

## **MUHAMMAD HARRIZ AZHAM | PROJECT 2**

### **Task 1**

Items		
Primary Key	id	Int
	name	Text
	price	Decimal
Foreign Key	category_id	Int

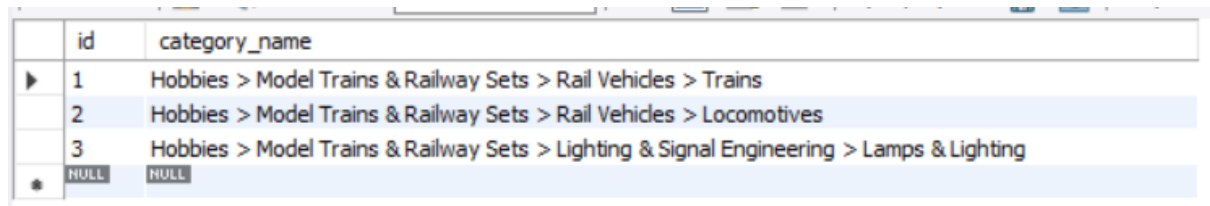
Category		
Primary Key	id	Int
	category_name	text

Based on Items and Category tables, the Entity Relationship Diagram (ERD) is each type of category can have many products and both tables can be joined by category\_id.

Hence, both tables are created inside MySQL workbench.

### **Task 2**

Category Table



The screenshot shows the MySQL Workbench interface with the 'Category' table selected. The table has two columns: 'id' and 'category\_name'. The data is as follows:

id	category_name
1	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
2	Hobbies > Model Trains & Railway Sets > Rail Vehides > Locomotives
3	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting
NULL	NULL

Items Table

	id	name	price	category_id
▶	1	Hornby 2014 Catalogue	3.4200	1
	2	FunkyBuysÂ® Large Christmas Holiday Express...	16.9900	1
	3	CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...	9.9900	1
	4	HORNBY Coach R4410A BR Hawksworth Corrid...	39.9900	1
	5	Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...	32.1900	1
	6	20pcs Model Garden Light Double Heads Lampp...	6.9900	3
	7	Hornby 00 Gauge 230mm BR Bogie Passenger B...	24.9900	1
	8	Hornby Santa's Express Train Set	69.9300	1
	9	Hornby Gauge Western Express Digital Train Se...	235.5800	1
	10	Learning Curve Chuggington Interactive Chats...	175.1900	1
	11	Hornby Gauge Railroad Mosley Tarmacadam Loc...	27.4900	2
	12	Kato (USA) 176-1308 F3B Denver & Rio Grande ...	273.6000	2
	13	Bachmann 37-662 14 Ton Tank Wagon Pease & ...	9.6000	1
	14	Hornby 00 Gauge 253mm Weathered Paviland ...	119.5000	1
	15	Kato 3060-2 EF65 500 (F Model) Electric Locom...	164.8000	2
	16	Glacier Express of N gauge 10-1219 Alps [UNES...	75.9900	2
	17	Power Trains Freight Industrial (Pack of 4)	63.9900	1
	18	Chuggington Interactive Wash and Fuel Set wit...	693.9300	1
	19	Kumoyuni 74-0 Shonan Color (Model Train)	17.0800	1
	20	Bachmann 31-588 Freightliner Class 70 005 Pow...	96.0500	2
●	NULL	NULL	NULL	NULL

	id	name	price	category_name
▶	1	Hornby 2014 Catalogue	3.4200	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	2	FunkyBuysÂ® Large Christmas Holiday Express...	16.9900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	3	CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...	9.9900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	4	HORNBY Coach R4410A BR Hawksworth Corrid...	39.9900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	5	Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...	32.1900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	7	Hornby 00 Gauge 230mm BR Bogie Passenger B...	24.9900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	8	Hornby Santa's Express Train Set	69.9300	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	9	Hornby Gauge Western Express Digital Train Se...	235.5800	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	10	Learning Curve Chuggington Interactive Chats...	175.1900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	13	Bachmann 37-662 14 Ton Tank Wagon Pease & ...	9.6000	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	14	Hornby 00 Gauge 253mm Weathered Paviland ...	119.5000	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	17	Power Trains Freight Industrial (Pack of 4)	63.9900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	18	Chuggington Interactive Wash and Fuel Set wit...	693.9300	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	19	Kumoyuni 74-0 Shonan Color (Model Train)	17.0800	Hobbies > Model Trains & Railway Sets > Rail Vehides > Trains
	11	Hornby Gauge Railroad Mosley Tarmacadam Loc...	27.4900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Locomotives
	12	Kato (USA) 176-1308 F3B Denver & Rio Grande ...	273.6000	Hobbies > Model Trains & Railway Sets > Rail Vehides > Locomotives
	15	Kato 3060-2 EF65 500 (F Model) Electric Locom...	164.8000	Hobbies > Model Trains & Railway Sets > Rail Vehides > Locomotives
	16	Glacier Express of N gauge 10-1219 Alps [UNES...	75.9900	Hobbies > Model Trains & Railway Sets > Rail Vehides > Locomotives
	20	Bachmann 31-588 Freightliner Class 70 005 Pow...	96.0500	Hobbies > Model Trains & Railway Sets > Rail Vehides > Locomotives
	6	20pcs Model Garden Light Double Heads Lampp...	6.9900	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting

### Task 3

METHOD/category										
List (List all category)	<div>○ HTTP method: GET</div> <div>○ HTTP Path: /category</div> <div>○ Request parameters:<ul style="list-style-type: none"><li>Header parameter: Token Authentication</li><li>Body parameters:<table><tr><td>limit</td><td>Int (optional)</td><td>Display number of categories</td></tr><tr><td>category_id</td><td>Int (optional)</td><td>Filtering to categories with only exact category_id</td></tr><tr><td>sort</td><td>String (optional)</td><td>Sort the data in ascending order</td></tr></table></li></ul></div> <div>○ Response structure:<pre>{  "object": "list",  "url": "/category",  "limit": "15"  "data": [    {category_1}, {category_2},{category_3}  ]  }</pre><div>*each dictionary of category carries some information such as id and category_name</div></div> <div>○ Status code</div> <div>200 – it will return a full list of categories</div> <div>401 – No valid authentication key provided</div> <div>○ A request-response example for the happy case:</div> <div>Request: GET /category with header of token XXXXXX-XXXX-XXXX-XXXX</div> <div>Response: it will return a list of categories in json format</div> <div>○ At least 1 request-response example for the error case:</div> <div>Api_error : problem of retrieving the information of category from database server</div>	limit	Int (optional)	Display number of categories	category_id	Int (optional)	Filtering to categories with only exact category_id	sort	String (optional)	Sort the data in ascending order
limit	Int (optional)	Display number of categories								
category_id	Int (optional)	Filtering to categories with only exact category_id								
sort	String (optional)	Sort the data in ascending order								
Retrieve	<div>○ HTTP method: GET</div> <div>○ HTTP Path: category/:id</div> <div>○ Request parameters:<ul style="list-style-type: none"><li>Header parameter: Token Authentication</li><li>Route parameters: put the index of category at the end of path</li></ul></div> <div>○ Response structure:<pre>{  "id": "1",  "category_name": "Marvel",}</pre></div> <div>○ Status code (including failure)</div> <div>200 – return a category at the respective index</div> <div>401 - No valid authentication key provided</div>									

	<p>o A request-response example for the happy case: Request: GET /category/2 with header of token XXXXXX-XXXX-XXXX-XXXX Response: Information about category at index 2 in json format.</p> <p>o At least 1 request-response example for the error case: Invalid_request_error: provide a wrong type of request parameters such as index is not in integer</p>
Create	<p>o HTTP method: POST o HTTP Path: /category o Request parameters:</p> <ul style="list-style-type: none"> <li>• Header parameter: Token Authentication</li> <li>• Body parameters: category_name</li> </ul> <p>o Response structure</p> <pre>{   "object": "create",   "url": "/category",   "data": [     {category_1}, {category_2},{category_3},{new category}   ] }</pre> <p>*each dictionary of category carries some information such as id and category_name</p> <p>o Status code (including failure): 200 – it returns a full list of category with the new category row 401 - No valid API key provided.</p> <p>o A request-response example for the happy case: Request: POST /category with header of token XXXXXX-XXXX-XXXX-XXXX Response: it returns a full list of category with the new category row in json format</p> <p>o At least 1 request-response example for the error case: invalid_request_error – supply wrong type of value for category_name in body parameters</p>
Update	<p>o HTTP method: PUT o HTTP Path: /category/:id o Request parameters:</p> <ul style="list-style-type: none"> <li>• Header parameter: Token Authentication</li> <li>• Body parameters: category_name</li> <li>• Route Parameters: id</li> </ul> <p>o Response structure:</p> <pre>{   "object": "update",   "url": "/category/3",   "data": [     {category_1}, {category_2},{category_3},{new updated category}   ] }</pre> <p>*each dictionary of category carries some information such as id and category_name</p> <p>o Status code:</p>

	<p>200 – successfully updated the category_name at the respective index</p> <p>o A request-response example for the happy case: Request: PUT /category/3 with header of token XXXXXX-XXXX-XXXX-XXXX Response: it returns a full list of category with the new updated category at 3<sup>rd</sup> row in json format</p> <p>o At least 1 request-response example for the error case: invalid_request_error – the id does not exist in the database</p>
Delete	<p>o HTTP method: DELETE</p> <p>o HTTP Path: /category/:id</p> <p>o Request parameters:</p> <ul style="list-style-type: none"> <li>Header parameter: Token Authentication</li> <li>Route parameter: id</li> </ul> <p>o Response structure:</p> <pre>{   "object": "delete",   "url": "/category/4",   "data": [     {category_1}, {category_2},{category_3}   ] }</pre> <p>o Status code (including failure)</p> <p>200 – successfully deleted the respective index in category table</p> <p>402 – the parameter were valid but there is a double authentication for client to delete the data</p> <p>o A request-response example for the happy case Request: DELETE /category/:id Response: it returns a full list of categories without the recent deletion</p> <p>o At least 1 request-response example for the error case: api_error – the database server is down</p>

METHOD/items	
List	<p>o HTTP method : GET</p> <p>o HTTP Path: /items</p> <p>o Request parameters (route param or query or body)</p> <ul style="list-style-type: none"> <li>Header parameter: Token Authentication</li> <li>Body Parameter: limit</li> </ul> <p>o Response structure:</p> <pre>{   "object": "list",   "url": "/items",   "limit": "15"   "data": [     {items_1}, {items_2},{items_3}   ] }</pre> <p>*each dictionary of items carries some information such as id, name, price, category_id</p>

	<ul style="list-style-type: none"> <li>o Status code (including failure): 200 – it will return a full list of items 401 – No valid authentication key provided</li> <li>o A request-response example for the happy case Request: GET /items with header of token XXXXXX-XXXX-XXXX-XXXX Response: it will return a list of items in json format</li> <li>o At least 1 request-response example for the error case: Api_error : problem of retrieving the information of items from database server</li> </ul>
Retrieve	<ul style="list-style-type: none"> <li>o HTTP method: GET</li> <li>o HTTP Path: items/:id</li> <li>o Request parameters: <ul style="list-style-type: none"> <li>• Header parameter: Token Authentication</li> <li>• Route parameters: put the index of items at the end of path</li> </ul> </li> <li>o Response structure: <pre>{   "id": "1",   "name": "DragonBall",   "price": 123.65,   "category_id": 4, }</pre> </li> <li>o Status code (including failure) 200 – return an item at the respective index 401 - No valid authentication key provided</li> <li>o A request-response example for the happy case: Request: GET /items/2 with header of token XXXXXX-XXXX-XXXX-XXXX Response: Information about item at index 2 in json format.</li> <li>o At least 1 request-response example for the error case: Invalid_request_error: provide a wrong type of request parameters such as index is not in integer</li> </ul>
Create	<ul style="list-style-type: none"> <li>o HTTP method: POST</li> <li>o HTTP Path: /category</li> <li>o Request parameters: <ul style="list-style-type: none"> <li>• Header parameter: Token Authentication</li> <li>• Body parameters: name, price, category_id</li> </ul> </li> <li>o Response structure <pre>{   "object": "create",   "url": "/items",   "data": [     {item_1}, {item_2}, {item_3}, {new item}   ] }</pre> <p><b>**each dictionary of items carries some information such as id, name, price, category_id</b></p> </li> <li>o Status code (including failure): 200 – it returns a full list of items with the new item row 401 - No valid API key provided.</li> </ul>

	<p>o A request-response example for the happy case: Request: POST /items with header of token XXXXXX-XXXX-XXXX-XXXX Response: it returns a full list of items with the new item row in json format</p> <p>o At least 1 request-response example for the error case: invalid_request_error – supply wrong type of value for name, price or category_id in body parameters</p>
Update	<p>o HTTP method: PUT o HTTP Path: /items/:id o Request parameters:</p> <ul style="list-style-type: none"> <li>• Header parameter: Token Authentication</li> <li>• Body parameters: name, price, category_id</li> <li>• Route Parameters: id</li> </ul> <p>o Response structure:</p> <pre>{   "object": "update",   "url": "/items/3",   "data": [     {item_1}, {item_2},{item_3},{new updated item}   ] }</pre> <p>**each dictionary of items carries some information such as id, name, price, category_id</p> <p>o Status code: 200 – successfully updated the name, price and category_id at the respective index</p> <p>o A request-response example for the happy case: Request: PUT /item/3 with header of token XXXXXX-XXXX-XXXX-XXXX Response: it returns a full list of items with the new updated item at 3<sup>rd</sup> row in json format</p> <p>o At least 1 request-response example for the error case: invalid_request_error – the id does not exist in the database</p>
Delete	<p>o HTTP method: DELETE o HTTP Path: /items/:id o Request parameters:</p> <ul style="list-style-type: none"> <li>• Header parameter: Token Authentication</li> <li>• Route parameter: id</li> </ul> <p>o Response structure:</p> <pre>{   "object": "delete",   "url": "/items/4",   "data": [     {category_1}, {category_2},{category_3}   ] }</pre> <p>o Status code (including failure) 200 – successfully deleted the respective index in items table 402 – the parameter were valid but there is a double authentication for client to delete the data</p>

	<ul style="list-style-type: none"><li>o A request-response example for the happy case Request: DELETE /items/4 Response: it returns a full list of categories without the recent deletion</li><li>o At least 1 request-response example for the error case: api_error – the database server is down</li></ul>
--	---

**Task 4**

### /category

#### LIST

http://localhost:3000/category

Save

GET http://localhost:3000/category

ParamsAuthHeaders (8)BodyPre-req. Tests Settings

Query Params

	KEY	VALUE	DESCRIPTION
	Key	Value	Description

Body

200 OK75 ms279 B

PrettyRawPreviewVisualizeJSON

```
1  [
2    "1": "Locomotive",
3    "2": "Trains",
4    "3": "Lights"
5  ]
```

#### CREATE

POST http://localhost:3000/category/1

ParamsAuthHeaders (8)BodyPre-req. Tests Settings

Query Params

	KEY	VALUE
	Key	Value

Body

PrettyRawPreviewVisualizeJSON

```
1  {
2    "result": 1,
3    "status": "created"
4  }
```



## RETRIEVE

GET

⌵

http://localhost:3000/category/1

Params

Auth

Headers (8)

Body ●

Pre-req.

Te

Query Params

	KEY	VALUE
	Key	Value

Body ⌵

Pretty

Raw

Preview

Visualize

JSON

```
1 {
2   "result": 1,
3   "status": "gotten"
4 }
```

## UPDATE

PUT

⌵

http://localhost:3000/category/1

Params

Auth

Headers (8)

Body ●

Pre-req.

1

Query Params

	KEY	VALUE
	Key	Value

Body ⌵

Pretty

Raw

Preview

Visualize

JSC

```
1 {
2   "result": 1,
3   "status": "updated"
4 }
```

## DELETE

DELETE

http://localhost:3000/category/1

Params Auth Headers (8) Body ● Pre-req.

### Query Params

	KEY	VALUE
	Key	Value

Body ▾

Pretty

Raw

Preview

Visualize

JS

```
1 {  
2   "result": 1,  
3   "status": "deleted"  
4 }
```

## /items

### LIST

GET

http://localhost:3000/items

Params Auth Headers (8) Body ● Pre-rec

### Query Params

	KEY	VALUE
	Key	Value

Body ▾

Pretty

Raw

Preview

Visualize

```
1 {  
2   "1": "toy",  
3   "2": "kids"  
4 }
```

# RETRIEVE

GET

⌵

http://localhost:3000/items/12

Params   Auth   Headers (8)   Body ●   Pre-req.

## Query Params

	KEY	VALUE
	Key	Value

Body ⌵

Pretty

Raw

Preview

Visualize

JSON

```
1 {
2   "result": 12,
3   "status": "gotten"
4 }
```

# CREATE

POST

⌵

http://localhost:3000/items/34

Params   Auth   Headers (8)   Body ●   Pre-req.   Test

## Query Params

	KEY	VALUE
	Key	Value

Body ⌵

Pretty

Raw

Preview

Visualize

JSON

```
1 {
2   "result": 34,
3   "status": "created"
4 }
```

## UPDATE

PUT ⌵ http://localhost:3000/items/68

Params Auth Headers (8) Body ● Pre-req. Tests

### Query Params

	KEY	VALUE
	Key	Value

Body ⌵

Pretty Raw Preview Visualize JSON

```
1 {
2   "result": 68,
3   "status": "updated"
4 }
```

## DELETE

DELETE ⌵ http://localhost:3000/items/16

Params Auth Headers (8) Body ● Pre-req. Tests

### Query Params

	KEY	VALUE
	Key	Value

Body ⌵

Pretty Raw Preview Visualize JSON ⌵

```
1 {
2   "result": 16,
3   "status": "deleted"
4 }
```

Validation error, the index must be integer, else error

DELETE

http://localhost:3000/items/a

Params

Auth

Headers (8)

Body

Pre-req.

Tests

Se

Query Params

	KEY	VALUE
	Key	Value

Body



Pretty

Raw

Preview

Visualize

JSON



```
1  {
2    "errors": [
3      {
4        "value": "a",
5        "msg": "Invalid value",
6        "param": "id",
7        "location": "params"
8      }
9    ]
10  }
```

Task 5

CATEGORY/METHOD				
List	<div><div>GET</div><div>http://localhost:3000/category</div><div>ParamsAuthorizationHeaders (8)BodyPre-request ScriptTestsSettings</div><div>Query Params</div><table><tr><th>KEY</th><th>VALUE</th><th>DESCRIPTION</th></tr></table><div>BodyCookiesHeaders (7)Test Results</div><div>Status: 200 OKTime: 1996 msSize</div><div>PrettyRawPreviewVisualizeJSON</div><div><pre>1  { 2    "category": [ 3      { 4        "id": 1, 5        "category_name": "Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Trains" 6      }, 7      { 8        "id": 2, 9        "category_name": "Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Locomotives" 10     }, 11     { 12       "id": 3, 13       "category_name": "Hobbies &gt; Model Trains &amp; Railway Sets &gt; Lighting &amp; Signal Engineering &gt; Lamps &amp; Lighting" 14     } 15   ] 16 }</pre></div></div>	KEY	VALUE	DESCRIPTION
KEY	VALUE	DESCRIPTION		
Retrieve	<div><div>GET</div><div>http://localhost:3000/category/2</div><div>ParamsAuthorizationHeaders (8)BodyPre-request ScriptTestsSettings</div><div>Query Params</div><table><tr><th>KEY</th><th>VALUE</th><th>DESCRIPTION</th></tr></table><div>BodyCookiesHeaders (7)Test Results</div><div>Status: 200 OKTime: 1996 msSize</div><div>PrettyRawPreviewVisualizeJSON</div><div><pre>1  { 2    "result": 2, 3    "status": "gotten", 4    "category": [ 5      { 6        "id": 2, 7        "category_name": "Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Locomotives" 8      } 9    ] 10 }</pre></div></div>	KEY	VALUE	DESCRIPTION
KEY	VALUE	DESCRIPTION		
Create	<div><div>POST</div><div>http://localhost:3000/category</div><div>ParamsAuthorizationHeaders (8)BodyPre-request ScriptTestsSettings</div><div>noneform-data x-www-form-urlencodedrawbinary GraphQLJSON</div><div><pre>1  { 2    "name": "Test Toy" 3  }</pre></div></div>			

	<div>12</div> <div>13 • <code>select * from category;</code></div> <div>14</div> <div>15 • <code>select</code></div> <div>16 <code>items.id as id,</code></div> <div>17 <code>items.name as name,</code></div> <div></div> <div><div>Result Grid</div><div><div>Filter Rows:</div><div>Edit:</div><div>Export/Import:</div></div><table><tr><th>id</th><th>category_name</th></tr><tr><td>1</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Trains</td></tr><tr><td>2</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Locomotives</td></tr><tr><td>3</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Lighting &amp; Signal Engineering &gt; Lamps &amp; Lighting</td></tr><tr><td>4</td><td>Marvel</td></tr><tr><td>5</td><td>Marvel</td></tr><tr><td>6</td><td>Test Toy</td></tr><tr><td>NULL</td><td>NULL</td></tr></table></div>	id	category_name	1	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Trains	2	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Locomotives	3	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting	4	Marvel	5	Marvel	6	Test Toy	NULL	NULL		
id	category_name																		
1	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Trains																		
2	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Locomotives																		
3	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting																		
4	Marvel																		
5	Marvel																		
6	Test Toy																		
NULL	NULL																		
Update	<div><div>PUT</div><div>http://localhost:3000/category/4</div></div> <div><div>Params</div><div>Authorization</div><div>Headers (8)</div><div>Body •</div><div>Pre-request Script</div><div>Tests</div><div>Settings</div></div> <div><div>none</div><div>form-data</div><div>x-www-form-urlencoded</div><div>raw</div><div>binary</div><div>GraphQL</div><div>JSON</div></div> <div><div>1</div><div>2</div><div>3</div></div> <div><table><tr><th>id</th><th>category_name</th></tr><tr><td>1</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Trains</td></tr><tr><td>2</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Locomotives</td></tr><tr><td>3</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Lighting &amp; Signal Engineering &gt; Lamps &amp; Lighting</td></tr><tr><td>4</td><td>DC</td></tr><tr><td>5</td><td>Marvel</td></tr><tr><td>6</td><td>Test Toy</td></tr><tr><td>NULL</td><td>NULL</td></tr></table></div>	id	category_name	1	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Trains	2	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Locomotives	3	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting	4	DC	5	Marvel	6	Test Toy	NULL	NULL		
id	category_name																		
1	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Trains																		
2	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Locomotives																		
3	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting																		
4	DC																		
5	Marvel																		
6	Test Toy																		
NULL	NULL																		
Delete	<div><div>DELETE</div><div>http://localhost:3000/category/6</div></div> <div><div>Params</div><div>Authorization</div><div>Headers (8)</div><div>Body •</div><div>Pre-request Script</div><div>Tests</div><div>Settings</div></div> <div><div>Query Params</div><table><tr><th>KEY</th><th>VALUE</th></tr><tr><td>Key</td><td>Value</td></tr></table></div> <div><table><tr><th>id</th><th>category_name</th></tr><tr><td>1</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Trains</td></tr><tr><td>2</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Rail Vehicles &gt; Locomotives</td></tr><tr><td>3</td><td>Hobbies &gt; Model Trains &amp; Railway Sets &gt; Lighting &amp; Signal Engineering &gt; Lamps &amp; Lighting</td></tr><tr><td>4</td><td>DC</td></tr><tr><td>5</td><td>Marvel</td></tr><tr><td>NULL</td><td>NULL</td></tr></table></div>	KEY	VALUE	Key	Value	id	category_name	1	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Trains	2	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Locomotives	3	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting	4	DC	5	Marvel	NULL	NULL
KEY	VALUE																		
Key	Value																		
id	category_name																		
1	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Trains																		
2	Hobbies > Model Trains & Railway Sets > Rail Vehicles > Locomotives																		
3	Hobbies > Model Trains & Railway Sets > Lighting & Signal Engineering > Lamps & Lighting																		
4	DC																		
5	Marvel																		
NULL	NULL																		

ITEMS/  
METHO  
D

## List

GET

http://localhost:3000/items

Send

Params

Authorization

Headers (8)

Body

Pre-request Script

Tests

Settings

Cookies

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<div> <div>Body</div> <div>Cookies</div> <div>Headers (7)</div> <div>Test Results</div> <div>Status: 200 OK Time: 292 ms Size: 2.36 KB Save Response</div> </div> <div> <div>Pretty</div> <div>Raw</div> <div>Preview</div> <div>Visualize</div> </div> <div> <div> <pre>[{"item_set":{"id":1,"name":"Hornby 2014 Catalogue","price":3.42,"category_id":1,"id":2,"name":"FunkyBuys&amp; Large Christmas Holiday Express Festive Train Set (SI-TV1017) Toy Light / Sounds / Battery Operated &amp; Smoke","price":16.99,"category_id":1,"id":3,"name":"CLASSIC TOY TRAIN SET TRACK CARRIAGES LIGHT ENGINE BOXED BOYS KIDS BATTERY","price":9.99,"category_id":1,"id":4,"name":"HORNBY Coach R4410A BR Hawksworth Corridor 3rd","price":39.99,"category_id":1,"id":5,"name":"Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Steam Locomotive Model","price":32.19,"category_id":1,"id":6,"name":"20pcs Model Garden Light Double Heads Lampost Scale 1:100","price":6.99,"category_id":3,"id":7,"name":"Hornby 00 Gauge 238mm BR Bogie Passenger Brake Coach Model (Red)","price":24.99,"category_id":1,"id":8,"name":"Hornby Santa's Express Train Set","price":69.93,"category_id":1,"id":9,"name":"Hornby Gauge Western Express Digital Train Set with eLink and TTS Loco Train Set","price":235.58,"category_id":1,"id":10,"name":"Learning Curve Chuggington Interactive Chatsworth","price":175.19,"category_id":1,"id":11,"name":"Hornby Gauge Railroad Mosley Tarmacadam Locomotive","price":27.49,"category_id":2,"id":12,"name":"Kato (USA) 176-1308 F3B Denver &amp; Rio Grande Western","price":273.6,"category_id":2,"id":13,"name":"Bachmann 37-662 14 Ton Tank Wagon Pease &amp; Partners Red","price":9.6,"category_id":1,"id":14,"name":"Hornby 00 Gauge 253mm Weathered Paviland Grange Steam Locomotive Train Model","price":119.5,"category_id":1,"id":15,"name":"Kato 3860-2 EF65 500 (F Model) Electric Locomotive","price":164.8,"category_id":2,"id":16,"name":"Glacier Express of N gauge 10-1219 Alps [UNESCO paint color] 7 Car Set","price":75.99,"category_id":2,"id":17,"name":"Power Trains Freight Industrial (Pack of 4)","price":63.99,"category_id":1,"id":18,"name":"Chuggington Interactive Wash and Fuel Set with Brewster Train Toy","price":693.93,"category_id":1,"id":19,"name":"Kumoyini 74-0 Shonan Color (Model Train)","price":17.08,"category_id":1,"id":20,"name":"Bachmann 31-588 Freightliner Class 70 005 Powerhaul Diesel Weathered","price":96.05,"category_id":2}]</pre> </div> </div>				

## Retrieval

GET

http://localhost:3000/items/9

Params

Authorization

Headers (8)

Body

Pre-request Script

Tests

Settings

Query Params

KEY	VALUE	DESCRIPTION
<div> <div>Body</div> <div>Cookies</div> <div>Headers (7)</div> <div>Test Results</div> </div> <div>Status: 200 OK</div>		

Pretty

Raw

Preview

Visualize

JSON

```

1  {
2    "result": 9,
3    "status": "gotten",
4    "item": [
5      {
6        "id": 9,
7        "name": "Hornby Gauge Western Express Digital Train Set with eLink and TTS Loco Train Set",
8        "price": 235.58,
9        "category_id": 1
10     }
11   ]
12 }
```

## Create

POST

▼

http://localhost:3000/items

Params

Authorization

Headers (8)

Body

Pre-request Script

Tests

Settings

☐ none

☐ form-data

☐ x-www-form-urlencoded

☒ raw

☐ binary

☐ GraphQL

JSON ▼

```
1 {
2   ... "name": "Test item name",
3   ... "price": 123.45,
4   ... "category_id": 2
5 }
```



	<table><thead><tr><th></th><th>id</th><th>name</th><th>price</th><th>category</th></tr></thead><tbody><tr><td>▶</td><td>1</td><td>Hornby 2014 Catalogue</td><td>3.42</td><td>1</td></tr><tr><td></td><td>2</td><td>FunkyBuys® Large Christmas Holiday Express...</td><td>16.99</td><td>1</td></tr><tr><td></td><td>3</td><td>CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...</td><td>9.99</td><td>1</td></tr><tr><td></td><td>4</td><td>HORNBY Coach R4410A BR Hawksworth Corrid...</td><td>39.99</td><td>1</td></tr><tr><td></td><td>5</td><td>Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...</td><td>32.19</td><td>1</td></tr><tr><td></td><td>6</td><td>20pcs Model Garden Light Double Heads Lampp...</td><td>6.99</td><td>3</td></tr><tr><td></td><td>7</td><td>Hornby 00 Gauge 230mm BR Bogie Passenger B...</td><td>24.99</td><td>1</td></tr><tr><td></td><td>8</td><td>Hornby Santa's Express Train Set</td><td>69.93</td><td>1</td></tr><tr><td></td><td>9</td><td>Hornby Gauge Western Express Digital Train Se...</td><td>235.58</td><td>1</td></tr><tr><td></td><td>10</td><td>Learning Curve Chuggington Interactive Chats...</td><td>175.19</td><td>1</td></tr><tr><td></td><td>11</td><td>Hornby Gauge Railroad Mosley Tarmacadam Loc...</td><td>27.49</td><td>2</td></tr><tr><td></td><td>12</td><td>Kato (USA) 176-1308 F3B Denver &amp; Rio Grande ...</td><td>273.60</td><td>2</td></tr><tr><td></td><td>13</td><td>Bachmann 37-662 14 Ton Tank Wagon Pease &amp; ...</td><td>9.60</td><td>1</td></tr><tr><td></td><td>14</td><td>Hornby 00 Gauge 253mm Weathered Paviland ...</td><td>119.50</td><td>1</td></tr><tr><td></td><td>15</td><td>Kato 3060-2 EF65 500 (F Model) Electric Locom...</td><td>164.80</td><td>2</td></tr><tr><td></td><td>16</td><td>Glacier Express of N gauge 10-1219 Alps [UNES...</td><td>75.99</td><td>2</td></tr><tr><td></td><td>17</td><td>Power Trains Freight Industrial (Pack of 4)</td><td>63.99</td><td>1</td></tr><tr><td></td><td>18</td><td>Chuggington Interactive Wash and Fuel Set wit...</td><td>693.93</td><td>1</td></tr><tr><td></td><td>19</td><td>Kumoyuni 74-0 Shonan Color (Model Train)</td><td>17.08</td><td>1</td></tr><tr><td></td><td>20</td><td>Bachmann 31-588 Freightliner Class 70 005 Pow...</td><td>96.05</td><td>2</td></tr><tr><td></td><td>21</td><td>Test item name</td><td>123.45</td><td>2</td></tr><tr><td>•</td><td>NULL</td><td>NULL</td><td>NULL</td><td>NULL</td></tr></tbody></table>		id	name	price	category	▶	1	Hornby 2014 Catalogue	3.42	1		2	FunkyBuys® Large Christmas Holiday Express...	16.99	1		3	CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...	9.99	1		4	HORNBY Coach R4410A BR Hawksworth Corrid...	39.99	1		5	Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...	32.19	1		6	20pcs Model Garden Light Double Heads Lampp...	6.99	3		7	Hornby 00 Gauge 230mm BR Bogie Passenger B...	24.99	1		8	Hornby Santa's Express Train Set	69.93	1		9	Hornby Gauge Western Express Digital Train Se...	235.58	1		10	Learning Curve Chuggington Interactive Chats...	175.19	1		11	Hornby Gauge Railroad Mosley Tarmacadam Loc...	27.49	2		12	Kato (USA) 176-1308 F3B Denver & Rio Grande ...	273.60	2		13	Bachmann 37-662 14 Ton Tank Wagon Pease & ...	9.60	1		14	Hornby 00 Gauge 253mm Weathered Paviland ...	119.50	1		15	Kato 3060-2 EF65 500 (F Model) Electric Locom...	164.80	2		16	Glacier Express of N gauge 10-1219 Alps [UNES...	75.99	2		17	Power Trains Freight Industrial (Pack of 4)	63.99	1		18	Chuggington Interactive Wash and Fuel Set wit...	693.93	1		19	Kumoyuni 74-0 Shonan Color (Model Train)	17.08	1		20	Bachmann 31-588 Freightliner Class 70 005 Pow...	96.05	2		21	Test item name	123.45	2	•	NULL	NULL	NULL	NULL
	id	name	price	category																																																																																																																
▶	1	Hornby 2014 Catalogue	3.42	1																																																																																																																
	2	FunkyBuys® Large Christmas Holiday Express...	16.99	1																																																																																																																
	3	CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...	9.99	1																																																																																																																
	4	HORNBY Coach R4410A BR Hawksworth Corrid...	39.99	1																																																																																																																
	5	Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...	32.19	1																																																																																																																
	6	20pcs Model Garden Light Double Heads Lampp...	6.99	3																																																																																																																
	7	Hornby 00 Gauge 230mm BR Bogie Passenger B...	24.99	1																																																																																																																
	8	Hornby Santa's Express Train Set	69.93	1																																																																																																																
	9	Hornby Gauge Western Express Digital Train Se...	235.58	1																																																																																																																
	10	Learning Curve Chuggington Interactive Chats...	175.19	1																																																																																																																
	11	Hornby Gauge Railroad Mosley Tarmacadam Loc...	27.49	2																																																																																																																
	12	Kato (USA) 176-1308 F3B Denver & Rio Grande ...	273.60	2																																																																																																																
	13	Bachmann 37-662 14 Ton Tank Wagon Pease & ...	9.60	1																																																																																																																
	14	Hornby 00 Gauge 253mm Weathered Paviland ...	119.50	1																																																																																																																
	15	Kato 3060-2 EF65 500 (F Model) Electric Locom...	164.80	2																																																																																																																
	16	Glacier Express of N gauge 10-1219 Alps [UNES...	75.99	2																																																																																																																
	17	Power Trains Freight Industrial (Pack of 4)	63.99	1																																																																																																																
	18	Chuggington Interactive Wash and Fuel Set wit...	693.93	1																																																																																																																
	19	Kumoyuni 74-0 Shonan Color (Model Train)	17.08	1																																																																																																																
	20	Bachmann 31-588 Freightliner Class 70 005 Pow...	96.05	2																																																																																																																
	21	Test item name	123.45	2																																																																																																																
•	NULL	NULL	NULL	NULL																																																																																																																
Update	<div><div>PUT</div><div>⌵</div><div>http://localhost:3000/items/21</div></div> <div><div>Params</div><div>Authorization</div><div>Headers (8)</div><div>Body ●</div><div>Pre-request Script</div><div>Tests</div><div>Setti</div></div> <div><div>● none</div><div>● form-data</div><div>● x-www-form-urlencoded</div><div>● raw</div><div>● binary</div><div>● GraphQL</div></div> <div><pre>1 { 2   ... "name": "Another test item name" 3 }</pre></div>																																																																																																																			

	Result Grid						Filter Rows:	<input type="text"/>	Edit:				Ex
		id	name	price	category								
	▶	1	Hornby 2014 Catalogue	3.42	1								
		2	FunkyBuys® Large Christmas Holiday Express...	16.99	1								
		3	CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...	9.99	1								
		4	HORNBY Coach R4410A BR Hawksworth Corrid...	39.99	1								
		5	Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...	32.19	1								
		6	20pcs Model Garden Light Double Heads Lampp...	6.99	3								
		7	Hornby 00 Gauge 230mm BR Bogie Passenger B...	24.99	1								
		8	Hornby Santa's Express Train Set	69.93	1								
		9	Hornby Gauge Western Express Digital Train Se...	235.58	1								
		10	Learning Curve Chuggington Interactive Chats...	175.19	1								
		11	Hornby Gauge Railroad Mosley Tarmacadam Loc...	27.49	2								
		12	Kato (USA) 176-1308 F3B Denver & Rio Grande ...	273.60	2								
		13	Bachmann 37-662 14 Ton Tank Wagon Pease & ...	9.60	1								
		14	Hornby 00 Gauge 253mm Weathered Paviland ...	119.50	1								
		15	Kato 3060-2 EF65 500 (F Model) Electric Locom...	164.80	2								
		16	Glacier Express of N gauge 10-1219 Alps [UNES...	75.99	2								
		17	Power Trains Freight Industrial (Pack of 4)	63.99	1								
		18	Chuggington Interactive Wash and Fuel Set wit...	693.93	1								
		19	Kumoyuni 74-0 Shonan Color (Model Train)	17.08	1								
		20	Bachmann 31-588 Freightliner Class 70 005 Pow...	96.05	2								
		21	Another test item name	123.45	2								
⚙	NULL	NULL	NULL	NULL									
Items 21 of 21													

Delete

DELETE

⌵

http://localhost:3000/items/21

Params

Authorization

Headers (8)

Body

Pre-request Script

Tests

Settings

Query Params

	KEY	VALUE	DESCRIPTION
	Key	Value	Description

	id	name	price	category_id
▶	1	Hornby 2014 Catalogue	3.42	1
	2	FunkyBuys® Large Christmas Holiday Express...	16.99	1
	3	CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...	9.99	1
	4	HORNBY Coach R4410A BR Hawksworth Corrid...	39.99	1
	5	Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...	32.19	1
	6	20pcs Model Garden Light Double Heads Lampp...	6.99	3
	7	Hornby 00 Gauge 230mm BR Bogie Passenger B...	24.99	1
	8	Hornby Santa's Express Train Set	69.93	1
	9	Hornby Gauge Western Express Digital Train Se...	235.58	1
	10	Learning Curve Chuggington Interactive Chats...	175.19	1
	11	Hornby Gauge Railroad Mosley Tarmacadam Loc...	27.49	2
	12	Kato (USA) 176-1308 F3B Denver & Rio Grande ...	273.60	2
	13	Bachmann 37-662 14 Ton Tank Wagon Pease & ...	9.60	1
	14	Hornby 00 Gauge 253mm Weathered Paviland ...	119.50	1
	15	Kato 3060-2 EF65 500 (F Model) Electric Locom...	164.80	2
	16	Glacier Express of N gauge 10-1219 Alps [UNES...	75.99	2
	17	Power Trains Freight Industrial (Pack of 4)	63.99	1
	18	Chuggington Interactive Wash and Fuel Set wit...	693.93	1
	19	Kumoyuni 74-0 Shonan Color (Model Train)	17.08	1
	20	Bachmann 31-588 Freightliner Class 70 005 Pow...	96.05	2
•	NULL	NULL	NULL	NULL

## Task 6

Migrating SQL Injection

Use parameter concatenation “+”

The screenshot shows a web browser's developer tools interface. At the top, a GET request is shown to the URL `localhost:3000/category/2 or 1 = 1`. Below the URL bar, several tabs are visible: Params, Authorization, Headers (8), Body, Pre-request Script, and Tests. The Authorization tab is currently selected, displaying a dropdown menu with the option 'No Auth'. Below the tabs, the Body tab is also selected, showing a JSON response in a 'Pretty' format. The JSON response is as follows:

```
1 {
2   "category": {
3     "id": 1,
4     "name": "Legos"
5   }
6 }
```

This is harmful as the hacker can access to another dataset. So, use parameter binding.

## Migrating XSS

POST

localhost:3000/items

Params

Authorization

Headers (8)

Body

Pre-request Script

Tests

Settings

☐ none

☐ form-data

☐ x-www-form-urlencoded

☒ raw

☐ binary

☐ GraphQL

JSON

```
1 {
2   ... "name": "Test item name <script>alert('Hacked!')</script> ",
3   ... "price": 987.65,
4   ... "category_id": 2
5   ...
6   ... }
```

Body

Cookies

Headers (7)

Test Results

Pretty

Raw

Preview

Visualize

```
{ "message": "Done" }
```



24




25

26 • `ALTER TABLE items MODIFY price DECIMAL(19, 2);`

27

28 • `select * from items;`

29 • `select * from category;`

Result Grid				
Filter Rows: <input type="text"/>				
Edit:    Export/Imp				
id	name	price	category_id	
1	Hornby 2014 Catalogue	3.42	1	
2	FunkyBuysÂ® Large Christmas Holiday Express...	16.99	1	
3	CLASSIC TOY TRAIN SET TRACK CARRIAGES LI...	9.99	1	
4	HORNBY Coach R4410A BR Hawksworth Corrid...	39.99	1	
5	Hornby 00 Gauge 0-4-0 Gildenlow Salt Co. Stea...	32.19	1	
6	20pcs Model Garden Light Double Heads Lampp...	6.99	3	
7	Hornby 00 Gauge 230mm BR Bogie Passenger B...	24.99	1	
8	Hornby Santa's Express Train Set	69.93	1	
9	Hornby Gauge Western Express Digital Train Se...	235.58	1	
10	Learning Curve Chuggington Interactive Chats...	175.19	1	
11	Hornby Gauge Railroad Mosley Tarmacadam Loc...	27.49	2	
12	Kato (USA) 176-1308 F3B Denver & Rio Grande ...	273.60	2	
13	Bachmann 37-662 14 Ton Tank Wagon Pease & ...	9.60	1	
14	Hornby 00 Gauge 253mm Weathered Paviland ...	119.50	1	
15	Kato 3060-2 EF65 500 (F Model) Electric Locom...	164.80	2	
16	Glacier Express of N gauge 10-1219 Alps (UNES...	75.99	2	
17	Power Trains Freight Industrial (Pack of 4)	63.99	1	
18	Chuggington Interactive Wash and Fuel Set wit...	693.93	1	
19	Kumoyuni 74-0 Shonan Color (Model Train)	17.08	1	
20	Bachmann 31-588 Freightliner Class 70 005 Pow...	96.05	2	
22	Test item name	987.65	2	
•	NULL	NULL	NULL	NULL

items 1 ▾