

Working with APIs in R: Takeaways

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Syntax

- Loading APIs library:

```
library(httr)
```

- Preparing the URL:

```
url <- modify_url(baseUrl, path = endpoint)
```

- Querying APIs and getting responses with the GET requests:

```
response <- GET(url, query = queries)
```

- Tracking errors:

```
http_error(response)
status_code(response)
http_type(response)
```

- Extracting content:

```
json_text <- content(response, as = "text")
```

- Converting content into a DataFrame:

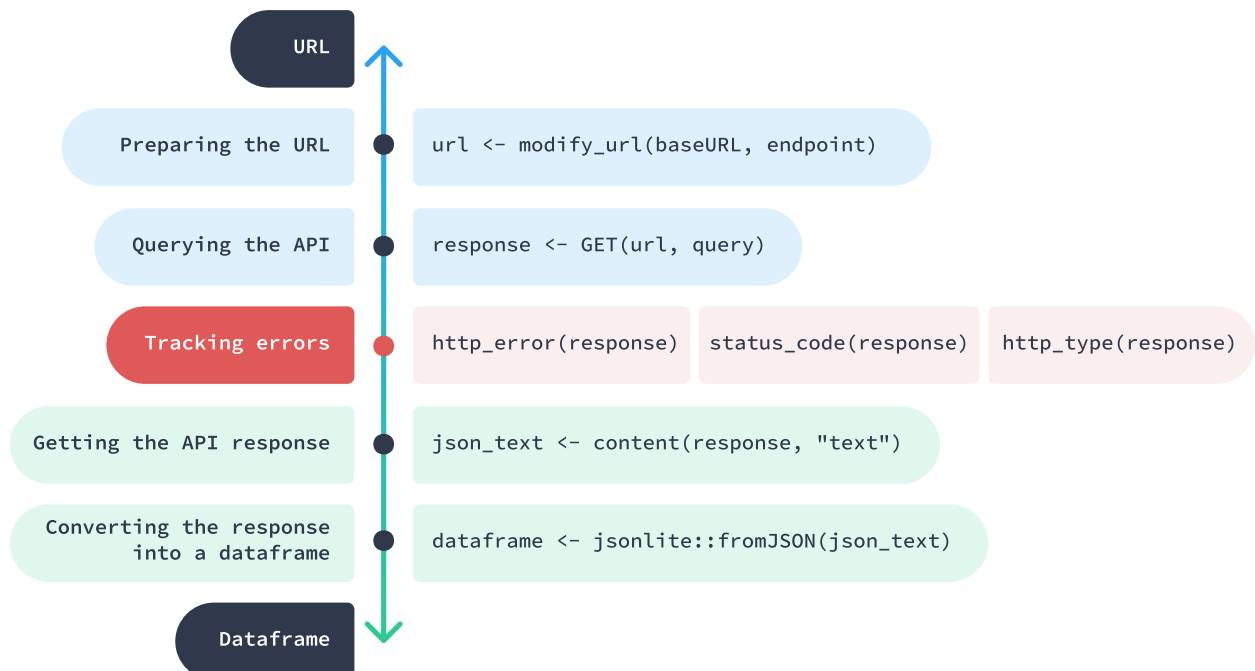
```
dataframe <- jsonlite::fromJSON(json_text)
```

- Accessing World Bank APIs using the function we built:

```
wb_api_json_get_df <- function(endpoint) {
  # Preparing the URL
  url <- modify_url("http://api.worldbank.org", path = endpoint)
  # API requests
  response <- GET(url)
  # Tracking errors
  if ( http_error(response) ){
    print(status_code(response))
    stop("Something went wrong.", call. = FALSE)
  }
  if (http_type(response) != "application/json") {
    stop("API did not return json", call. = FALSE)
  }
  # Extracting content
  json_text <- content(response, "text")
  # Converting content into Dataframe
  dataframe <- jsonlite::fromJSON(json_text)
  # Return the dataframe
  dataframe[[2]]
}
```

Concepts

- An application program interface (API) is a set of methods and tools that allows different applications to interact. Web servers host APIs.
- Programmers use APIs to retrieve data as it becomes available, which allows the client to quickly and effectively retrieve data that changes frequently.
- JavaScript Object Notation (JSON) format is the primary format for sending and receiving data through APIs. JSON encodes data structures like lists of values and collections of name/value pairs.
- We use the `httr` library to communicate with the web server and retrieve the data.
- An endpoint is a server route for retrieving specific data from an API.
- Web servers return status codes every time they receive an API request.
- Status codes that are relevant to GET requests include the following:
 - `200` — everything went as expected, and the server returned a result.
 - `301` — the server is redirecting us to a different endpoint. This can happen when a company switches domain names or an endpoint's name has changed.
 - `401` — the server thinks we're not authenticated. This happens when we don't supply the correct credentials.
 - `400` — the server thinks we made a bad request. This can happen when we don't send the information the API requires to process our request.
 - `403` — the resource we're trying to access is forbidden, and we don't have the right permissions to see it.
 - `404` — the server didn't find the resource we tried to access.
- Here are four necessary steps to extract data using APIs.



Resources

- [Requests library Documentation](#)
- [List of public APIs](#)

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