



CSCI 5409: ASSIGNMENT 3

Cloud Providers, Web Services, and DBs

Mr. Niravsinh Jadeja
Nirav.jadeja@dal.ca

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1. Web URL

1. REST Web service

URL: <https://a3-csci5409.herokuapp.com/Student/>

2. Client

URL: <https://web.cs.dal.ca/~jadeja/csci5409/a3/create.php>

3. Web service Log

Download Heroku CLI tool to your machine via following link

<https://devcenter.heroku.com/articles/heroku-cli>

After complete installation, open terminal or CMD in your machine in the project directory (Web Service).

Login ID: nr453154@dal.ca

Password: Nirav@261

Now type following command “heroku auth:login”

```
C:\Users\nirav\Desktop\CSCI5409 Cloud Computing\Assignments\A3\A3>heroku auth:login
heroku: Enter your login credentials
Email [nr453154@dal.ca]: nr453154@dal.ca
Password: *****
Logged in as nr453154@dal.ca
```

Once you logged in, type following command “heroku logs -a a3-csci5409” for logs

```
C:\Users\nirav\Desktop\CSCI5409 Cloud Computing\Assignments\A3\A3>heroku logs -a a3-csci5409
```

Response (Logs):

```
2018-06-26T01:32:05.316011+00:00 app[web.1]: 10.47.231.89 - - [26/Jun/2018:01:32:05 +0000] "GET /static/rest_framework/c
ss/default.css HTTP/1.1" 304 - "https://a3-csci5409.herokuapp.com/Student/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) A
ppleWebKit/537.36 (KHTML, like Gecko) Chrome/67.0.3396.99 Safari/537.36"
2018-06-26T01:32:05.320898+00:00 app[web.1]: 10.9.223.58 - - [26/Jun/2018:01:32:05 +0000] "GET /static/rest_framework/js
/ajax-form.js HTTP/1.1" 304 - "https://a3-csci5409.herokuapp.com/Student/" "Mozilla/5.0 (Windows NT 10.0; Win64; x64) Ap
pleWebKit/537.36 (KHTML, like Gecko) Chrome/67.0.3396.99 Safari/537.36"
2018-06-26T01:32:05.320972+00:00 app[web.1]: 10.65.204.162 - - [26/Jun/2018:01:32:05 +0000] "GET /static/rest_framework/
css/bootstrap-tweaks.css HTTP/1.1" 304 - "https://a3-csci5409.herokuapp.com/Student/" "Mozilla/5.0 (Windows NT 10.0; Win
64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/67.0.3396.99 Safari/537.36"
2018-06-26T01:32:05.322297+00:00 app[web.1]: 10.51.186.226 - - [26/Jun/2018:01:32:05 +0000] "GET /static/rest_framework/
js/jquery-3.3.1.min.js HTTP/1.1" 304 - "https://a3-csci5409.herokuapp.com/Student/" "Mozilla/5.0 (Windows NT 10.0; Win64
; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/67.0.3396.99 Safari/537.36"
```

The reason for providing this procedure for logs is that There wasn't other option to write logs, as Heroku wasn't writing any logs on bluenose server. Here, Logs shows that GET request with different time stamps.

2. Environment/Resources used

Hardware/Software Used: Acer Nitro5 with Windows 10, Atom (Editor), Chrome (Testing), FileZilla Desktop Client (For making connection with server), Bluenose Dalhousie Server (For Client Hosting), Heroku Cloud (For REST Web Service), Python-Django (For REST Web Service), PHP, HTML (For Client app), Heroku CLI (For web service testing and Logs).

Here, I am storing one image per student, so I am following one table schema where a table contains student ID, student name and image ID. In addition, I have used python (Django) for developing REST web service, which I have implemented on Heroku Cloud platform. Apart, I have used SQLite Database in Django and Django REST Framework for handling requests and implementation.

Table Name: Student
Primary key: Student ID
Student name Image ID

A student ID will be of 3-digit number and image ID will be file name which will be stored in web service and that image ID will also be used for uploading an image to cloudinary platform.

For Client-side application, I have built in PHP and HTML. For implementing REST requests, I have used CURL library with JSON encoded/decoded data. In addition, communication between client app and web service is taking place over HTTPS.

1. REST Web Service (Heroku Cloud)

Secure | <https://a3-csc15409.herokuapp.com>

Django REST framework

Api Root

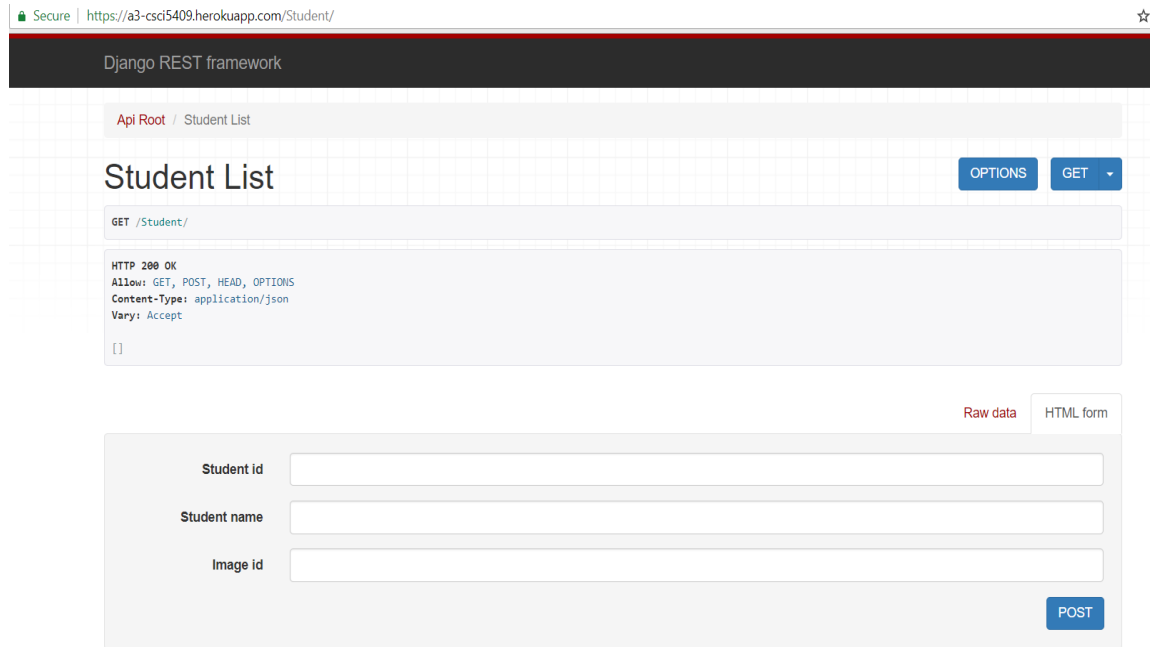
Api Root

The default basic root view for DefaultRouter

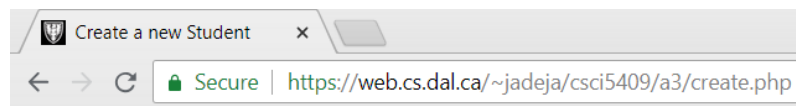
GET /

HTTP 200 OK
Allow: GET, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

```
{
  "Student": "https://a3-csc15409.herokuapp.com/Student/"
}
```



2. Client app (on Bluenose DAL Server)



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[Create New Student](#)

[Update existing student](#)

[Read student's details](#)

Enter the details

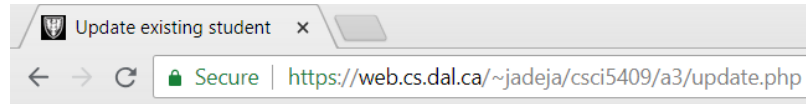
Student ID (Max 3 digits are allowed)

Student Name (Max 6 alphabets are allowed)

Student Image No file chosen

Developed by:
Mr. Niravsinh Jadeja | B00789139 | nirav.jadeja@dal.ca

Create Student ID operation



CSCI 5409: Assignment 3

[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

Update Student's details

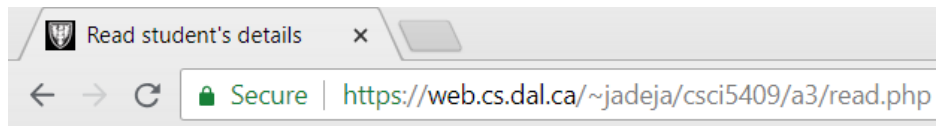
Student ID (Max 3 digits are allowed)

Student Name (Max 6 alphabets are allowed)

Student Image No file chosen

Developed by:
Mr. Niravsinh Jadeja | B00789139 | nirav.jadeja@dal.ca

Update Operation



CSCI 5409: Assignment 3

[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

Read Student Details

Student ID (Max 3 digits are allowed)

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Mr. Niravsinh Jadeja | B00789139 | nirav.jadeja@dal.ca

Read Operation

3. Code Reference

Reference:

```
curl_setopt($ch, CURLOPT_HTTPHEADER, array('Content-Type: application/json'));
curl_setopt($ch, CURLOPT_POST, 1);
curl_setopt($ch, CURLOPT_POSTFIELDS,$data_json);
```

My Code:

```
// 1 for post request
curl_setopt($ch, CURLOPT_POST, 1);

// encoded JSON data attached with curl post fields
curl_setopt($ch, CURLOPT_POSTFIELDS, $jsonDataEncoded);

//declaring application type as JSON.
curl_setopt($ch, CURLOPT_HTTPHEADER, array('Content-Type: application/json'));

//Execute the request
$result = curl_exec($ch);
```

Reference:

```
$ch = curl_init();
curl_setopt($ch, CURLOPT_URL, $url);
curl_setopt($ch, CURLOPT_HTTPHEADER, array('Content-Type: application/json'));
curl_setopt($ch, CURLOPT_POST, 1);
curl_setopt($ch, CURLOPT_POSTFIELDS,$data_json);
curl_setopt($ch, CURLOPT_RETURNTRANSFER, true);
$response = curl_exec($ch);
curl_close($ch);
```

My Code:

```
// curl initialization
$ch = curl_init();
curl_setopt($ch, CURLOPT_URL, $url);

// content type JSON
curl_setopt($ch, CURLOPT_HTTPHEADER, array('Content-Type: application/json'));

// mode of request
curl_setopt($ch, CURLOPT_CUSTOMREQUEST, 'PATCH');

// attaching data with headers
curl_setopt($ch, CURLOPT_POSTFIELDS,$data_json);
curl_setopt($ch, CURLOPT_RETURNTRANSFER, true);

// excute command
$response = curl_exec($ch);
curl_close($ch);
```

Reference:

```
$json = json_decode($json_data);  
echo $json->profile->displayName;
```

My Code:

```
$obj = json_decode($result);  
echo "<td>".$obj->student_id."</td>";
```

Reference:

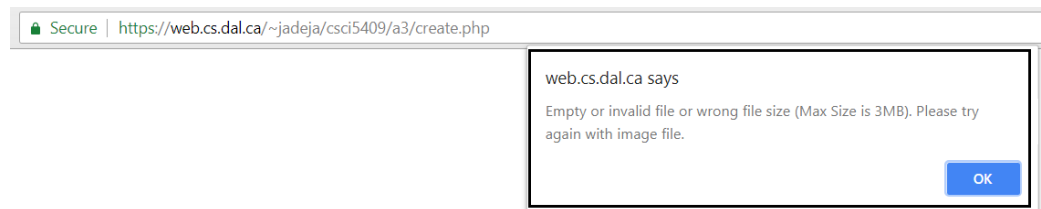
```
$ch = curl_init();  
curl_setopt($ch, CURLOPT_URL, $url);  
curl_setopt($ch, CURLOPT_CUSTOMREQUEST, "DELETE");  
curl_setopt($ch, CURLOPT_POSTFIELDS,$data_json);  
curl_setopt($ch, CURLOPT_RETURNTRANSFER, true);  
$response = curl_exec($ch);  
curl_close($ch);
```

My Code:

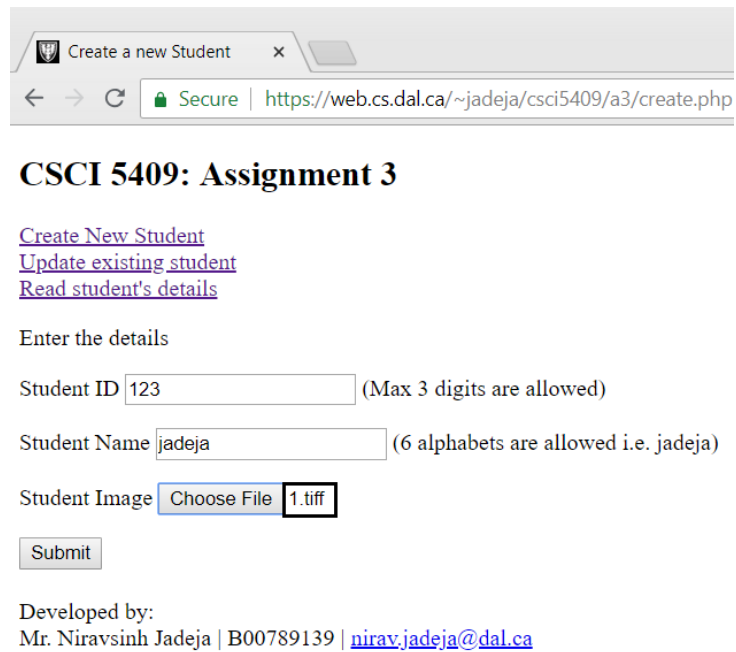
```
$ch = curl_init();  
curl_setopt($ch, CURLOPT_URL, $url);  
curl_setopt($ch, CURLOPT_CUSTOMREQUEST, 'DELETE');  
curl_setopt($ch, CURLOPT_POSTFIELDS);  
curl_setopt($ch, CURLOPT_RETURNTRANSFER, true);  
$response = curl_exec($ch);  
curl_close($ch);
```

3. Testing

1. No File Selected



2. Wrong Image Format applied



Create a new Student x

Secure | https://web.cs.dal.ca/~jadeja/csci5409/a3/create.php

CSCI 5409: Assignment 3

[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

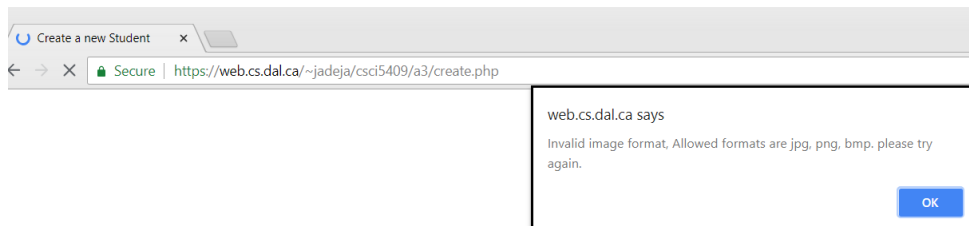
Enter the details

Student ID (Max 3 digits are allowed)

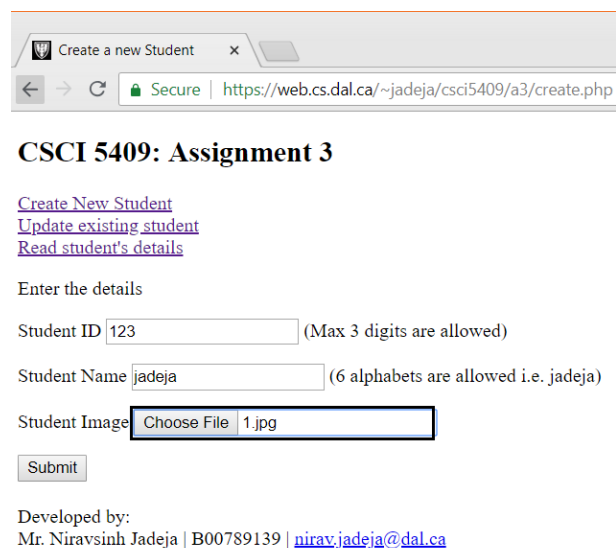
Student Name (6 alphabets are allowed i.e. jadeja)

Student Image

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Mr. Niravsinh Jadeja | B00789139 | nirav.jadeja@dal.ca



3. Large File Size



Create a new Student x

Secure | https://web.cs.dal.ca/~jadeja/csci5409/a3/create.php

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[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

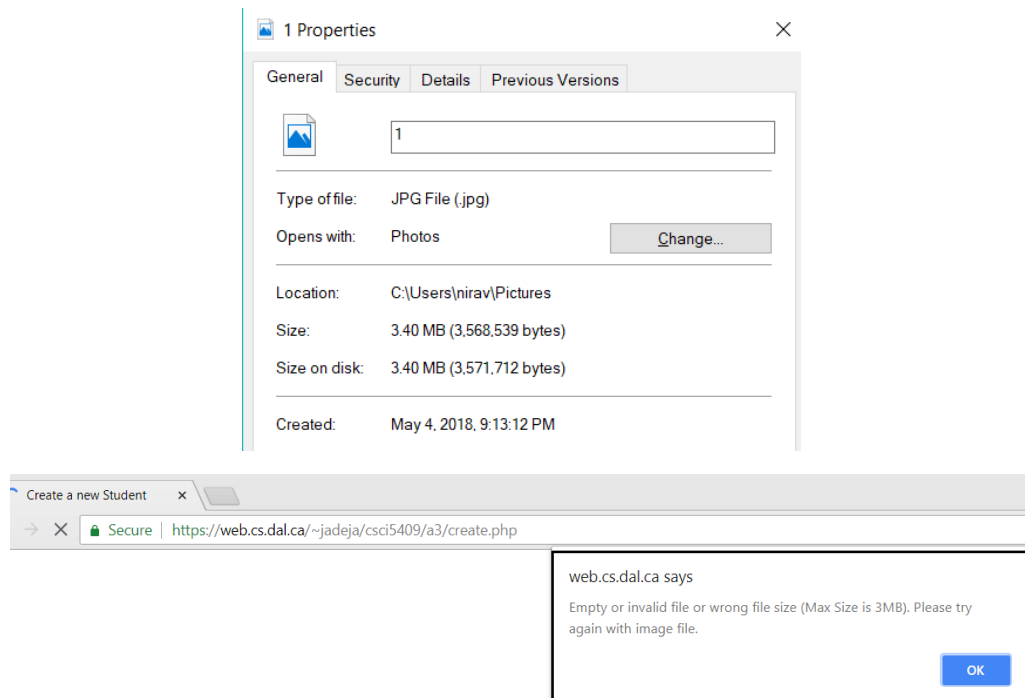
Enter the details

Student ID (Max 3 digits are allowed)

Student Name (6 alphabets are allowed i.e. jadeja)

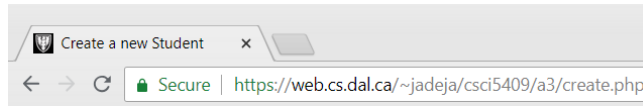
Student Image

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4. Wrong input in Student ID or Student Name

The image shows a web browser window titled 'Create a new Student' with the URL 'https://web.cs.dal.ca/~jadeja/csci5409/a3/create.php'. The page content includes the title 'CSCI 5409: Assignment 3' and three links: 'Create New Student', 'Update existing student', and 'Read student's details'. Below these links is the heading 'Enter the details'. The form contains three fields: 'Student ID' with the value '12' and a note '(Max 3 digits are allowed)', 'Student Name' with a validation error message 'Please match the requested format. (Max 6 alphabets are allowed)', and 'Student Image' with a 'Choose File' button and the text '2.1.PNG'. A 'Submit' button is at the bottom. At the very bottom of the page, it says 'Developed by: Mr. Niravsinh Jadeja | B00789139 | nirav.jadeja@dal.ca'.



CSCI 5409: Assignment 3

[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

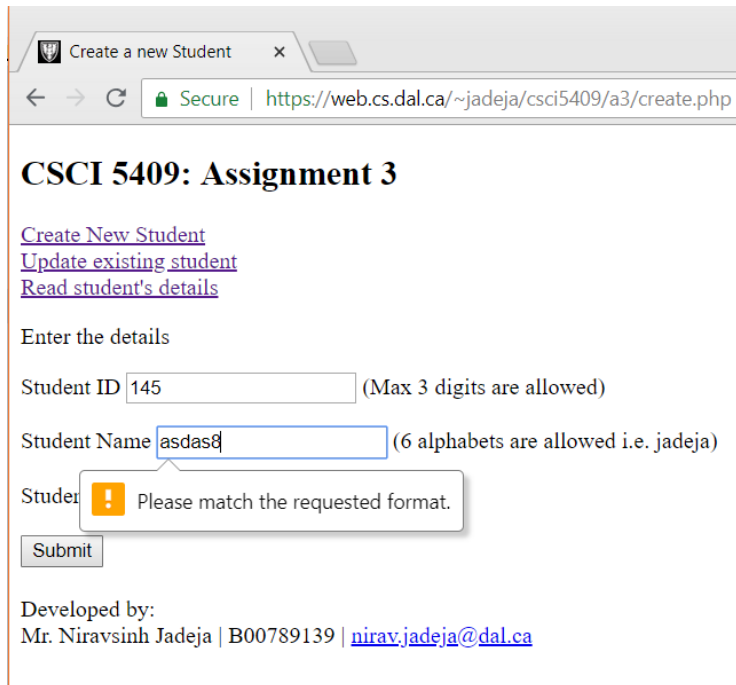
Enter the details

Student ID (Max 3 digits are allowed)

Student Name (6 alphabets are allowed i.e. jadeja)

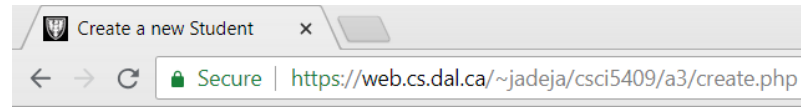
Student  Please match the requested format.

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5. Normal Operation

5.1 Create Operation



CSCI 5409: Assignment 3

[Create New Student](#)

[Update existing student](#)

[Read student's details](#)

Enter the details

Student ID (Max 3 digits are allowed)

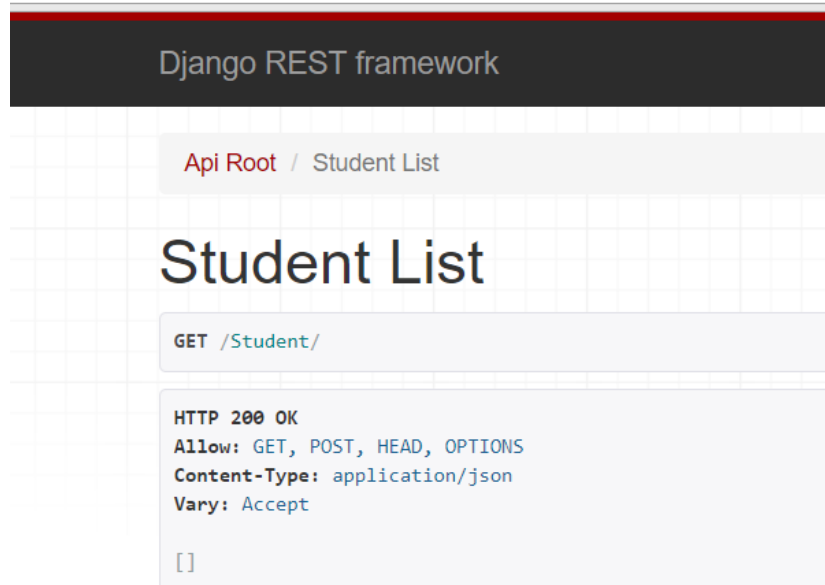
Student Name (Max 6 alphabets are allowed)

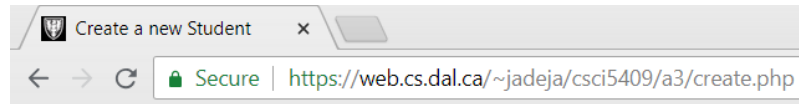
Student Image No file chosen

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Secure | <https://a3-csci5409.herokuapp.com/Student/>





CSCI 5409: Assignment 3

[Create New Student](#)

[Update existing student](#)

[Read student's details](#)

Enter the details

Student ID (Max 3 digits are allowed)

Student Name (Max 6 alphabets are allowed)

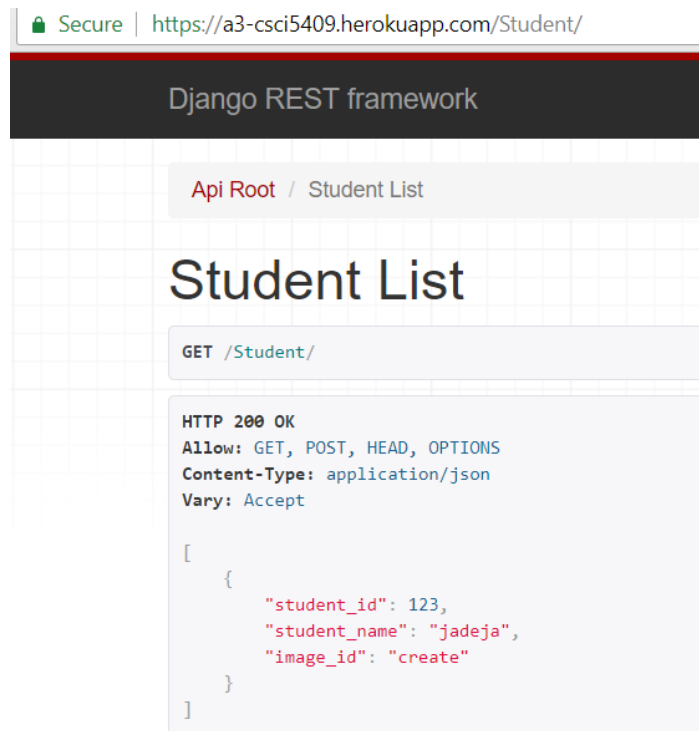
Student Image No file chosen

```
{"student_id":123,"student_name":"jadeja","image_id":"create"}
```

Uploading Done!!

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POST

https://a3-cloud.herokuapp.com//Student/

form-data

x-www-form-urlencoded

raw

binary

JSON (application/json)

1

2

3

4

5

6

{

"student_name": "jadeja",

"student_id": 456,

"image_id": "23"

}

Body

Cookies

Headers (9)

Test Results

Pretty

Raw

Preview

JSON

1

2

3

4

5

6

{

"id": 1,

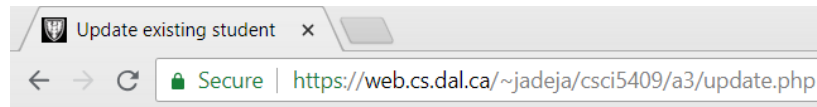
"student_name": "jadeja",

"student_id": 456,

"image_id": "23"

}

5.2 Update Operation



CSCI 5409: Assignment 3

[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

Update Student's details

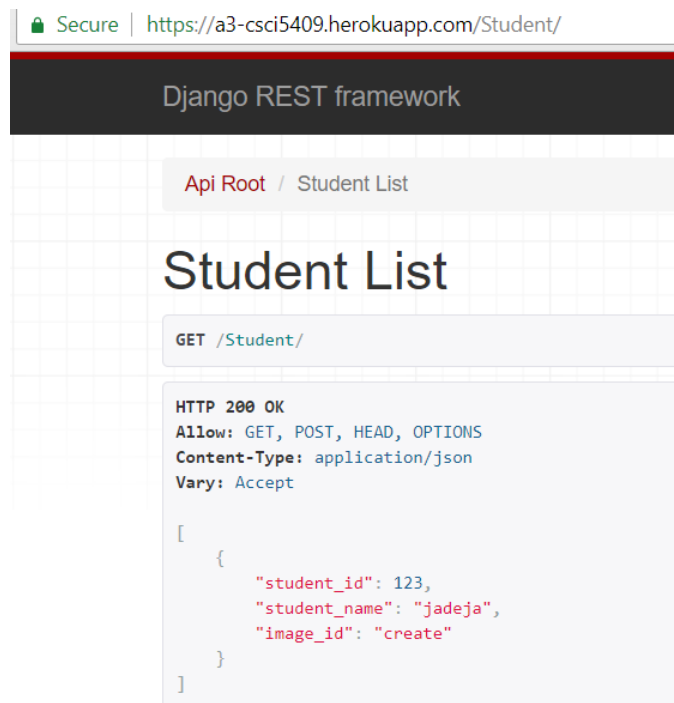
Student ID (Max 3 digits are allowed)

Student Name (Max 6 alphabets are allowed)

Student Image No file chosen

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CSCI 5409: Assignment 3

[Create New Student](#)

[Update existing student](#)

[Read student's details](#)

Update Student's details

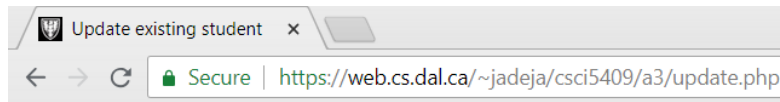
Student ID (Max 3 digits are allowed)

Student Name (Max 6 alphabets are allowed)

Student Image

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CSCI 5409: Assignment 3

[Create New Student](#)

[Update existing student](#)

[Read student's details](#)

Update Student's details

Student ID (Max 3 digits are allowed)

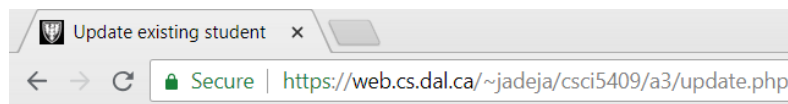
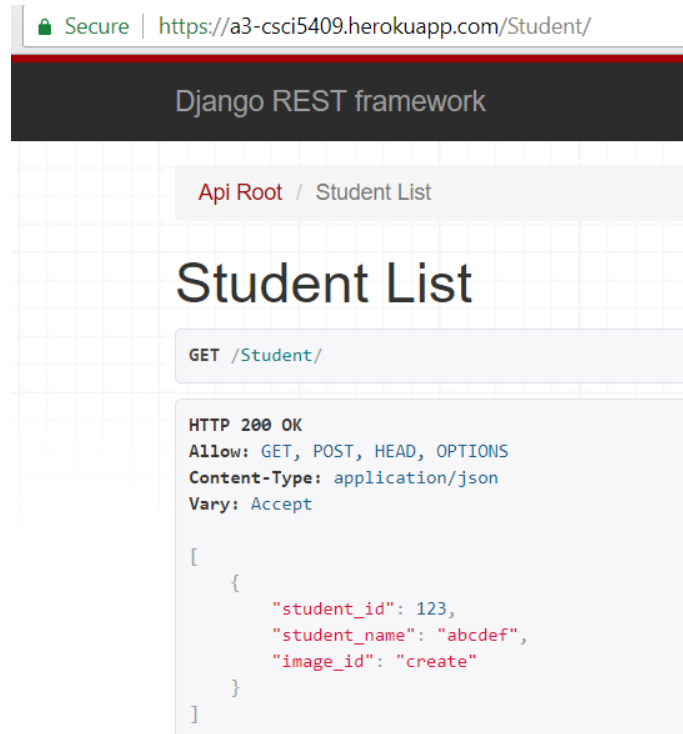
Student Name (Max 6 alphabets are allowed)

Student Image No file chosen

Information Updated!!

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CSCI 5409: Assignment 3

[Create New Student](#)

[Update existing student](#)

[Read student's details](#)

Update Student's details

Student ID (Max 3 digits are allowed)

Student Name (Max 6 alphabets are allowed)

Student Image

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Secure | <https://a3-csci5409.herokuapp.com/Student/>

Django REST framework

Api Root / Student List

Student List

GET /Student/

HTTP 200 OK
Allow: GET, POST, HEAD, OPTIONS
Content-Type: application/json
Vary: Accept

```
[
  {
    "student_id": 123,
    "student_name": "abcdef",
    "image_id": "update"
  }
]
```

PATCH ▾

<https://a3-csci5409.herokuapp.com/Student/789/>

Authorization

Headers (1)

Body ●

Pre-request Script

☐ form-data ☐ x-www-form-urlencoded ☒ raw ☐ binary

```
1
2 {
3   "student_name": "jadeja",
4   "student_id": 789,
5   "image_id": "23"
6 }
```

Body

Cookies

Headers (9)

Test Results

Pretty

Raw

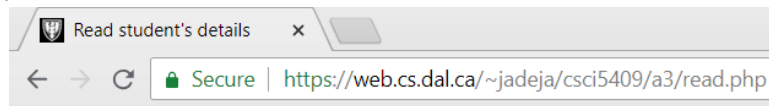
Preview

JSON ▾



```
1 {
2   "student_id": 789,
3   "student_name": "jadeja",
4   "image_id": "23"
5 }
```

5.3 Read Operation



CSCI 5409: Assignment 3

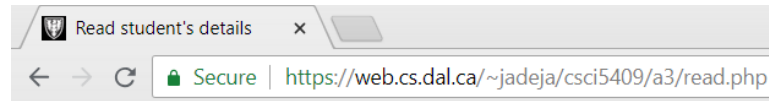
[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

Read Student Details

Student ID (Max 3 digits are allowed)

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CSCI 5409: Assignment 3

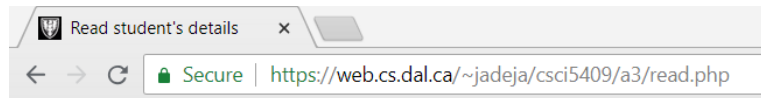
[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

Read Student Details

Student ID (Max 3 digits are allowed)

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CSCI 5409: Assignment 3

[Create New Student](#)

[Update existing student](#)

[Read student's details](#)

Read Student Details

Student ID (Max 3 digits are allowed)

Sr. No.	Student ID	Student Name	Preview	Edit
---------	------------	--------------	---------	------

1	123	abcdef
---	-----	--------

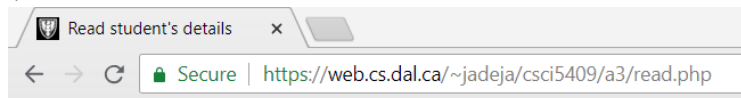


[Delete](#)

Developed by:

Mr. Niravsinh Jadeja | B00789139 | nirav.jadeja@dal.ca

5.4 Delete Operation




CSCI 5409: Assignment 3

[Create New Student](#)
[Update existing student](#)
[Read student's details](#)

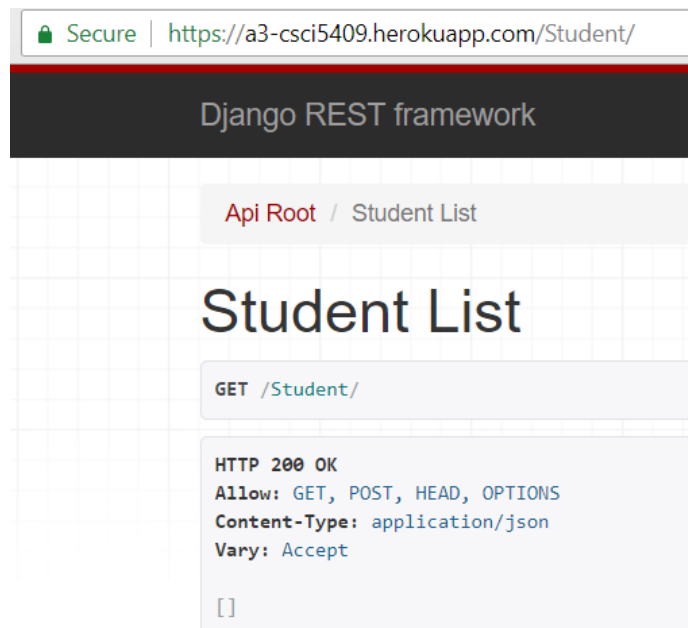
Read Student Details

Student ID (Max 3 digits are allowed)

Sr. No.	Student ID	Student Name	Preview	Edit
1	123	abcdef		Delete

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GET ▾

https://a3-cloud.herokuapp.com//Student/

TYPE

Inherit auth from parent ▾

This request

The authorization header will be automatically generated when you send the request. [Learn more about authorization](#)

Body

Cookies

Headers (9)


Test Results

Pretty

Raw

Preview

JSON ▾



```
1 [
2   {
3     "id": 1,
4     "student_name": "jadeja",
5     "student_id": 456,
6     "image_id": "23"
7   }
8 ]
```

4. References

1. CSCI 5409: Advance Cloud Computing Assignment 2
2. https://www.youtube.com/watch?v=263xt_4mBNc
3. <https://stackoverflow.com/questions/17865544/read-json-data-response-using-php>
4. <https://stackoverflow.com/questions/29373887/django-db-utils-integrityerror-unique-constraint-failed-rango-category-new-sl>
5. <http://thisinterestsme.com/sending-json-via-post-php/>
6. <https://stackoverflow.com/questions/21271140/curl-and-php-how-can-i-pass-a-json-through-curl-by-put-post-get>