

## Lab IV – HL7 FHIR Fundamentals

### Create a Patient Resource

Resource code in JSON format:

```
1 {  
2   "resourceType": "Patient",  
3   "identifier": {  
4     "value": "shuang379"  
5   },  
6   "name": {  
7     "family": "Daniel",  
8     "given": "Johnson"  
9   },  
10  "birthDate": "1980-01-27",  
11  "gender": "male",  
12  "telecom": {  
13    "system": "phone",  
14    "value": "1(555)555-1212",  
15    "use": "mobile"  
16  },  
17  "address": {  
18    "line": "4800 Calhoun Rd",  
19    "city": "Houston",  
20    "state": "Texas",  
21    "postcode": "77004",  
22    "country": "USA"  
23  }  
24 }
```

### CRUD Operations

**Task 1: Using the Patient Resource you created, save the resources by making a POST to the FHIR Server. Make sure the New Resource is successfully saved.**

The steps I took:

1. Selected the POST method as shown in the red ellipse:

The screenshot shows a REST client interface with a tab titled "Untitled Request". At the top right, there is a "Comments (0)" link. Below the tab, there is a dropdown menu showing "POST" (highlighted with a red ellipse), followed by a text input field "Enter request URL". To the right of the input field are "Send" and "Save" buttons. Below this, there are tabs for "Params", "Authorization", "Headers", "Body", "Pre-request Script", "Tests", and "Settings". The "Params" tab is selected, showing a table for "Query Params" with columns "KEY", "VALUE", and "DESCRIPTION". The table has one row with "Key" and "Value". To the right of the table is a "Bulk Edit" link. Below the table is a "Response" section.

KEY	VALUE	DESCRIPTION
Key	Value	Description

2. Typed <http://hapi.fhir.org/baseR4/Patient?> in the address box as shown in the red ellipse.

Untitled Request

Comments (0)

POST <http://hapi.fhir.org/baseR4/Patient?> Send Save

Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Response

3. Specified parameters “\_format” and “\_pretty” under “Params” tab as shown below in the red box:

Untitled Request

Comments (0)

POST [http://hapi.fhir.org/baseR4/Patient?\\_format=json&\\_pretty=true](http://hapi.fhir.org/baseR4/Patient?_format=json&_pretty=true) Send Save

Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/> _format	json			
<input checked="" type="checkbox"/> _pretty	true			
Key	Value	Description		

Response

4. Chose “Content-Type” under “Headers” tab and assigned its value as “application/json” as shown below in the red box:

Untitled Request

Comments (0)

POST [http://hapi.fhir.org/baseR4/Patient?\\_format=json&\\_pretty=true](http://hapi.fhir.org/baseR4/Patient?_format=json&_pretty=true) Send Save

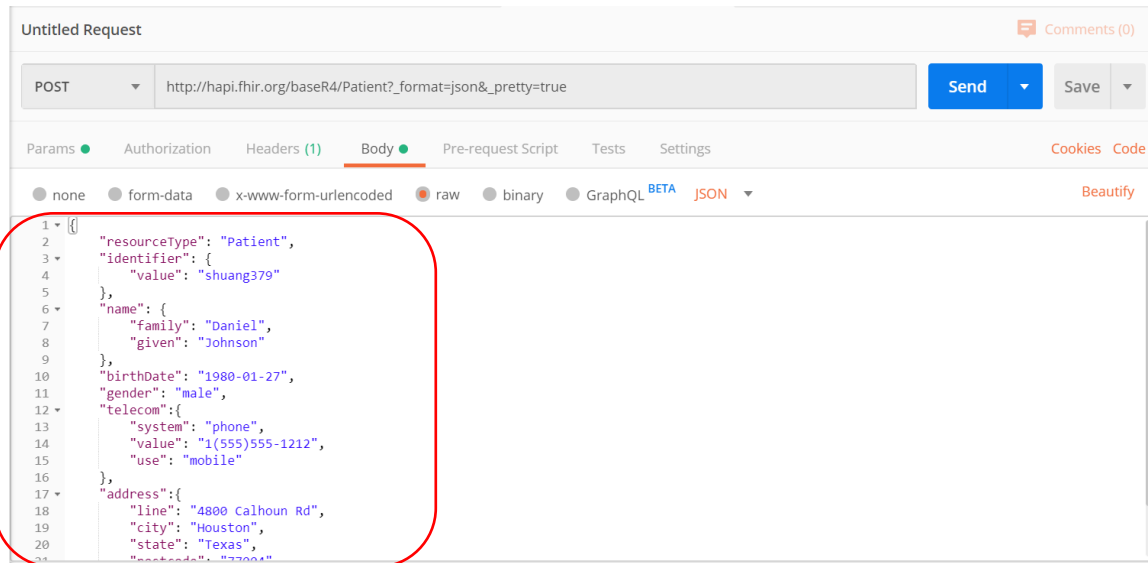
Params Authorization Headers (1) Body Pre-request Script Tests Settings Cookies Code

Headers (1)

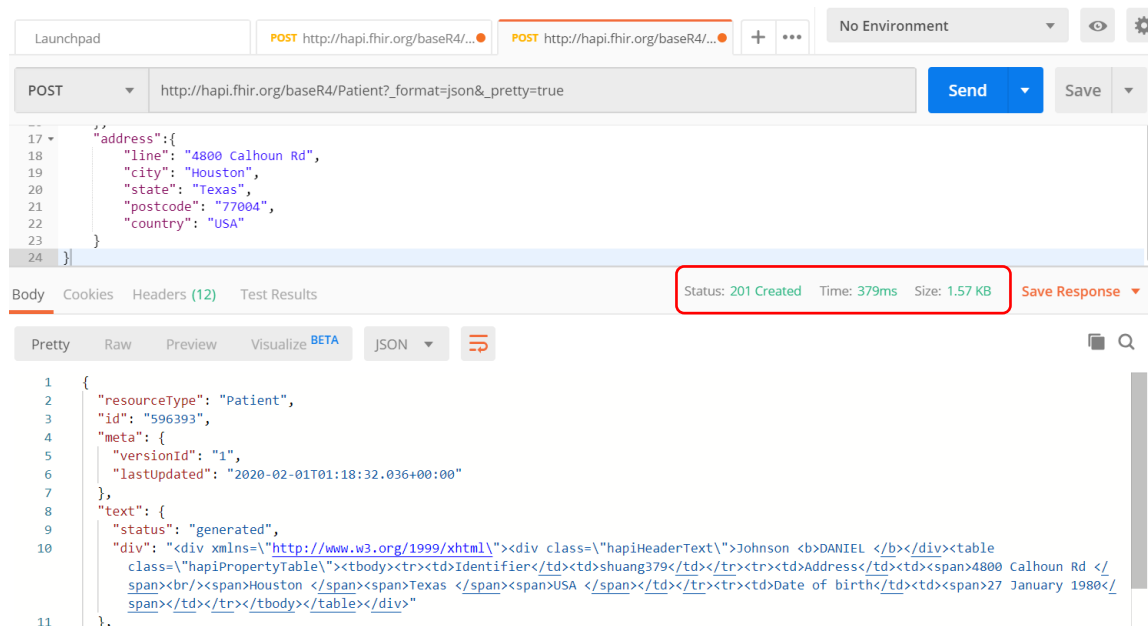
KEY	VALUE	DESCRIPTION	...	Bulk Edit	Presets
<input checked="" type="checkbox"/> Content-Type	application/json				
Key	Value	Description			

Response

5. Chose “raw” under the “Body” tab and pasted the resource I created in the body as shown below in the red box:



6. Pressed “Send” button to save the resource. The status returned as “201 Created” as shown below in the red box:



7. The created resource is shown below:

```

{
  "resourceType": "Patient",
  "id": "596393",
  "meta": {
    "versionId": "1",
    "lastUpdated": "2020-02-01T01:18:32.036+00:00"
  },
}

```

```

    "text": {
      "status": "generated",
      "div": "<div xmlns=\"http://www.w3.org/1999/xhtml\"><div class=\"hapiHeaderText\">Johnson <b>DANIEL </b></div><table class=\"hapiPropertyTable\"><tbody><tr><td>Identifier</td><td>shuang379</td></tr><tr><td>Address</td><td><span>4800 Calhoun Rd </span><br/><span>Houston </span><span>Texas </span><span>USA </span></td></tr><tr><td>Date of birth</td><td><span>27 January 1980</span></td></tr></tbody></table></div>"
    },
    "identifier": [
      {
        "value": "shuang379"
      }
    ],
    "name": [
      {
        "family": "Daniel",
        "given": [
          "Johnson"
        ]
      }
    ],
    "telecom": [
      {
        "system": "phone",
        "value": "1(555)555-1212",
        "use": "mobile"
      }
    ],
    "gender": "male",
    "birthDate": "1980-01-27",
    "address": [
      {
        "line": [
          "4800 Calhoun Rd"
        ],
        "city": "Houston",
        "state": "Texas",
        "country": "USA"
      }
    ]
  }
}

```

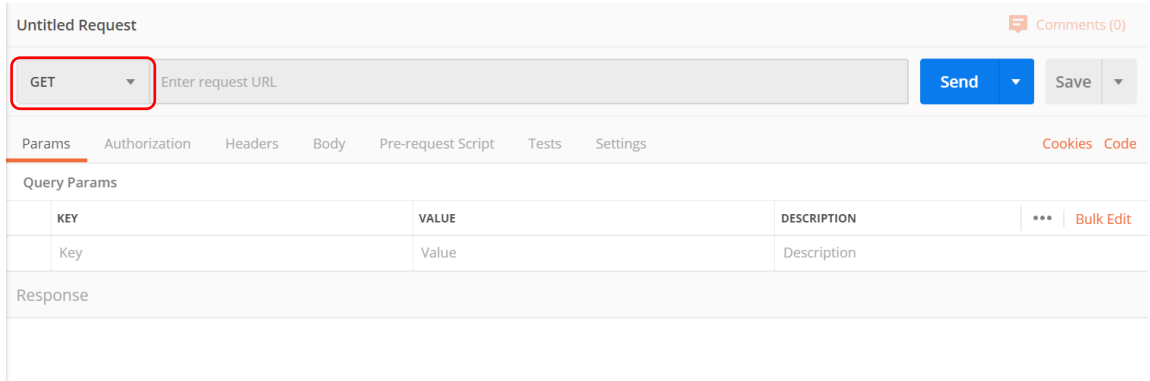
I tried several times until I completed task 1. Other elements except identifier and birthday were easy since they were covered by the provided tutorial video. I had difficulties in specifying identifier and birthday which were figured out later by referring to the result from a GET request shown below:

GET [http://hapi.fhir.org/baseR4/Patient?\\_format=json&\\_pretty=true](http://hapi.fhir.org/baseR4/Patient?_format=json&_pretty=true)

## Task 2: GET the FHIR Resource using the ID that has been assigned by the server to your resource.

The steps I took:

1. Selected the “GET” method as shown below in the red box:



Untitled Request

GET Enter request URL Send Save

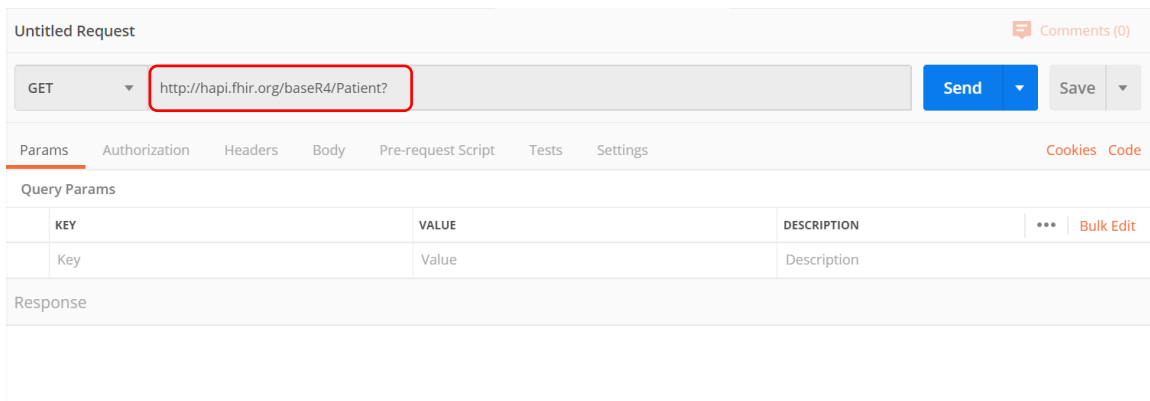
Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Response

2. Typed <http://hapi.fhir.org/baseR4/Patient?> in the address box as shown in the red box.



Untitled Request

GET http://hapi.fhir.org/baseR4/Patient? Send Save

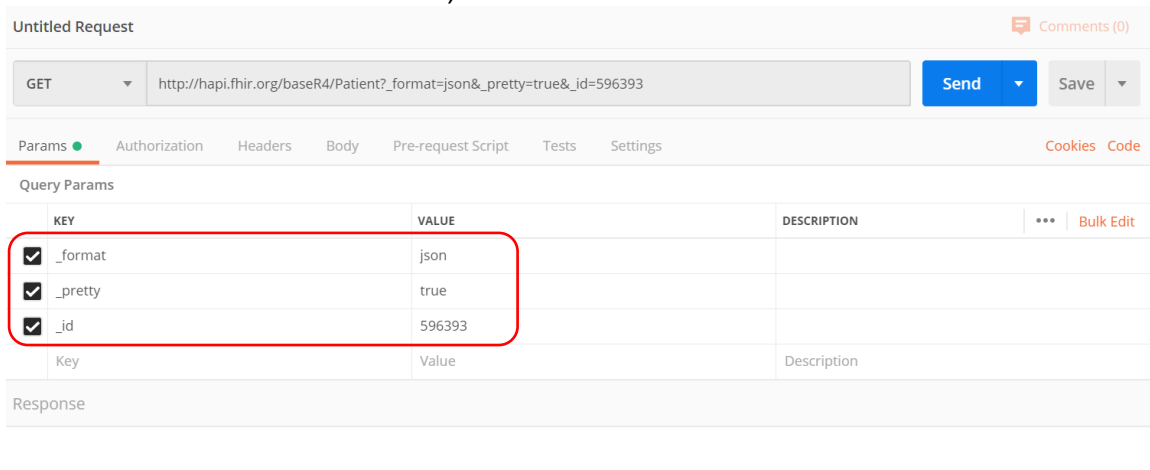
Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Response

3. Specified parameters “\_format”, “\_pretty” and “\_id” (refer to step 7 in task 1, the id of the created resource is 596393) under “Params” tab as shown below in the red box:



Untitled Request

GET http://hapi.fhir.org/baseR4/Patient?\_format=json&\_pretty=true&\_id=596393 Send Save

Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/> _format	json			
<input checked="" type="checkbox"/> _pretty	true			
<input checked="" type="checkbox"/> _id	596393			
Key	Value	Description		

Response

4. Chose “Content-Type” under “Headers” tab and assigned its value as “application/json” as shown below in the red box:

Untitled Request Comments (0)

GET http://hapi.fhir.org/baseR4/Patient?\_format=json&\_pretty=true&\_id=596393 Send Save

Params Authorization Headers (1) Body Pre-request Script Tests Settings Cookies Code

▼ Headers (1)

KEY	VALUE	DESCRIPTION	...	Bulk Edit	Presets
<input checked="" type="checkbox"/> Content-Type	application/json				
Key	Value	Description			

Response

5. Pressed “Send” button to get the resource. The status returned as “200 OK” as shown below in the red box:

Untitled Request Comments (0)

GET http://hapi.fhir.org/baseR4/Patient?\_format=json&\_pretty=true&\_id=596393 Send Save

Params Authorization Headers (8) Body Pre-request Script Tests Settings Cookies Code

▼ Headers (1)

KEY	VALUE	DESCRIPTION	...	Bulk Edit	Presets
<input checked="" type="checkbox"/> Content-Type	application/json				
Key	Value	Description			

► Temporary Headers (7) ⓘ

Body Cookies Headers (9) Test Results Status: 200 OK Time: 189ms Size: 2.19 KB Save Response

Pretty Raw Preview Visualize BETA JSON ⌵

```
1 {
2   "resourceType": "Bundle",
3   "id": "6fc12efd-48b7-46a7-87e4-8efae21035bf",
4   "meta": {
5     "lastUpdated": "2020-02-01T03:02:53.334+00:00"
```

6. The resource returned as below:

```
"entry": [
  {
    "fullUrl": "http://hapi.fhir.org/baseR4/Patient/596393",
    "resource": {
      "resourceType": "Patient",
      "id": "596393",
      "meta": {
        "versionId": "1",
        "lastUpdated": "2020-02-01T01:18:32.036+00:00",
        "source": "#g7GbBBTUSnz2LvRU"
      },
      "text": {
        "status": "generated",
        "div": "<div xmlns=\\\"http://www.w3.org/1999/xhtml\\\"><div class=\\\"hapiHeaderText\\\">Johnson <b>DANIEL </b></div><table class=\\\"hapiPropertyTable\\\"><tbody><tr><td>Identifier</td><td>shuang379</td></tr><tr><td>Address</td><td><span>4800 Calhoun Rd </span><br><span>Houston </span><span>Texas </span><span>USA </span></td></tr><tr><td>Date of birth</td><td><span>27 January 1980</span></td></tr></tbody></table></div>"
      },
      "identifier": [
        {
          "value": "shuang379"
        }
      ],
      "name": [
        {
          "family": "Daniel",
          "given": [
            "Johnson"
          ]
        }
      ]
    }
  }
]
```

```
[
  {
    "telecom": [
      {
        "system": "phone",
        "value": "1(555)555-1212",
        "use": "mobile"
      }
    ],
    "gender": "male",
    "birthDate": "1980-01-27",
    "address": [
      {
        "line": [
          "4800 Calhoun Rd"
        ],
        "city": "Houston",
        "state": "Texas",
        "country": "USA"
      }
    ]
  }
]
```

Task 2 is straightforward. I did not encounter any issue while following what had been demonstrated in the provided tutorial.

**Task 3: Using the Resource you retrieved in task 2, alter the line, city, state and telecom to different ones and send your edited resource for update to the server.**

The steps I took:

1. Selected the “PUT” method as shown below in the red box:

Untitled Request

Comments (0)

PUT Enter request URL Send Save

Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
Key	Value	Description		

Response

2. Typed “http” and selected from the auto fill list the address shown below in the red box:

Untitled Request

Comments (0)

PUT http://hapi.fhir.org/baseR4/Patient?\_format=json&\_pretty=true Send Save

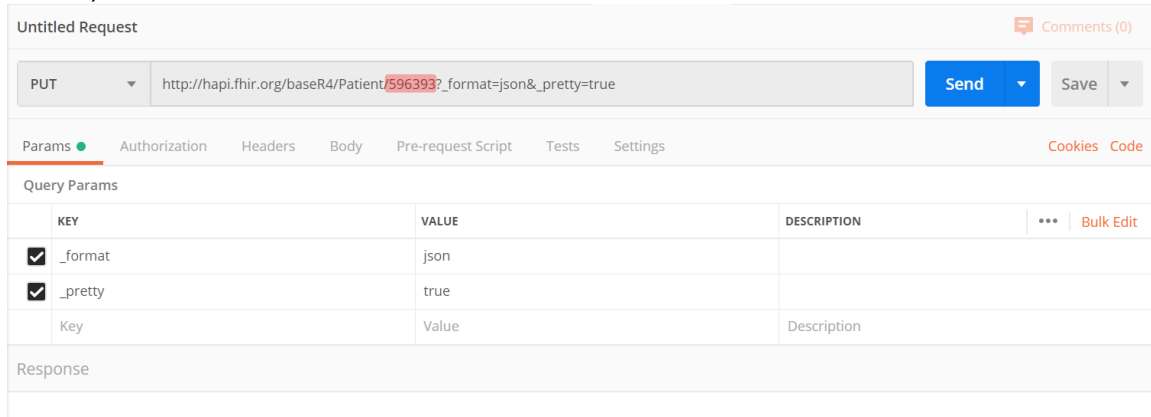
Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/> _format	json			
<input checked="" type="checkbox"/> _pretty	true			
Key	Value	Description		

Response

3. Modified the address by adding the assigned id (i.e. the highlighted part shown below):



Untitled Request

PUT http://hapi.fhir.org/baseR4/Patient/596393?\_format=json&\_pretty=true

Send Save

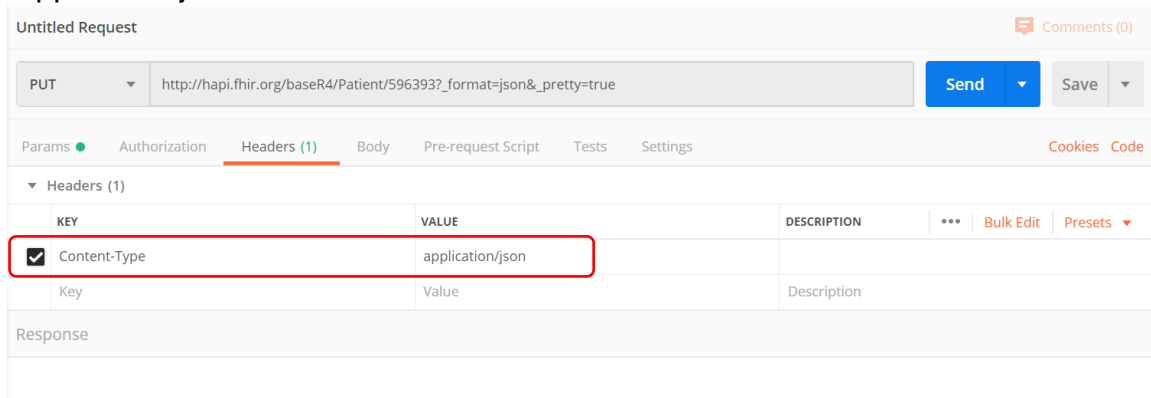
Params Authorization Headers Body Pre-request Script Tests Settings Cookies Code

Query Params

KEY	VALUE	DESCRIPTION	...	Bulk Edit
<input checked="" type="checkbox"/> _format	json			
<input checked="" type="checkbox"/> _pretty	true			
Key	Value	Description		

Response

4. Chose "Content-Type" under "Headers" tab and assigned its value as "application/json" as shown below in the red box:



Untitled Request

PUT http://hapi.fhir.org/baseR4/Patient/596393?\_format=json&\_pretty=true

Send Save

Params Authorization Headers (1) Body Pre-request Script Tests Settings Cookies Code

Headers (1)

KEY	VALUE	DESCRIPTION	...	Bulk Edit	Presets
<input checked="" type="checkbox"/> Content-Type	application/json				
Key	Value	Description			

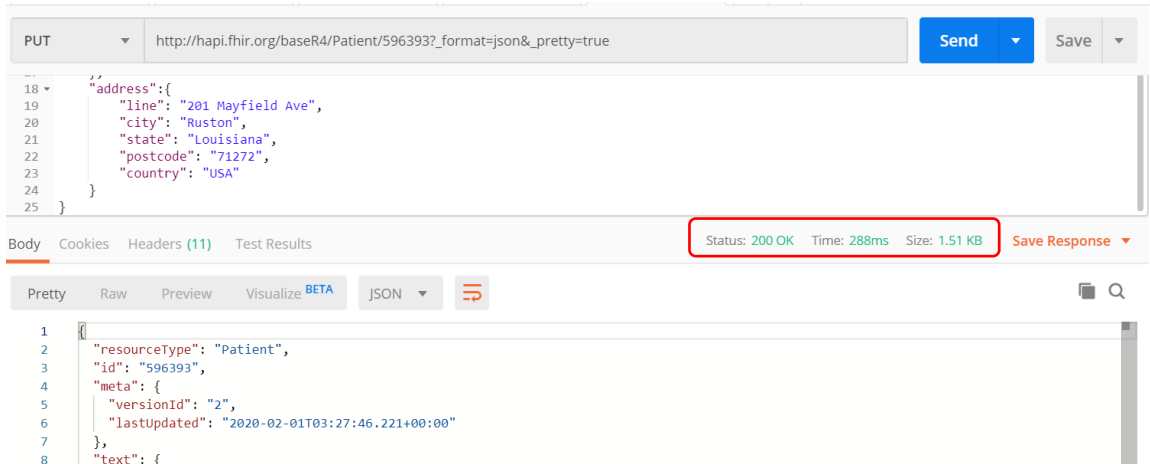
Response

5. Chose "raw" under the "Body" tab and pasted the resource I created in the body. But this time, I added the "id" element and its value of "596393". Moreover, I altered the line, city, state and telecom to different ones as shown below:

```
{
  "resourceType": "Patient",
  "id": "596393",
  "identifier": {
    "value": "shuang379"
  },
  "name": {
    "family": "Daniel",
    "given": "Johnson"
  },
  "birthDate": "1980-01-27",
  "gender": "male",
  "telecom": {
    "system": "phone",
    "value": "1(318)257-2000",
    "use": "mobile"
  },
  "address": {
    "line": "201 Mayfield Ave",
    "city": "Ruston",
    "state": "Louisiana",
    "postcode": "71272",
    "country": "USA"
  }
}
```



6. Pressed “Send” button to update the resource. The status returned as “200 OK” as shown below in the red box:



7. The updated resource matches new information and “versionId” became “2”, which is shown below:

```

{
  "resourceType": "Patient",
  "id": "596393",
  "meta": {
    "versionId": "2",
    "lastUpdated": "2020-02-01T03:27:46.221+00:00"
  },
  "text": {
    "status": "generated",
    "div": "<div xmlns='\"http://www.w3.org/1999/xhtml\"'><div class='\"hapiHeaderText\"'>Johnson <b>DANIEL </b></div><table class='\"hapiPropertyTable\"'><tbody><tr><td>Identifier</td><td>shuang379</td></tr><tr><td>Address</td><td><span>201 Mayfield Ave </span><br><span>Ruston </span><span>Louisiana </span><span>USA </span></td></tr><tr><td>Date of birth</td><td><span>27 January 1980</span></td></tr></tbody></table></div>"
  },
  "identifier": [
    {
      "value": "shuang379"
    }
  ],
  "name": [
    {
      "family": "Daniel",
      "given": [
        "Johnson"
      ]
    }
  ],
  "telecom": [
    {
      "system": "phone",
      "value": "1(318)257-2000",
      "use": "mobile"
    }
  ],
  "gender": "male",
  "birthDate": "1980-01-27",
  "address": [
    {
      "line": [
        "201 Mayfield Ave"
      ],
      "city": "Ruston",
      "state": "Louisiana",
      "country": "USA"
    }
  ]
}

```

Task 3 is tricky. First issue was the format with which the id should be included in the address. I had to go back to the tutorial video and got the correct order. Then, I got a 400 Bad Request error because I did not include the id in the raw input. I followed the error message in the response (shown below) and had it fixed.

```
,"issue": [  
  {  
    "severity": "error",  
    "code": "processing",  
    "diagnostics": "Can not update resource, resource body must contain an ID element for update (PUT) operation"  
  }  
]
```