and user reviews.**

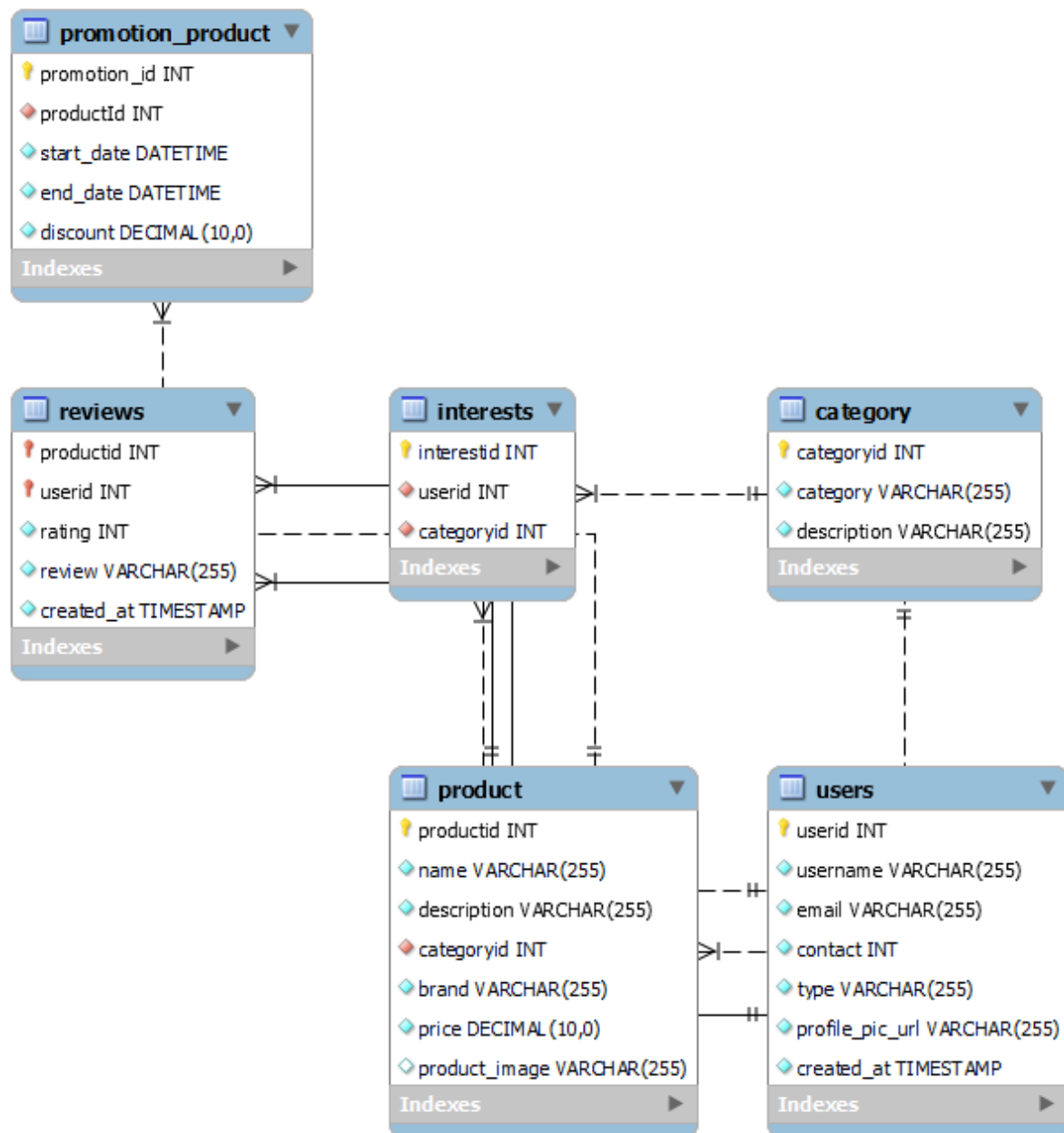
Context:

Background

SP IT! is considering setting up an online e-store to allow the public to purchase IT products it is selling. Before it launches its online e-store, it requires a web application to computerize its inventory management module and also allow the public to view the product details online.

As such, SP IT! has tasked you to design the backend API Specs the website. The API specs would support functionalities such as user registration, publication of product info, insertion of products and user reviews

ER Diagram:



User Table for user registration:

userid	username	email	contact	type	profile_pic_url	created_at
1	Terry Tan	terry@gmail.com	98765432	Customer	https://www.abc.com/terry.jpg	2021-12-15 20:27:21
2	Amir Rahman	amirramen@gmail.com	96209012	Customer	https://www.abc.com/amirramen.jpg	2021-12-15 20:58:33
3	Percy Jackson	percyjackson@gmail.com	98765432	Customer	https://www.abc.com/percyj.jpg	2021-12-16 18:00:06
NULL	NULL	NULL	NULL	NULL	NULL	NULL

Product Table for publication of product:

productid	name	description	categoryid	brand	price
10	SP AMD Ryzen 3600 Laptop	Best Laptop	1	SP IT!	1858
11	Oppo Find X Pro 3	Best Phone	1	SP IT!	2000
NULL	NULL	NULL	NULL	NULL	NULL

Foreign Key for categoryid to category table:

category - Table   interests - Table   **product - Table**   promotion\_product - Table   reviews - Table   users - Table

Table Name:  Schema:

Charset/Collation:   Engine:

Comments:

Foreign Key Name	Referenced Table	Column	Referenced Column
Product_category_catgo...	sp_it.'category'	<input checked="" type="checkbox"/> categoryid	categoryid

Foreign Key Options

On Update:

On Delete:

☐ Skip in SQL generation

Foreign Key Comment:

Columns   Indexes   **Foreign Keys**   Triggers   Partitioning   Options

Apply   Revert

Category Table for category of devices:

categoryid	category	description
1	Laptops	Light and high performance laptops for school
2	Smartphones	Portable, high performance and easy for differe...
NULL	NULL	NULL

Reviews Table for reviews from users on the various products:

productid	userid	rating	review	created_at
10	1	5	Good Laptop, super fast and can play game in class!	2021-12-19 15:08:34
10	2	10	Good Laptop, super fast and can play game in cla...	2021-12-19 16:49:46
NULL	NULL	NULL	NULL	NULL

Foreign Key for productid to product table:

interests - Table promotion\_product - Table reviews - Table

Table Name: reviews Schema: sp\_it

Charset/Collation: utf8mb4 utf8mb4\_0900\_ai\_ci Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table	Column	Referenced Column
Review_product_productid	sp_it.product	productid	productid
Review_user_userid	sp_it.users	userid	userid

Foreign Key Options

On Update: RESTRICT

On Delete: RESTRICT

☐ Skip in SQL generation

Foreign Key Comment:

Columns Indexes ForeignKeys Triggers Partitioning Options

Apply Revert

Foreign Key for userid to user table:

interests - Table promotion\_product - Table reviews - Table

Table Name: reviews Schema: sp\_it

Charset/Collation: utf8mb4 utf8mb4\_0900\_ai\_ci Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table	Column	Referenced Column
Review_product_productid	sp_it.product	productid	productid
Review_user_userid	sp_it.users	userid	userid

Foreign Key Options

On Update: RESTRICT

On Delete: RESTRICT

☐ Skip in SQL generation

Foreign Key Comment:

Columns Indexes ForeignKeys Triggers Partitioning Options

Apply Revert

Interests Table for users who are interested in multiple categories:

	interestid	userid	categoryid
▶	1	1	1
	2	1	2
•	NULL	NULL	NULL

Foreign key for userid to user table:

Table Name: interests Schema: sp\_it  
 Charset/Collation: utf8mb4 utf8mb4\_0900\_ai\_ci Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table	Column	Referenced Column
interests_category_catg...	'sp_it'. 'category'	interestid	
interests_users_userid	'sp_it'. 'users'	userid	userid
		categoryid	

Foreign Key Options:  
 On Update: RESTRICT  
 On Delete: RESTRICT  
☐ Skip in SQL generation

Foreign Key Comment:

Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert

Foreign key for categoryid to category table:

Table Name: interests Schema: sp\_it  
 Charset/Collation: utf8mb4 utf8mb4\_0900\_ai\_ci Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table	Column	Referenced Column
interests_category_catg...	'sp_it'. 'category'	categoryid	categoryid
interests_users_userid	'sp_it'. 'users'	userid	
		categoryid	

Foreign Key Options:  
 On Update: RESTRICT  
 On Delete: RESTRICT  
☐ Skip in SQL generation

Foreign Key Comment:

Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert

Advanced Feature:

Promotion\_product Table for the promotion period and discount for the respective products:

	promotion_id	productid	start_date	end_date	discount
▶	4	10	2021-12-25 10:00:00	2021-12-31 11:59:00	15
*	NULL	NULL	NULL	NULL	NULL



Foreign Key for productid to product table:

promotion\_product - Table

Table Name: promotion\_product Schema: sp\_it

Charset/Collation: utf8mb4 utf8mb4\_0900\_ai\_ci Engine: InnoDB

Comments:

Foreign Key Name	Referenced Table	Column	Referenced Column
promotion_product_prod...	sp_it.product	<input checked="" type="checkbox"/> productid	productid
		<input type="checkbox"/> promotion_id	
		<input type="checkbox"/> start_date	
		<input type="checkbox"/> end_date	
		<input type="checkbox"/> discount	

Foreign Key Options

On Update: RESTRICT

On Delete: RESTRICT

☐ Skip in SQL generation

Foreign Key Comment

Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert

## 3. Proof that the endpoints work with the sql database when tested on postman.

## Endpoint 1

CA1 / localhost:8081/users/

POST localhost:8081/users/ Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies Beautify

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```
1 {
2   "username": "Percy Jackson",
3   "email": "percyjackson@gmail.com",
4   "contact": "12345678",
5   "password": "lightningbolt",
6   "type": "Customer",
7   "profile_pic_url": "https://www.abc.com/percyj.jpg"
8 }
9
```

Body Cookies Headers (7) Test Results Status: 201 Created Time: 208 ms Size: 251 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "userID": 3
3 }
```

## Endpoint 2

CA1 / localhost:8081/users/id/

GET localhost:8081/users/id/ Send

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION
Key	Value	Description

Path Variables

KEY	VALUE	DESCRIPTION
id	3	Description

Body Cookies Headers (7) Test Results Status: 200 OK Time: 10 ms Size: 431 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "userid": 3,
3   "username": "Percy Jackson",
4   "email": "percyjackson@gmail.com",
5   "contact": "12345678",
6   "type": "Customer",
7   "profile_pic_url": "https://www.abc.com/percyj.jpg",
8   "created_at": "2021-12-16 18:00:06"
9 }
```

## Endpoint 3

CA1 / localhost:8081/users/id/ Save ... ✎ 💬

**PUT** localhost:8081/users/id/ Send

Params Authorization Headers (9) **Body** Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded **raw** binary GraphQL JSON Beautify

```
1 {
2   "username": "Percy Jackson",
3   "email": "percyjackson@gmail.com",
4   "contact": 98765432,
5   "type": "Customer",
6   "profile_pic_url": "https://www.abc.com/percyj.jpg"
7 }
```

**Body** Cookies Headers (4) Test Results Status: 204 No Content Time: 32 ms Size: 134 B Save Response

**Pretty** Raw Preview Visualize Text ...

1

Rootcamp Runner Trash

## Endpoint 4

CA1 / localhost:8081/category Save ... ✎ 💬

**POST** localhost:8081/category Send

Params Authorization Headers (9) **Body** Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded **raw** binary GraphQL JSON Beautify

```
1 {
2   "category": "Smartphones",
3   "description": "Portable, high performance and easy for different modes of communication"
4 }
5
```

**Body** Cookies Headers (7) Test Results Status: 201 Created Time: 15 ms Size: 253 B Save Response

**Pretty** Raw Preview Visualize JSON ...

```
1 {
2   "category": 2
3 }
```

## Endpoint 5

CA1 / localhost:8081/category

GET localhost:8081/category Send

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body Cookies Headers (7) Test Results Status: 200 OK Time: 9 ms Size: 468 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "categoryid": 1,
3   "category": "Laptops",
4   "description": "Light and high performance laptops for school"
5 },
6 {
7   "categoryid": 2,
8   "category": "Smartphones",
9   "description": "Portable, high performance and easy for different modes of communication"
10 }
11 }
```

## Endpoint 6

CA1 / localhost:8081/category

GET localhost:8081/category Send

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Body Cookies Headers (7) Test Results Status: 200 OK Time: 9 ms Size: 468 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "categoryid": 1,
3   "category": "Laptops",
4   "description": "Light and high performance laptops for school"
5 },
6 {
7   "categoryid": 2,
8   "category": "Smartphones",
9   "description": "Portable, high performance and easy for different modes of communication"
10 }
11 }
```

## Endpoint 7

CA1 / localhost:8081/product/

POST localhost:8081/product/ Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
1 {
2   "name": "Oppo Find X Pro 3",
3   "description": "Best Phone",
4   "categoryid": 1,
5   "brand": "SP IT!",
6   "price": "2000.00"
7 }
8
```

Body Cookies Headers (7) Test Results Status: 201 Created Time: 21 ms Size: 256 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "productid": 11
3 }
```

## Endpoint 8

CA1 / localhost:8081/product/id

GET localhost:8081/product/id Send

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	Bulk Edit
Key	Value	Description	

Path Variables

KEY	VALUE	DESCRIPTION	Bulk Edit
id	10	Description	

Body Cookies Headers (7) Test Results Status: 200 OK Time: 11 ms Size: 422 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "productid": 10,
3   "name": "SP AMD Ryzen 3600 Laptop",
4   "description": "Best Laptop",
5   "categoryid": 1,
6   "brand": "SP IT!",
7   "price": 1850,
8   "product_image": "1641102108853-product-design-phone-blue.jpeg"
9 }
```

## Endpoint 9

CA1 / localhost:8081/product/:id/

DELETE localhost:8081/product/:id/ **Send**

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params



KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Path Variables

KEY	VALUE	DESCRIPTION	...	Bulk Edit
id	12	Description		

Body Cookies Headers (4) Test Results

Status: 204 No Content Time: 29 ms Size: 134 B **Save Response**

Pretty Raw Preview Visualize Text  

1

## Endpoint 10

CA1 / localhost:8081/product/:id/reviews

POST localhost:8081/product/:id/review **Send**



Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON **Beautify**

```
1 {
2   ... "userId": 2,
3   ... "rating": 10,
4   ... "review": "Good Laptop, super fast and can play game in class! GPU very reliable"
5 }
6
7
```

Body Cookies Headers (7) Test Results

Status: 201 Created Time: 153 ms Size: 253 B **Save Response**

Pretty Raw Preview Visualize JSON  

```
1 {
2   "reviewid": 0
3 }
```

## Endpoint 11

GET localhost:8081/product/:id/reviews Send

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Path Variables

KEY	VALUE	DESCRIPTION	...	Bulk Edit
id	10	Description		

Body Cookies Headers (7) Test Results

Status: 200 OK Time: 14 ms Size: 372 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "productId": 10,
3   "userId": 1,
4   "rating": 5,
5   "review": "Good Laptop, super fast and can play game in class!",
6   "created_at": "2021-12-19 15:08:34"
7 }
```

## Endpoint 12

CA1 / localhost:8081/interest/:userid Save

POST localhost:8081/interest/:userid Send

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL JSON Beautify

```
1 {
2   "categoryids": "1,2"
3 }
```

Body Cookies Headers (7) Test Results

Status: 201 Created Time: 54 ms Size: 253 B Save Response

Pretty Raw Preview Visualize JSON

```
1 {
2   "interest": 1
3 }
```

ADVANCECD FEATURE APIs:

## Endpoint 13

CA1 / localhost:8081/promotion/:productid

POST localhost:8081/promotion/:productid

Params Authorization Headers (9) Body Pre-request Script Tests Settings

none form-data x-www-form-urlencoded raw binary GraphQL JSON

```

1  {
2    "start_date": "2021-12-25 10:00:00",
3    "end_date": "2021-12-31 11:59:00",
4    "discount": 15
5  }

```

Body Cookies Headers (7) Test Results

Status: 201 Created Time: 149 ms Size: 254 B Save Response

Pretty Raw Preview Visualize JSON

```

1  {
2    "promotion": 3
3  }

```

## Endpoint 14

CA1 / localhost:8081/promotion/:productid

GET localhost:8081/promotion/:productid

Params Authorization Headers (7) Body Pre-request Script Tests Settings

Query Params

KEY	VALUE	DESCRIPTION
Key	Value	Description

Path Variables

KEY	VALUE	DESCRIPTION
productid	10	Description

Body Cookies Headers (7) Test Results

Status: 200 OK Time: 57 ms Size: 351 B Save Response

Pretty Raw Preview Visualize JSON

```

1  {
2    "promotion_id": 3,
3    "productId": 10,
4    "start_date": "2021-12-25 10:00:00",
5    "end_date": "2021-12-31 11:59:00",
6    "discount": 15
7  }

```



## Endpoint 15

CA1 / localhost:8081/promotion/:productid

DELETE localhost:8081/promotion/:productid **Send**

Params Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION		Bulk Edit
Key	Value	Description		

Auth Variables

KEY	VALUE	DESCRIPTION		Bulk Edit
productid	10	Description		

Body Cookies Headers (4) Test Results

Status: 204 No Content Time: 77 ms Size: 134 B Save Response

Pretty Raw Preview Visualize Text

```
1
```

## Endpoint 16

CA1 / http://localhost:8081/upload

POST http://localhost:8081/upload/11 **Send**

Params Authorization Headers (9) Body Pre-request Script Tests Settings Cookies

none form-data x-www-form-urlencoded raw binary GraphQL

KEY	VALUE	DESCRIPTION		Bulk Edit
<input checked="" type="checkbox"/> productImage	product-design-phone-blue.jpg X			
Key	Value	Description		

Body Cookies Headers (7) Test Results

Status: 201 Created Time: 141 ms Size: 259 B Save Response

Pretty Raw Preview Visualize HTML

```
1 file uploaded successfully
```

## Endpoint 17

CA1 / <http://localhost:8081/uploads> Save ... Edit Comments

**GET** ⌵ <http://localhost:8081/upload/productid> Send ⌵

Params ● Authorization Headers (7) Body Pre-request Script Tests Settings Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Path Variables

KEY	VALUE	DESCRIPTION	...	Bulk Edit
productid	11	Description		

Body Cookies Headers (7) Test Results ⌕ Status: 200 OK Time: 21 ms Size: 298 B Save Response ⌵

Pretty Raw Preview Visualize JSON ⌵ ⌕

```
1  {
2    "product_image": "1641108219288-product-design-phone-blue.jpg"
3  }
```