

Rest API Design

Oliver Holder, Nik Dijkema, Tai Ting (Group 18)

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1 Introduction

1.1 Framework choice

(Reasons for choosing python and flask etc.. here). – Python (Bootstrap, Flask).
Python flask allows for character escaping. – SQLAlchemy for storage.

1.2 Data storage options

In this project, the initial data we receive is in JSON and CSV format. Either of these formats can be directly parsed and loaded into memory as lists in python. This way of processing data works well for read only data, however, there will be PUSH requests in the API, meaning the data will be subject to change. This causes problems for data loaded in memory, saving the data as text for every PUSH request is very inefficient. Therefore SQL will be used as the main storage method. Because the API will be made in python, the SQL handling will be performed by SQLAlchemy.

2 Data model

The objects and their relations must be defined before an API can be designed.
Visible Objects (with URI):

- Airport
- Carrier
 - Statistics
 - Delays
 - Amount
 - Minutes
- Flights

2.1 URIs

Airport: url/airports/< code >

Carrier: url/carriers/< code >

Statistics: url/carriers/< code >/statistics

Delays(amount): url/carriers/< code >/delays/count

Delays(minutes): url/carriers/< code >/delays/minutes

Flights: url/carriers/< code >/flights

3 End Points

3.1 Airports

3.1.1 /airports (1)

Type: GET

Return: List of airport URIs

3.1.2 /airports/< code > (3)

Type: GET

return: Airport name + List of carrier URIs related to that airport

3.2 Carriers

3.2.1 /carriers (2)

Type: GET

Return: List of carrier URIs

3.2.2 /carriers/< code >

Type: GET

Return: Statistics URI + Carrier Name (string).

3.3 Statistics

3.3.1 /carriers/< code >/statistics (4)

TYPE: GET

Return: Statistics URI for given carrier returned as delay and flight resources.

(- query options: month, airport)

3.3.2 /carriers/< code >/statistics/flights (5)

TYPE: GET

Return: Json Flights information list.

(- query options: month, airport)

3.3.3 /carriers/< code >/statistics/delays/minutes (6)

TYPE: GET

Return: Json (minute) delays information list.

(- query options: *delay_type*, month, airport)

3.3.4 /carriers/< code >/statistics/delays/minutes/averages

(- query options: *delay_type*, airport1, airport2, carrier)

4 URL GET METHOD LIST

- /airports
- /airports/< code >
- /carriers
- /carriers/< code >
- /carriers/< code >/statistics
- /carriers/< code >/statistics/flights
- /carriers/< code >/statistics/delays/minutes
- /carriers/< code >/statistics/delays/minutes/verages

5 Verification and security

Security for viewing data is unnecessary. (what about push?)

Using HTTPS with a self generated certificate.