

Application Programming Interface (API)

An API is a software intermediary that allows two or more applications to talk to each other.



API Type in terms of Release Policies:-

- Private – It can be used within the organization.
- Partner – It can be used within Business Partners.
- Public – It can be used any third party Developers.



Add/Update Student

Show Student Information

Name

Email

Password

Save

ID	Name	Email	Password	Action
65	Raj	raj@gmail.com	sonam1234	<div>edit</div> <div>delete</div>
66	Rahul	rahul@gmail.com	rahul1234	<div>edit</div> <div>delete</div>



```
const express = require('express');
const app = express();
const mongoose = require('mongoose');
const bcrypt = require('bcrypt');
const jwt = require('jsonwebtoken');

const User = mongoose.model('User');

app.post('/register', async (req, res) => {
  const { name, email, password } = req.body;
  const user = new User({ name, email });
  const hashedPassword = await bcrypt.hash(password, 10);
  user.password = hashedPassword;
  await user.save();
  res.status(201).send('User registered successfully');
});

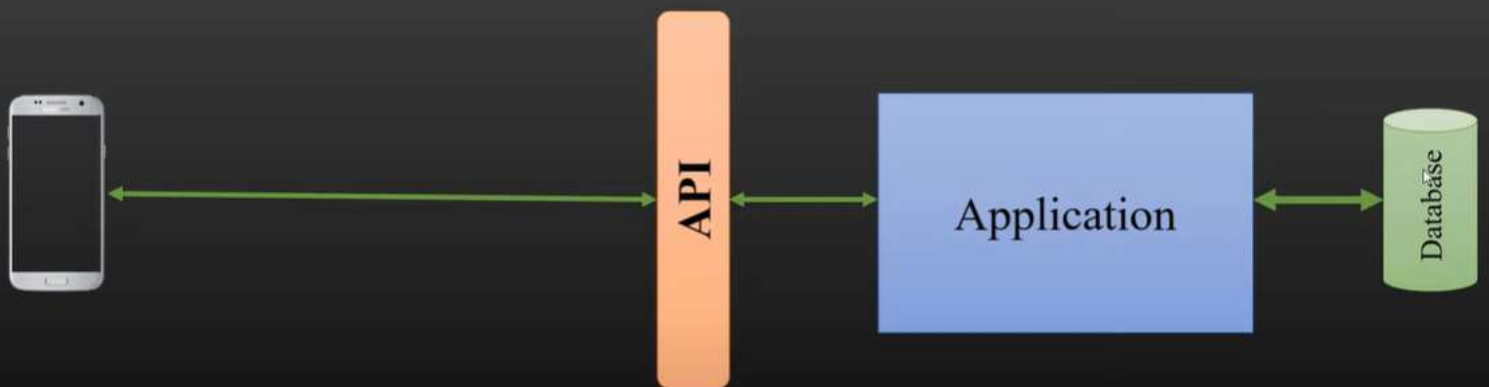
app.post('/login', async (req, res) => {
  const { email, password } = req.body;
  const user = await User.findOne({ email });
  if (!user) {
    res.status(404).send('User not found');
  }
  const validPassword = await bcrypt.compare(password, user.password);
  if (!validPassword) {
    res.status(401).send('Invalid password');
  }
  const token = jwt.sign({ id: user._id }, 'secret', { expiresIn: '1h' });
  res.status(200).send({ user, token });
});
```

API

Web Application

Database

How use API



API Key/Token: 23423jkhjgh32434hjgjh4343



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REST

It is an architectural guideline to develop Web API.

REST API

The API which is developed using REST is known as REST API / RESTful API.

Add/Update Student

Show Student Information

Name:

Email:

Password:

Save

ID	Name	Email	Password	Action
65	Raj	raj@gmail.com	12345678	<div>edit</div> <div>delete</div>
66	Rahul	rahul@gmail.com	12345678	<div>edit</div> <div>delete</div>



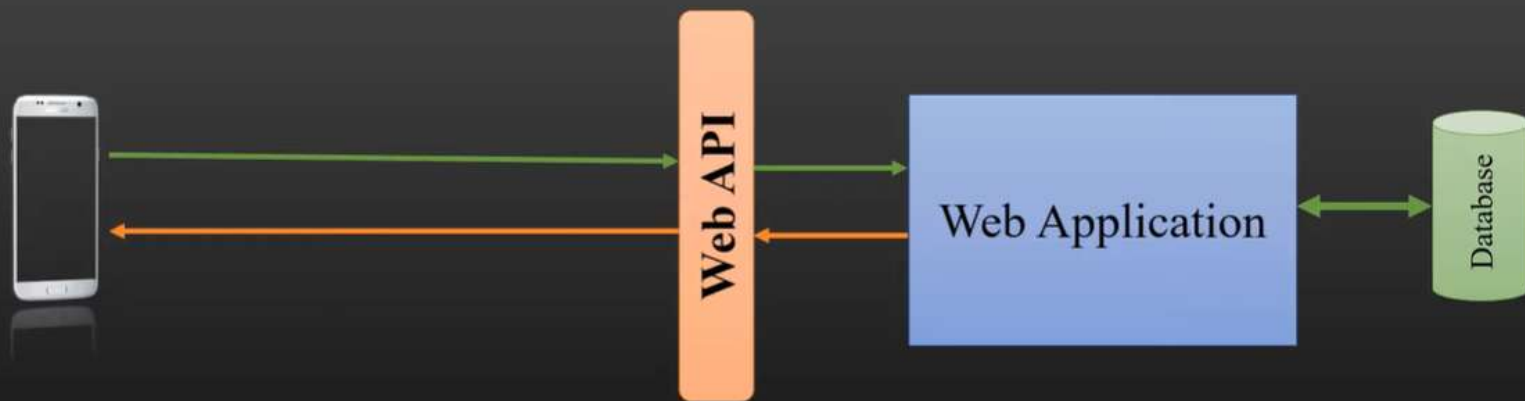
REST Web API

Web Application



Database

How REST Web API Works



- Client makes HTTP Request to API
- API will communicate to Web Application/Database (If needed)
- Web Application/Database provides required data to API
- API returns Response Data to Client

Note – Json Data, XML Data

REST API

CRUD Operations:-

Operation	HTTP Methods	Description
Create	POST	Creating/Posting/Inserting Data
Read	GET	Reading/Getting/Retrieving Data
Update	PUT, PATCH	Updating Data Complete Update - PUT Partial Update - PATCH
Delete	DELETE	Deleting Data

Students API Resource

<http://geekyshows.com/api/students>



1. Base URL
2. Naming Convention
3. Resource of API or End-Point

Request - Response

- Request for All Students

Request

GET: /api/students

Response

```
[  
  {"id":1, "name": "Rahul"},  
  {"id":2, "name" : "Sonam"},  
  ....  
]
```

Request - Response

- Request for One Student having id = 1

Request

GET: /api/students/1

Response

```
[  
  {"id":1, "name": "Rahul" }  
]
```

Request - Response

- Request Posting/Creating/Inserting Data

Request

POST: api/students

```
{"name": "Sumit"}
```

Response

```
{"id":11, "name": "Sumit"}
```

Request - Response

- Request for Updating Data, id = 1

Request

PUT or PATCH: /api/students/1

```
{"name": "Raj" }
```

Response

```
[  
  {"id":1, "name": "Raj" }  
]
```

Request - Response

- Request for Deleting Data, id = 1

Request

DELETE: /api/students/1

Response

```
{"id":1, "name": "Raj" }
```

RESTful API

<http://geekyshows.com/api/students>

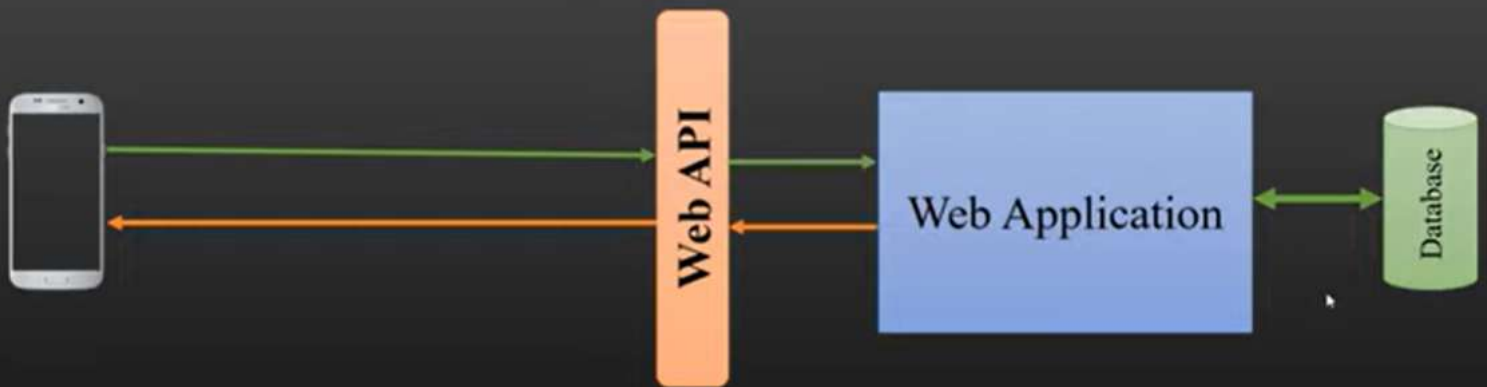
GET	/api/students
GET	/api/students/1
POST	/api/students
PUT	/api/students/1
PATCH	/api/students/1
DELETE	/api/students/1

Web API

An API, which is interface for web is called as Web API.

It may consist of one or more endpoints to define request and response.

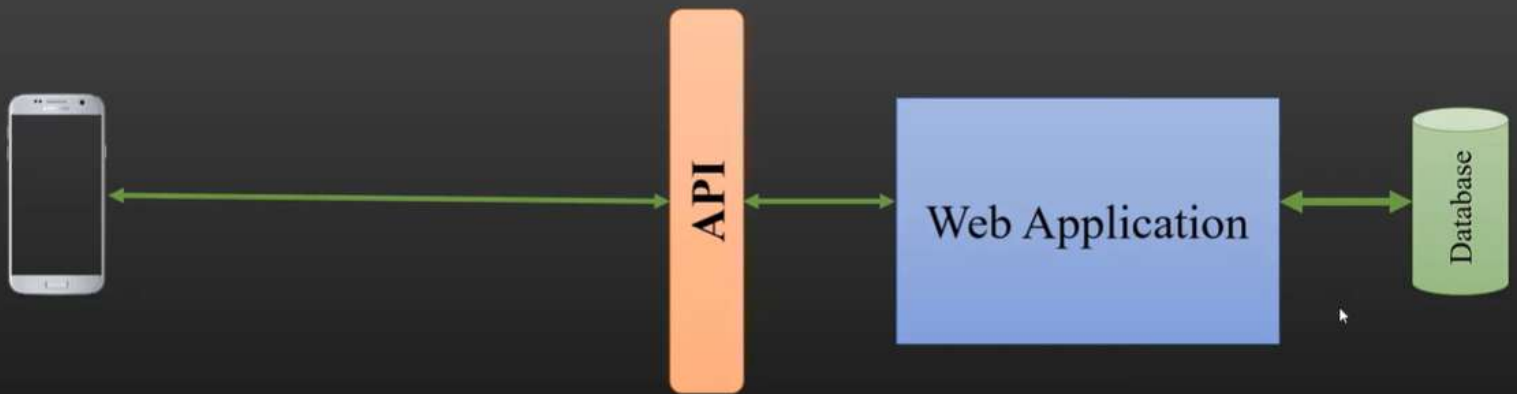
How Web API Works



- Client makes HTTP Request to API
- API will communicate to Web Application/Database (If needed)
- Web Application/Database provides required data to API
- API returns Data to Client

Note – Json Data, XML Data

How to use Web API



- Register/Sign-up to API
- API may provide API Key for Authentication purpose
API Key/Token: 23423jkhjhgh32434hkgjh4343
- Whenever you need to communicate with server make Request to API with API Key
<http://geekyshows.com/?key=23423jkhjhgh32434hkgjh4343>
- If API Key authentication succeed, API will provide required Data