

Using Python to write SQL and
web API queries

What is Python?

- ◇ Very popular high-level programming language
- ◇ High readability → ideal for rapid application development
- ◇ Many applications: web development, scientific computing, artificial intelligence...

Lists and for-loops

List

- ◇ We can define lists that contain multiple objects
- ◇ Lists can be used to store information
- ◇ Example:

```
my_list = [1,2,3,4,5]
```

For-loop

- ◇ We can use a for-loop to iterate over the elements in our lists
- ◇ Example:

```
my_list = [1,2,3,4,5]  
for number in my_list:  
    print(number)
```

Functions

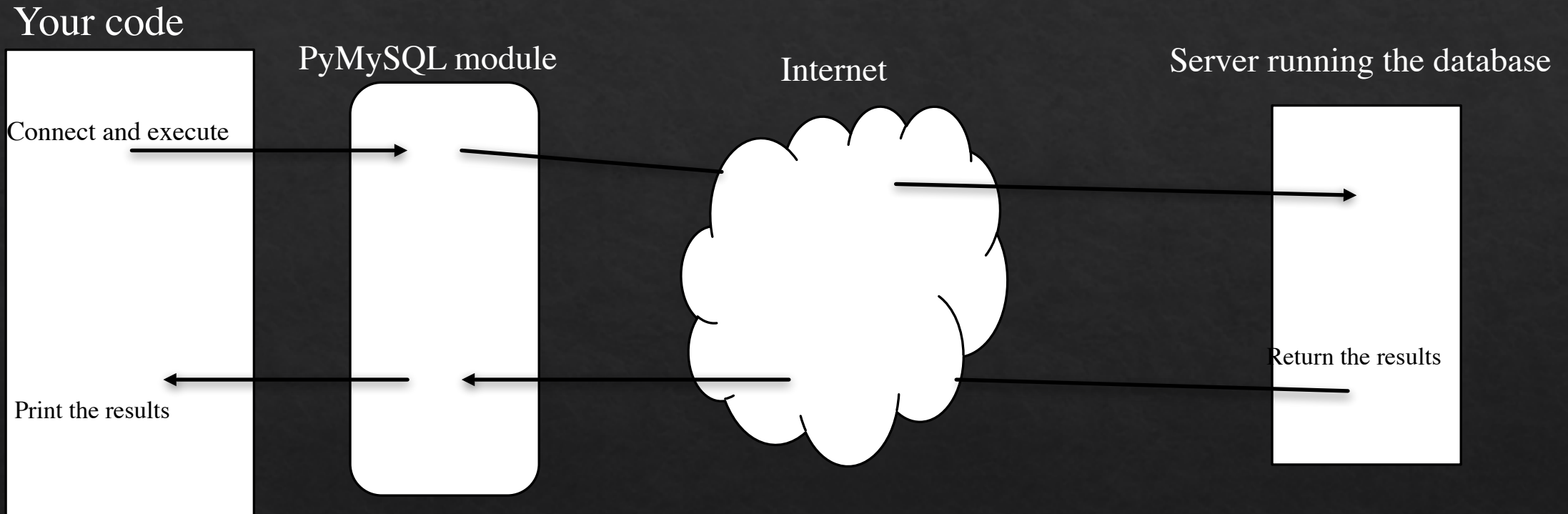
- ◇ Function is a block of code, that can be reused
- ◇ Functions are used to increase modularity
- ◇ Example

```
def my_function():  
    my_list = range(1, 6)  
    for number in my_list:  
        print(number)
```

SQL queries

- ◇ Python doesn't have a built-in connector to connect to a database, so we have to use an external module called PyMySQL
- ◇ This module contains functions that we can use to connect to a database and execute SQL queries

High-level action diagram



Small exercises

- ◇ Print the price of Tofu
- ◇ Print all the names of the products that cost more than 50€
- ◇ Print the ordering date of the order with id 100
- ◇ Print the home country of Helen Bennett

- ◇ Tables:
 - ◇ Product(Id, ProductName, SupplierId, UnitPrice, Package, IsDiscontinued)
 - ◇ orders(Id, OrderDate, OrderNumber, CustomerId, TotalAmount)
 - ◇ OrderItem(Id, OrderId, ProductId, UnitPrice, Quantity)
 - ◇ customer(Id, FirstName, LastName, City, Country, Phone)

- ◇ Database url: aaltoddb.cyzeylgjauci.eu-central-1.rds.amazonaws.com

Web API requests

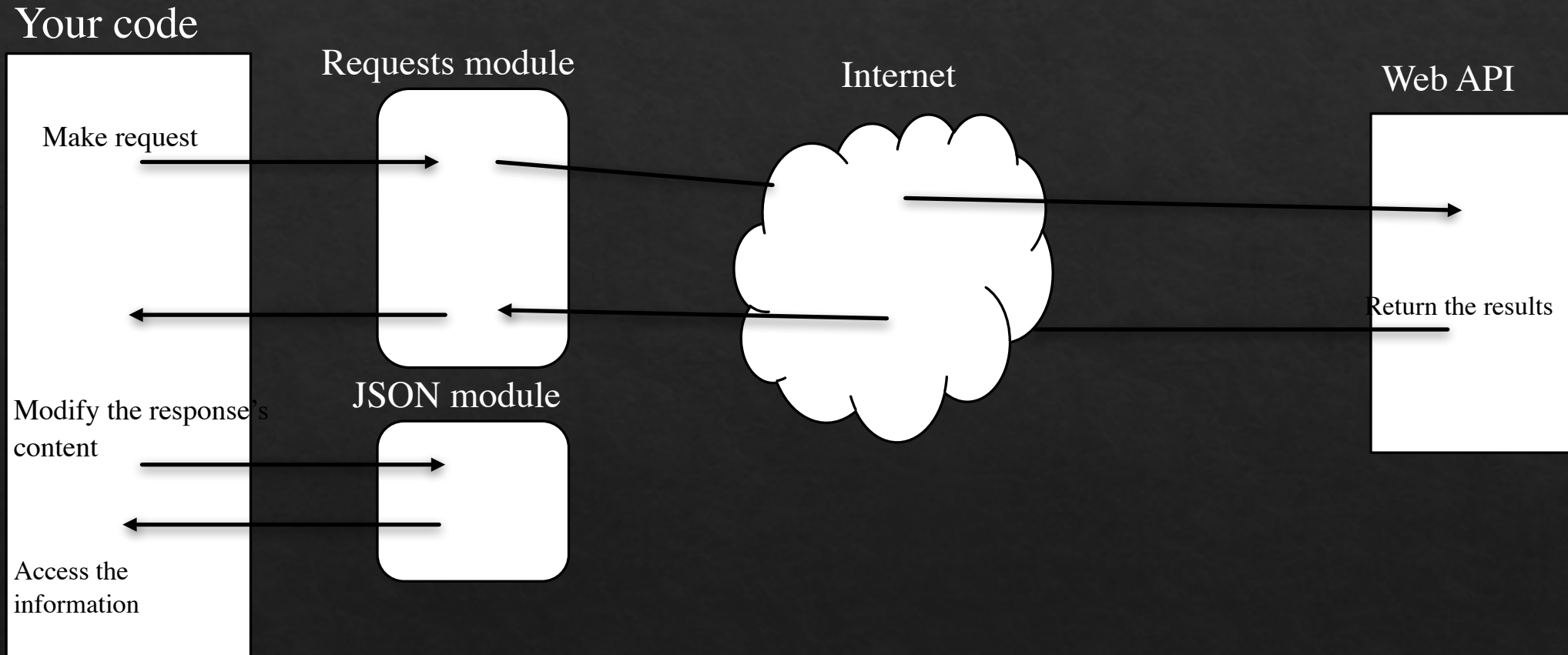
What is a web API?

- ◊ Web API(Application Programming Interface) is an interface which has exposed endpoints that can be requested
- ◊ To put it simply: we can get create requests to the API and the API will respond with the information that we requested
- ◊ The response is usually in JSON format

Requests with Python

- ◊ Similarly to SQL queries, we have to use an external module to make API requests
- ◊ We'll be using a module called requests
- ◊ We'll be also using a module called json to help us print the response

High-level action diagram



Exercises

- ◇ Print historical prices for Apple stock
 - ◇ Post "Hello World!" to the Slack channel
 - ◇ Fetch the price of Chang from the database and post that to the Slack channel
 - ◇ If you have time: Print the price of the Apple stock on 11.01.2018
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- ◇ Alpha Vantage API:n url: https://www.alphavantage.co/query?function=TIME_SERIES_DAILY&symbol=AMZN&apikey=ROSL9OWEWZ20JFBP
 - ◇ Slack hook: <https://hooks.slack.com/services/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>