Automation Testing

REST Basics

A Day in the Life of an Automation Test Engineer

Thomas would like to create a website for his restaurant where customers can book reservations, order take-away, and leave feedback.

He would also like to allow customers to perform these actions on third-party websites and food delivery apps.

To achieve this, he must make use of the power and flexibility of APIs.

Learning Objectives

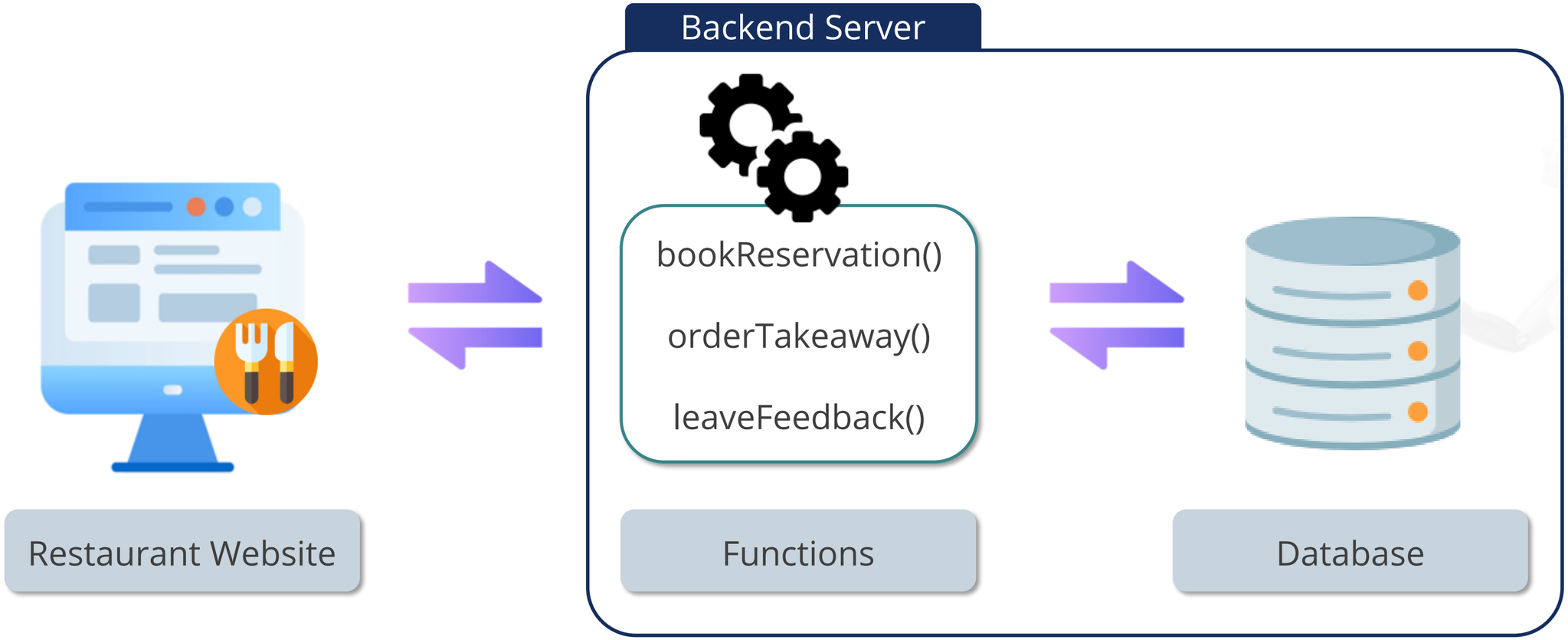
By the end of this lesson, you will be able to:

- Analyze how APIs work and how they are useful
- Explain RESTful APIs
- List the elements of RESTful architecture

What Is REST?

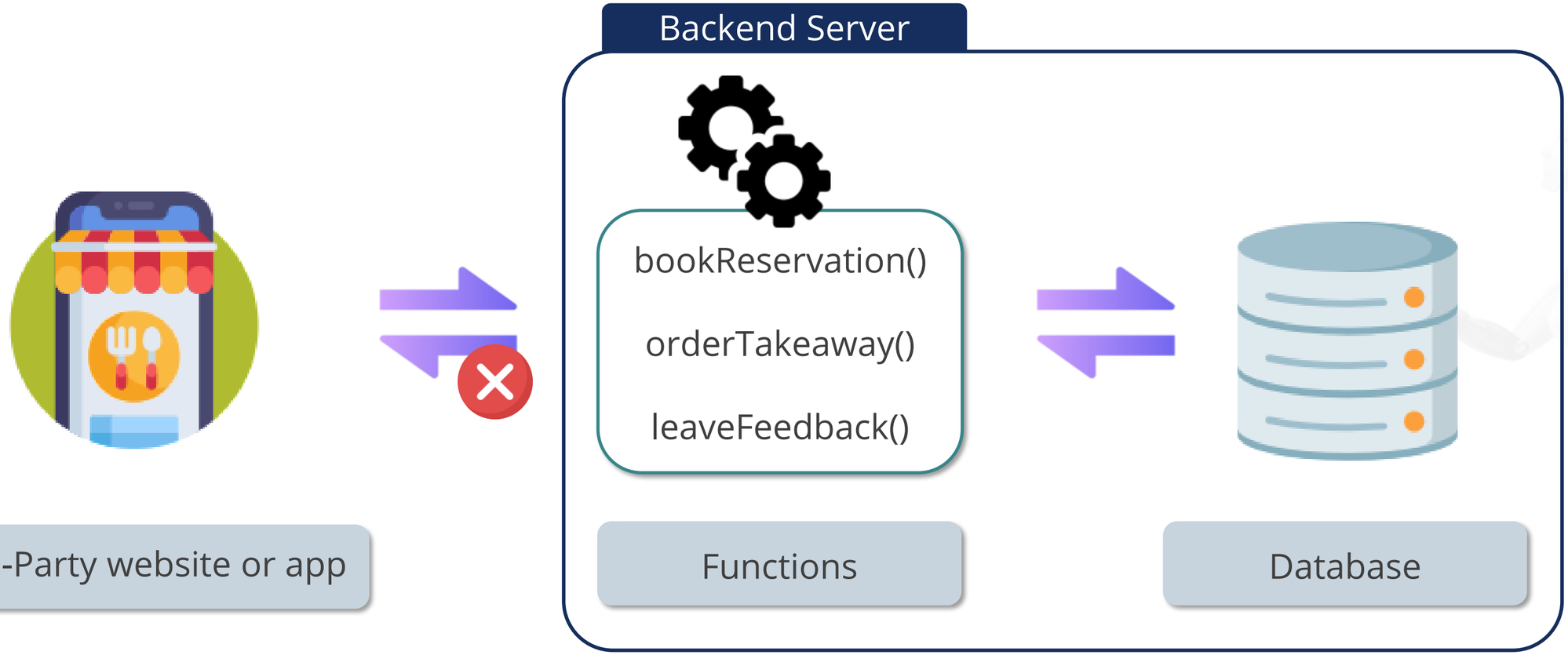
Need for APIs

In this system, the frontend directly interacts with the backend functions.



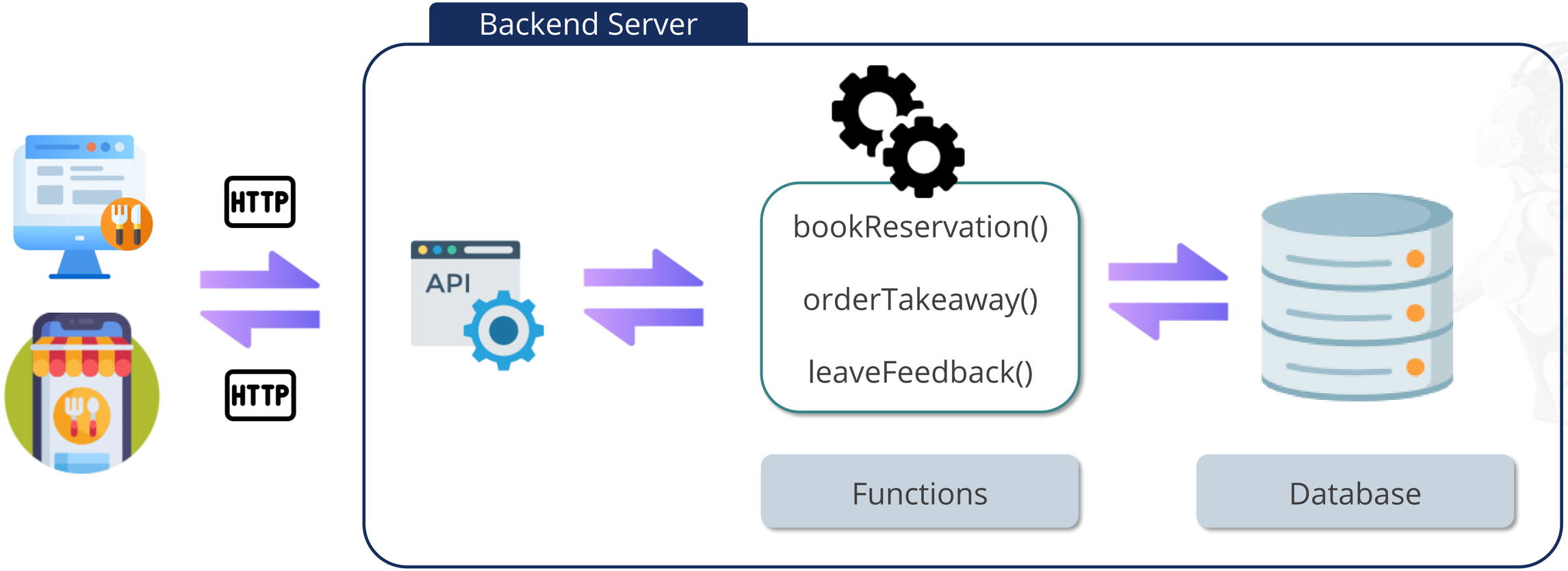
Need for APIs

This system would not work with a third-party website or app.



Need for APIs

An Application Programming Interface (API) would allow the restaurant backend to work with any frontend system.



REST APIs

A REST API is one which follows the REST architectural framework.

REST corresponds to a set of principles and constraints

REST APIs are comparatively lightweight and flexible

REST APIs are relatively easy to build and maintain

Elements of REST Architecture

Elements of REST Architecture

The following are the elements comprising REST Architecture:

Uniform Interface

Stateless

Cacheable

Client-Server

Layered

HTTP Request and Response Formats

HTTP requests and responses are in a fixed format, specifically either JSON or XML.

Example:

```
{"booking" : {
      "booking_num" : "12112",
      "name" : "Jane Doe",
      "phone" : "4774722213",
      "table_num" : "4",
      "date" : "04-12-2022",
      "time" : "1330"}
}
```

Example:

```
<booking>
      <booking_num>12112</booking_num>
      <name>Jane Doe</name>
      <phone>4774722213</phone>
      <table_num>4</table_num>
      <date>04-12-2022</date>
      <time>1330</time>
</booking>
```

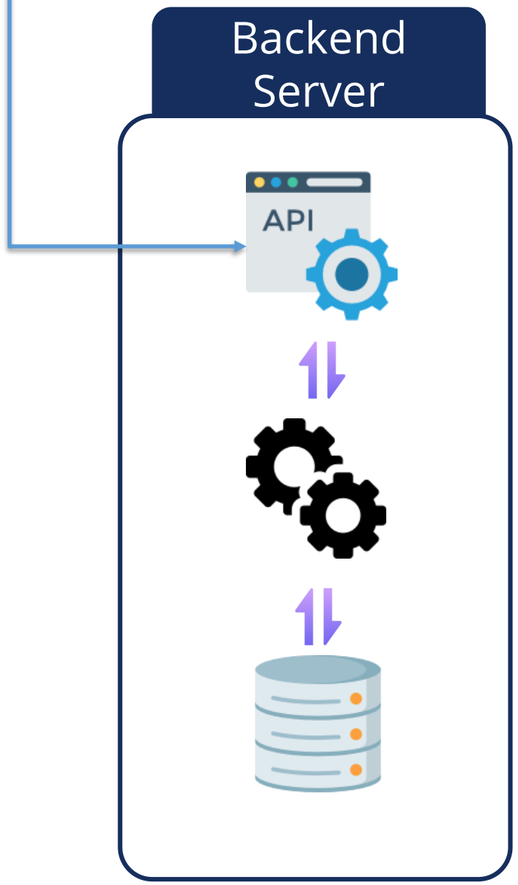
HTTP Methods and CRUD Operations

The four HTTP methods used with REST APIs directly correspond to the four CRUD operations:

HTTP methods			CRUD operations
	POST		Create
	GET		Retrieve
	PUT		Update
	DELETE		Delete

Endpoint

The REST Endpoint is where the REST API resides inside the backend server.

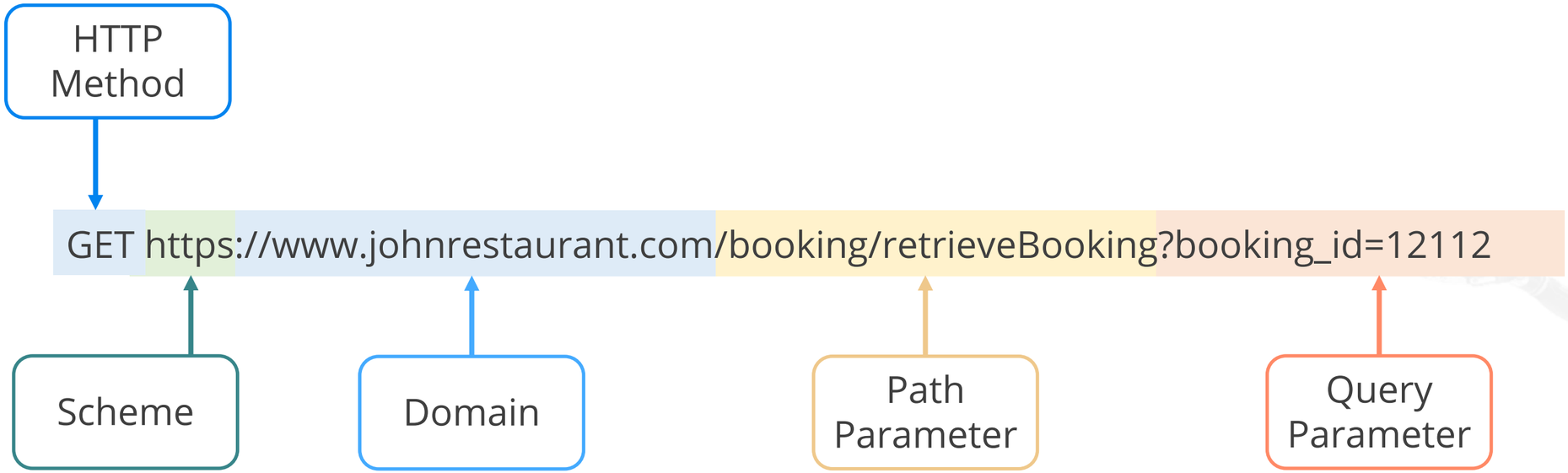


The Endpoint URL is used to call the specific API resource.

Example:
https://www.johnrestaurant/booking

Endpoint URI Components

Here is an example of an endpoint URI:



Key Takeaways

- APIs are essential if the functions of a backend server need to be safely exposed to all potential frontends.
- APIs provide flexibility and language agnosticism.
- REST stands for Representational State Transfer and is a set of architectural principles.
- REST makes use of JSON or XML format when dealing with HTTP requests and responses.
- A user can access an API using its endpoint URI.