

API Design

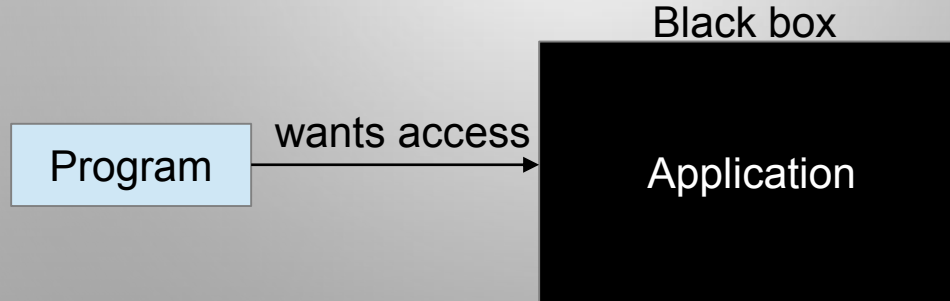
Designing a REST API

The slide features a light gray gradient background. In the top-left and top-right corners, there are several decorative, semi-transparent bubbles of various sizes, some with highlights, giving them a 3D effect.

API - APPLICATION PROGRAMMING INTERFACE

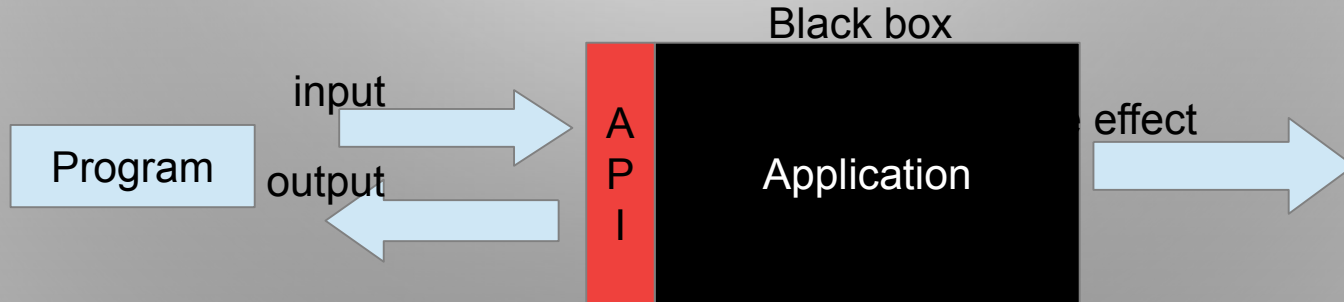
- AN INTERFACE THAT ALLOWS 3RD PARTY SOFTWARE SYSTEMS TO ACCESS FEATURES OF YOUR APPLICATION.

API - Application Programming Interface



API - Application Programming Interface

- Through API, other programs can access features in your application without having access to the source code




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DESIGNING REST APIS

- CODE YOUR DOCUMENTATION OVER DOCUMENT YOUR CODE
- SWAGGER DOCUMENTATION

Swagger Documentation

 **swagger**

/static/v1/swagger.json

Explore

Dentist Reservation 0.0.1

[Base URL: /v1]
</static/v1/swagger.json>

Book an appointment with a dentist

Appointments

GET

/timeslots Gets the available time slots

POST

/timeslots Creates a timeslot

GET

/timeslots/{id}/reserve Books an appointment

SWAGGER DOCUMENTATION (CONT.)

01

A specification for documenting APIs

02

Comes with **Swagger-Editor** to help visualize and organize the documentation process

03

Tools that turn swagger documents into actual source codes

SWAGGER EDITOR

[HTTPS://EDITOR.SWAGGER.IO/](https://editor.swagger.io/)



S



Swagger Editor

Supported by SMARTBEAR

File ▾

Edit ▾

Generate Server ▾

Generate Client ▾

```
1  swagger: '2.0'
2  basePath: /
3  info:
4    version: 0.0.1
5    title: Dentist Reservation
6    description: Book an appointment with a dentist
7  paths:
8    /timeslots:
9      get:
10        summary: Gets the available time slots
11        tags:
12          - Appointments
13        responses:
14          200:
15            description: OK
16
17      post:
18        summary: Creates a timeslot
19        parameters:
20          - in: query
21            name: body
22            type: string
23            required: true
24
25        tags:
26          - Appointments
27        responses:
28          200:
```

Dentist Reservation 0.0.1

[Base URL: /]

Book an appointment with a dentist

Appointments



GET

/timeslots Gets the available time slots

POST

/timeslots Creates a timeslot

GET

/timeslots/{id}/reserve Books an appointment

Activity 1: Make swagger doc for an API

- Go to <https://swagger.io/docs/specification/2-0/basic-structure/> to understand the basic structure of **OpenAPI 2**
- Open <https://editor.swagger.io> to create a swagger doc
- Consider a simple Dentist Reservation API with following three methods
 - To get available timeslots
 - To add a timeslot
 - reserve a timeslot

Activity 1: Make swagger doc for an API

Demo

SWAGGER TO CODE



<https://github.com/guokr/swagger-py-codegen>



Language used here is
Python

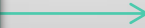
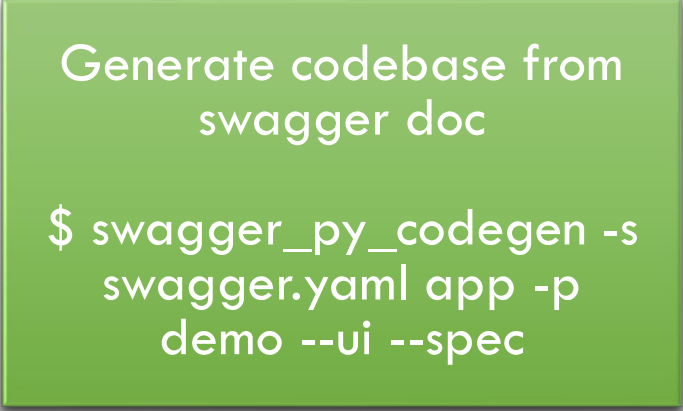
Install code generator

```
$ pip install swagger-py-codegen
```



Generate codebase from
swagger doc

```
$ swagger_py_codegen -s  
swagger.yaml app -p  
demo --ui --spec
```



SWAGGER 2 CODE

Activity 2: Generate the Code from Swagger Doc

- From <https://editor.swagger.io> generate the code from your swagger doc
- Download the yaml file of your swagger doc
- Use swagger-py-codegen to create the code
- Install the requirements
- Run the application (`__init__.py`)
- Browse <http://127.0.0.1:5000/static/swagger-ui/index.html>

Activity 2: Generate the Code from Swagger Doc

Demo

INVOKING APIS

REST APIs are just API calls over HTTP
so any tool that support HTTP request
can be used to invoke REST APIs



Popular tools:

Postman

Restlet
Client

cURL (CLI)

Postman

- GUI tool designed to help developer test APIs
- <https://www.getpostman.com/>



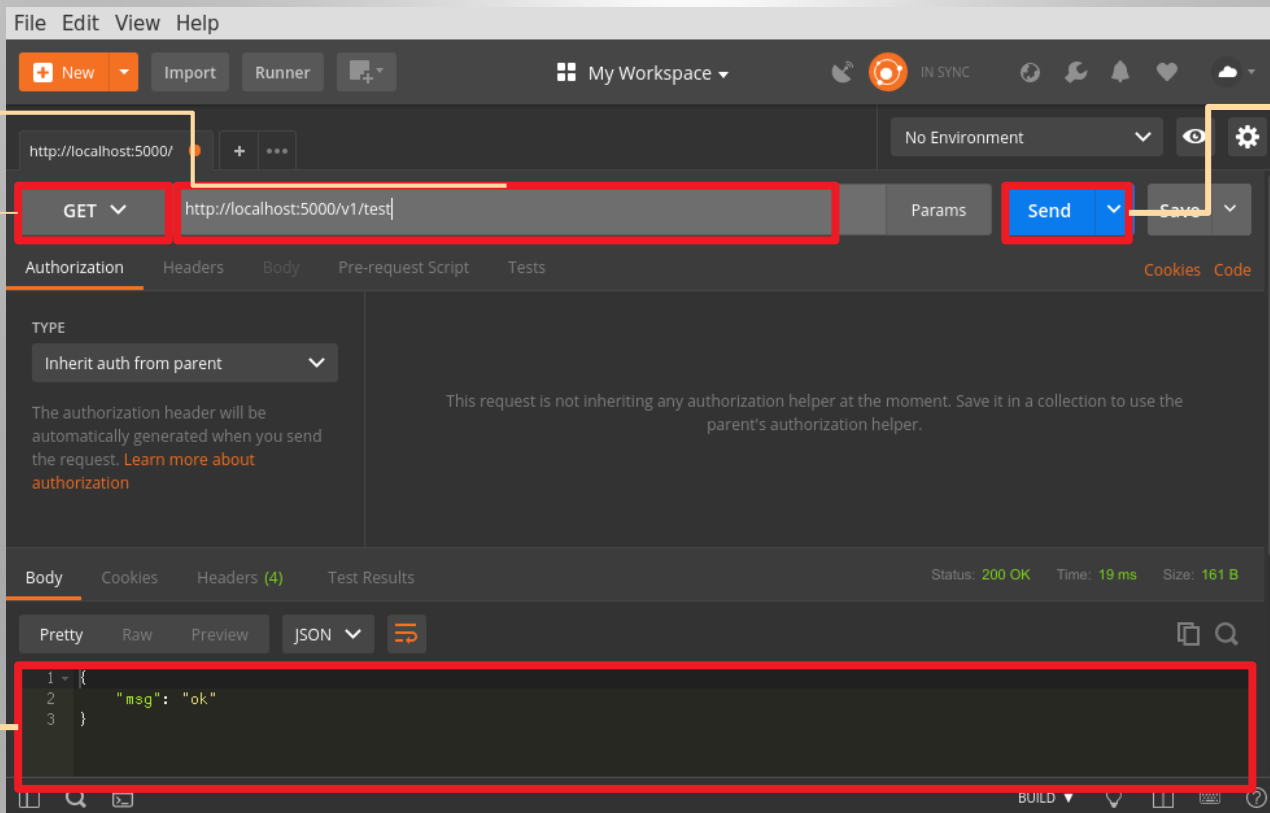
Postman

URL

Method

Send API
request

Result



CURL



Available in almost every
*nix system



Command line interface



Can be used with other CLI
tools to help debugging

cURL

- **Standard API call:**

```
$ curl -X POST -H http://127.0.0.1:5000/v1/timeslots
```

- **Pretty print**

```
$ curl -X POST -H http://127.0.0.1:5000/v1/timeslots | python -  
mjson.tool
```

Activity 3: Invoke your API

- Call your calculator API
 - Use Postman
 - Use cURL

Next Week Lab Activity

Implement All three Methods
of Dentist Reservation System
in your own way