



Week Six Assignment Problem Statement

1.0.0 OAS3

[openapi_week6.yaml](#)

In this assignment, you have to create a RESTful API, database models using Flask-RESTful and flask-SQLAlchemy. We list below instructions to be followed in preparing and submitting the solution.

General instructions:

1. Submit a single .zip file containing all your submission files and folders, the name of which should be "roll_number.zip". E.g.: 21f1000000.zip
2. The folder structure inside the zip file should be as follows:
 - I. The Python program must be written inside a file named "app.py". This file must reside inside the root folder.
 - II. The database file named "api_database.sqlite3". You are not required to submit this database file with your submission.
3. You should not keep any code inside the scope of the condition "if __name__ == '__main__':" except run() call.
4. Allowed Python packages: flask, flask-sqlalchemy, flask-restful, and any standard Python3 package.
5. The database URI must be the same as: app.config['SQLALCHEMY_DATABASE_URI'] = 'sqlite:///api_database.sqlite3'.
6. You should not use create_all() call in your program to create a database.

Course Table Schema

Column Name	Column Type	Constraints
course_id	Integer	Primary Key, Auto Increment
course_name	String	Not Null
course_code	String	Unique, Not Null
course_description	String	

Student Table Schema

Column Name	Column Type	Constraints
student_id	Integer	Primary Key, Auto Increment
roll_number	String	Unique, Not Null
first_name	String	Not Null
last_name	String	

Enrollment Table Schema

Column Name	Column Type	Constraints
enrollment_id	Integer	Primary Key, Auto Increment

Column Name	Column Type	Constraints
student_id	Integer	Foreign Key (student.student_id), Not Null
course_id	Integer	Foreign Key (course.course_id), Not Null

Error Codes

Resource	Error Code	Message
Course	COURSE001	Course Name is required
Course	COURSE002	Course Code is required
Student	STUDENT001	Roll Number required
Student	STUDENT002	First Name is required
Enrollment	ENROLLMENT001	Course does not exist
Enrollment	ENROLLMENT002	Student does not exist.

Servers

http://127.0.0.1:5000/

default

GET/api/course/{course_id}

Operation to Read course resource.

Parameters

course_id * required

integer (path)

201

Responses

Try it out

Code	Description	Links
200	Request Successful	No links
	<div>Media type<div>application/json</div>Controls Accept header.</div> <div>Example ValueSchema<pre>{ "course_id": 201, "course_name": "Maths1", "course_code": "MA101", "course_description": "Course Description Example"}</pre></div>	
404	Course not found	No links
500	Internal Server Error	No links

PUT

/api/course/{course_id}

Operation to update the course resource.

Parameters

Try it out

Name	Description
course_id ★ required integer (path)	<div>201</div>

Request body

application/json

Example Value

Schema

```
{  "course_name": "Maths1",  "course_code": "MA101",  "course_description": "Course Description Example"}
```

Responses

Code	Description	Links
200	<div>Successfully updated</div> <div>Media type</div> <div>application/json</div> <div>Controls Accept header.</div> <div>Example Value Schema</div> <div><pre>{ "course_id": 201, "course_name": "Maths1", "course_code": "MA101", "course_description": "Course Description Example" }</pre></div>	No links
400	<div>Bad request</div> <div>Media type</div> <div>application/json</div> <div>Example Value Schema</div> <div><pre>{ "error_code": "string", "error_message": "string" }</pre></div>	No links
404	Course not found	No links
500	Internal Server Error	No links

DELETE

/api/course/{course_id}

⌵

Operation to delete the course resource

Parameters

Try it out

Name	Description
course_id ★ required	
integer (path)	<div>201</div>

Responses

Code	Description	Links
200	Successfully Deleted	No links
404	Course not found	No links
500	Intenal Server Error	No links

POST /api/course

Operation to create the course resource

Parameters

Try it out

No parameters

Request body

application/json

Example Value Schema

```
{
  "course_name": "Maths1",
  "course_code": "MA101",
  "course_description": "Course Description Example"
}
```

Responses

Code	Description	Links
201	Successfully Created	No links
Media type		
application/json		
Controls Accept header.		
Example Value Schema		
{		
"course_id": 201,		

Code	Description	Links
	<pre>"course_name": "Maths1", "course_code": "MA101", "course_description": "Course Description Example" }</pre>	
400	Bad request	No links
	<div>Media type</div> <div>application/json</div> <div>Example Value Schema</div> <div><pre>{ "error_code": "string", "error_message": "string" }</pre></div>	
409	course_code already exist	No links
500	Internal Server Error	No links

GET /api/student/{student_id}

Operation to read student resource

Parameters

Try it out

Name	Description
student_id * required integer (path)	<div>201</div>

Responses

Code	Description	Links
200	Request Successful	No links
	<div>Media type</div> <div>application/json</div> <div>Controls Accept header.</div>	

Code	Description	Links
	Example Value	Schema
	<pre>{ "student_id": 101, "first_name": "Narendra", "last_name": "Mishra", "roll_number": "MA19M010" }</pre>	
404	Student not found	No links
500	Internal server error	No links

PUT /api/student/{student_id}

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Operation to update the student resource

Parameters

Try it out

Name	Description
student_id * required integer (path)	<div>101</div>

Request body

application/json

Example Value	Schema
<pre>{ "first_name": "Narendra", "last_name": "Mishra", "roll_number": "MA19M010" }</pre>	

Responses

Code	Description	Links
200	Successfully updated	No links
Media type		

Code	Description	Links
	<div><div>application/json</div><div>Controls Accept header.</div><div><div>Example Value</div><div>Schema</div></div><div><pre>{ "student_id": 101, "first_name": "Narendra", "last_name": "Mishra", "roll_number": "MA19M010"}</pre></div></div>	
400	Bad request	No links
	<div><div>Media type</div><div>application/json</div><div><div>Example Value</div><div>Schema</div></div><div><pre>{ "error_code": "string", "error_message": "string"}</pre></div></div>	
404	Student not found	No links
500	Internal Server Error	No links

DELETE

/api/student/{student_id}

⌵

Operation to delete the course resource

Parameters

Try it out

Name	Description
student_id * required integer (path)	<div>101</div>

Responses

Code	Description	Links
200	Successfully Deleted	No links
404	Student not found	No links
500	Internal Server Error	No links

POST

/api/student

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Operation to create the student resource

Parameters

Try it out

No parameters

Request body

application/json

Example Value

Schema

```
{
  "first_name": "Narendra",
  "last_name": "Mishra",
  "roll_number": "MA19M010"
}
```

Responses

Code	Description	Links
201	Successfully Created	No links
<div>Media type</div> <div>application/json</div> <div>Controls Accept header.</div> <div><div>Example Value</div><div>Schema</div></div> <div><pre>{ "student_id": 101, "first_name": "Narendra", "last_name": "Mishra", }</pre></div>		

Code	Description	Links
	<pre>"roll_number": "MA19M010" }</pre>	
400	Bad request	No links
	Media type <div>application/json</div>	
	Example Value Schema	
	<pre>{ "error_code": "string", "error_message": "string" }</pre>	
409	Student already exist	No links
500	Internal Server Error	No links

GET /api/student/{student_id}/course

URL to get the list of enrollments, the student is enrolled in. This path belongs to the Enrollment table.

Parameters

Try it out

Name	Description
student_id * required integer (path)	<div>101</div>

Responses

Code	Description	Links
200	Request Successful	No links
	Media type <div>application/json</div> Controls Accept header.	
	Example Value Schema	

Code	Description	Links
	<pre>[{ "enrollment_id": 10, "student_id": 101, "course_id": 201 }]</pre>	
400	Invalid Student Id	No links
Media type		
application/json		
Example Value Schema		
	<pre>{ "error_code": "string", "error_message": "string" }</pre>	
404	Student is not enrolled in any course	No links
500	Internal Server Error	No links

POST

/api/student/{student_id}/course

Add student enrollment aka enroll the student to the course. This path belongs to the Enrollment table.

Parameters

Try it out

Name	Description
student_id ★ required	
integer (path)	101

Request body

application/json

Example Value Schema

```
{
  "course_id": 12345
}
```

Responses

Code	Description	Links
201	Enrollment successful	No links
	<div>Media type<div>application/json</div><div>Controls Accept header.</div><div>Example ValueSchema<div>[{ "enrollment_id": 10, "student_id": 101, "course_id": 201 }]</div></div></div>	
400	Bad request	No links
	<div>Media type<div>application/json</div><div>Example ValueSchema<div>{ "error_code": "string", "error_message": "string" }</div></div></div>	
404	Student not found	No links
500	Internal Server Error	No links

DELETE

/api/student/{student_id}/course/{course_id}

URL to delete enrollment of the student in the course. This path belongs to the Enrollment table.

Parameters

Try it out

Name	Description
student_id * required integer (path)	101

Name

Description

course_id

*

 required

integer

(path)

10

Responses

Code	Description	Links
200	Successfully deleted	No links
400	Invalid Student Id or Course Id.	No links
<div>Media type</div> <div><div>application/json</div></div>		
<div>Example Value</div> <div>Schema</div> <div><div>{</div><div>"error_code": "string",</div><div>"error_message": "string"</div><div>}</div></div>		
404	Enrollment for the student not found	No links
500	Internal Server Error	No links

VALID

{...}