API Documentation

(*Airlines App*)

Version	Date	Author	Description
1.0	4-March-2019	Teodor Oanca Razvan Poinaru	Initial draft

1. All airports available in the USA

1.1 GET: Retrieve a list of all airports available in the USA

Request structure

Method	URL
GET	api/airports?content-type=<content-type>

Type	Params	Values
URL_QUERY	content-type	String *If none specified, default is "JSON"

Example request

Method	URL
GET	api/airports

Example response

Status	Response
| 200 | ```
{
    "airports": [
      {
        "code": "ATL",
        "name": "Atlanta, GA: Hartsfield-Jackson Atlanta International",
        "links": [
          {"carriers": "api/airport/ATL/carriers"}
         ]
``` |

```
                },
                {
                    "code": "BOS",
                    "name": "Boston, MA: Logan International",
                    "links": [
                        {"carriers": "api/airport/BOS/carriers"}
                    ]
                }
            ],
            "number_airports": "2"
        }
```

400	{"error":"Content-type specified is not available."}
500	{"error":"Internal server error. Please try again later."}

2. All carriers operating in US airports

GET : Retrieve a list of all carriers operating in US airports

Request structure

Method	URL
GET	api/carriers?content-type=<content-type>

Type	Params	Values
URL_QUERY	content-type	String *If none specified, default is "JSON"

Example request

Method	URL
GET	api/carriers/

Example response

Status	Response

200	<pre>{
	    "carriers":[
	      {
	        "code": "AA",
	        "name": "American Airlines Inc." ,
	        "links": [
	          {"descriptive-statistics":
	                      "api/descriptive-statistics?carrier=AA"}
	        ]
	      },
	      {
	        "code": "RU",
	        "name": "ExpressJet Airlines Inc.",
	        "links": [
	          {"descriptive-statistics":
	                      "api/descriptive-statistics?carrier=RU"}
	        ]
	      },
	      {
	        "code": "OH",
	        "name": "Comair Inc.",
	        "links": [
	          {"descriptive-statistics":
	                      "api/descriptive-statistics?carrier=OH"}
	        ]
	      }
	    ],
	    "number_carriers": "3"
	}</pre>

400	{"error":"Content-type specified is not available."}
500	{"error":"Internal server error. Please try again later."}

3. All carriers operating at a specific US airport

GET : Retrieve a list of all carriers operating at a specific US airport

Request structure

Method	URL
GET	api/airport/<airport_code>/carriers?content-type=<content-type>

Type	Params	Values
URL_PARAM	airport_code	string
URL_QUERY	content-type	string *If none specified, default is "JSON"

Request example

Method	URL
GET	api/airport/ATL/carriers

Example response

Status	Response
200	<pre>{
"carriers":[
{
"code": "AA",
"name": "American Airlines Inc.," ,
"links": [
{"statistics": "api/carrier/AA/airport/ATL"},
{ "descriptive-statistics":
"api/descriptive-statistics?carrier=AA"}
]
},
{
"code": "B6",
"name": "JetBlue Airways",
"links": [
{"statistics": "api/carrier/B6/airport/ATL"},
{"descriptive-statistics":
"api/descriptive-statistics?carrier=B6"}
]
}
],
"number_carriers": "2"
}</pre>
400	{"error":"Content-type specified is not available."}
404	{"error":"Resource not found."}
500	{"error":"Internal server error. Please try again later."}

4. Statistics about flights of a carrier from/to a airport

4.1 **GET:** Retrieve statistics about flights of a carrier from/to a US airport for a given month/ all months available.

Request structure

Method	URL
GET	api/carrier/<carrier_code>/airport/<airport_code>?month=<month>& content-type=<content-type>

Type	Params	Values
URL_PARAM	carrier_code	string
URL_PARAM	airport_code	string
URL_QUERY	month	integer *If none specified, will retrieve for ALL MONTHS*
URL_QUERY	content-type	string *If none specified, default is "JSON"*

Example request

Method	URL
GET	api/carrier/CO/airport/CLT?month=6

Example response

Status	Response
| 200 | ```json
{
  "flights": {
        "cancelled": 1,
        "on time": 31,
        "total": 46,
        "delayed": 14,
        "diverted": 0
    },
  "# of delays": {
        "late aircraft": 2,
        "weather": 0,
        "security": 0,
        "national aviation system": 10,
        "carrier": 1
    },
  "minutes delayed": {
        "late aircraft": 93,
        "weather": 51,
        "carrier": 77,
        "security": 0,
        "total": 664,
        "national aviation system": 443
    },
  "links": [
        {"flights-numbers":
            "api/carrier/CO/airport/CLT/flights-numbers"},
        {"carrier-delays-minutes":
            "api/carrier-delays-minutes/CO?airport=CLT"}
    ]
}
``` |
400	{"error":"Content-type specified is not available."}
404	{"error":"Resource not found."}
500	{"error":"Internal server error. Please try again later.}

4.2 **PUT:** Update statistics about flights of a carrier from/to a US airport for a given month.

*When using PUT, will replace the object. All the existent fields should be overwritten to avoid data loss. For partial update, check 4.3 underneath.

Request structure

Method	URL
PUT	`api/carrier/<carrier_code>/airport/<airport_code>?month=<month>`

Type	Params	Values
URL_PARAM	`carrier_code`	`string`
URL_PARAM	`airport_code`	`string`
URL_QUERY	`month`	`integer`

Example request

Method	URL
PUT	`api/carrier/CO/airport/CLT?month=6`

Type	Params	Values

BODY	`flights`	`{`
		    `"cancelled": 5,`
		    `"on time": 1232,`

		``
		    "total": 46,
		    "delayed": 214,
		    "diverted": 0
		}
		``

BODY	# of delays	```
		{
		    "late aircraft": 2,
		    "weather": 45,
		    "security": 1,
		    "national aviation system": 10,
		    "carrier": 1
		}
		``

BODY	minutes delayed	```
		{
		    "late aircraft": 93,
		    "weather": 51,
		    "carrier": 77,
		    "security": 0,
		    "total": 664,
		    "national aviation system": 443
		}
		``

Example response

Status	Response

200	```
	{
	  "flights": {
	    "cancelled": 5,
	    "on time": 1232,
	    "total": 46,
	    "delayed": 214,
	    "diverted": 0
	  },
	  "# of delays": {
	    "late aircraft": 2,
	    "weather": 45,
	    "security": 1,
	    "national aviation system": 10,
	    "carrier": 1
	``

	``
	        },
	        "minutes delayed": {
	           "late aircraft": 93,
	           "weather": 51,
	           "carrier": 77,
	           "security": 0,
	           "total": 664,
	           "national aviation system": 443
	        }
	     }
	``

400	`{"error":"Invalid/Missing month."}`
400	`{"error":"Invalid fields specified."}`
404	`{"error":"Resource not found."}`
500	`{"error":"Internal server error. Please try again later.}`

4.3 **PATCH:** Partial update statistics about flights of a carrier from/to a US airport for a given month.

*When using PATCH, will update only the fields specified in the body. The fields not present in the body of the request will stay "untouched".

Request structure

Method	URL
PATCH	`api/carrier/<carrier_code>/airport/<airport_code>?month=<month>`

Type	Params	Values
URL_PARAM	carrier_code	string
URL_PARAM	airport_code	string

URL_QUERY	month	integer

Example request

Method	URL
PATCH	`api/carrier/CO/airport/CLT?month=6`

Type	Params	Values
| BODY | flights | ```
{
    "cancelled": 5,
    "on time": 1232,
    "total": 46,
    "delayed": 214,
    "diverted": 0
}
``` |

Example response

Status	Response
| 200 | ```
{
  "flights": {
     "cancelled": 5,
     "on time": 1232,
     "total": 46,
     "delayed": 214,
     "diverted": 0
   },
  "# of delays": {
     "late aircraft": 2,
     "weather": 0,
     "security": 0,
     "national aviation system": 10,
     "carrier": 1
   },
``` |

	``json
	      "minutes delayed": {
	         "late aircraft": 93,
	         "weather": 51,
	         "carrier": 77,
	         "security": 0,
	         "total": 664,
	         "national aviation system": 443
	      }
	   }
	}
	``

400	{"error":"Invalid/Missing month."}
400	{"error":"Invalid fields specified."}
404	{"error":"Resource not found."}
500	{"error":"Internal server error. Please try again later.}

5. Number of on-time, delayed, and cancelled flights of a carrier

5.1 **GET:** Retrieve the number of on-time, delayed and cancelled flights of a carrier from/to a US airport for a given month/ all months available.

Request structure

Method	URL
GET	api/carrier/<carrier_code>/airport/<airport_code>/flights-numbers?month=<month>&content-type=<content-type>

Type	Params	Values

URL_PARAM	carrier_code	string
URL_PARAM	airport_code	string
URL_QUERY	month	integer *If none specified, will retrieve for ALL MONTHS*
URL_QUERY	content-type	string *If none specified, default is "JSON"*

Example request

Method	URL
GET	api/carrier/CO/airport/CLT/flights-numbers?month=6

Example response

Status	Response

200	```
	{
	    "cancelled": 1,
	    "on time": 31,
	    "delayed": 14
	}
	``

400	{"error":"Content-type specified is not available."}
400	{"error":"Invalid/Missing month."}
404	{"error":"Resource not found."}
500	{"error":"Internal server error. Please try again later.}

6. Number of minutes of delay

6.1 **GET:** Retrieve the number of minutes of delay per carrier attributed to carrier-specific reasons (i.e. attributes carrier and late aircraft in the dataset)/ all reasons, for a given month/ all months available for a specific airport/ across all US airports.

Request structure

Method	URL
GET	`api/carrier-delays-minutes/<carrier_code>?specific=<specific_reason>&` `airport=<code_airport>&month=<month>&content-type=<content-type>`

Type	Params	Values
URL_PARAM	carrier_code	string
URL_QUERY	specific_reason	boolean
URL_QUERY	code_airport	string *If none specified, will retrieve for ALL AIRPORTS*
URL_QUERY	month	string *If none specified, will retrieve for ALL MONTHS*
URL_QUERY	content-type	string *If none specified, default is "JSON"*

Method	URL
GET	api/carrier-delays-minutes/CO?specific=true&airport=CLT&month=(

Example response

Status	Response
200	```{ "late aircraft": 93, "carrier": 77 }```
400	{"error":"Content-type specified is not available."}
400	{"error":"Invalid/Missing month."}
404	{"error":"Resource not found."}
500	{"error":"Internal server error. Please try again later.}

7. Descriptive statistics

7.1 **GET:** Retrieve the descriptive statistics (mean, median, standard deviation) for carrier-specific delays for a flight between any two airports in the USA for a specific carrier/ all carriers serving this route.

Request structure

Method	URL
GET	api/descriptive-statistics?carrier=<carrier_code>&content-type=<content-type>

Type	Params	Values
URL_QUERY	carrier_code	String *If none specified, will retrieve for ALL CARRIERS
URL_QUERY	content-type	string *If none specified, default is "JSON"*

Example request

Method	URL
GET	api/descriptive-statistics?carrier=CO

Example response

Status	Response

200	```
	{
	    "mean": 34.3,
	    "median": 45.5,
	    "standard deviation": 2.3,
	}
	``

400	{"error":"Content-type specified is not available."}
404	{"error":"Resource not found."}
500	{"error":"Internal server error. Please try again later.}