

# Client Server Architecture



**Client**

**request**



**response**



**Server**

# XML v/s JSON

```
<Information db="dbXML" network="HMO">
  <Dept id="1559" branch="Cola" specialist="Int Med">
    <PatientList>
      <PatInfo>
        <Patient ssn="1237435" dob="01/01/1950">
          <Name>
            <First>John</First>
            <Last>Fisher</Last>
          </Name>
          <Visit no="2" date="06/12/2004">
            <Problems>Headache</Problems>
            <Provider hospital="Baptist">
              <Physician>Dr. Mark Winderip</Physician>
            </Provider>
            <Diagnosis>
              <Prescription>Tylenol</Prescription>
              <Allergy>Sugar</Allergy>
            </Diagnosis>
          </Visit>
        </Patient>
      </PatInfo>
    </PatientList>
  </Dept>
</Information>
```

**XML (Extensible Markup Language)**

```
{
  "id": 1,
  "name": "Leanne Graham",
  "username": "Bret",
  "email": "Sincere@april.biz",
  "address": {
    "street": "Kulas Light",
    "suite": "Apt. 556",
    "city": "Gwenborough",
    "zipcode": "92998-3874",
    "geo": {
      "lat": "-37.3159",
      "lng": "81.1496"
    }
  },
  "phone": "1-770-736-8031 x56442",
  "website": "hildegard.org",
  "company": {
    "name": "Romaguera-Crona",
    "catchPhrase": "Multi-layered client-server neural-net",
    "bs": "harness real-time e-markets"
  }
}
```

**JSON (JavaScript Object Notation)**

# JSON

- ❑ JSON stands for JavaScript Object Notation.
- ❑ It's a lightweight data format used to store and exchange data — like sending data between a browser and a server.

```
// JavaScript Object
const user = {
  name: "Manas",
  age: 25,
  isStudent: true
};

// JSON version (as a string)
const jsonUser = `{
  "name": "Manas",
  "age": 25,
  "isStudent": true
}`;
```

## Note:

- ❑ Keys and string values are wrapped in double quotes.
- ❑ It's a string, not an object

# Convert Between JS and JSON

```
// Convert object to JSON
const jsonData = JSON.stringify(user);

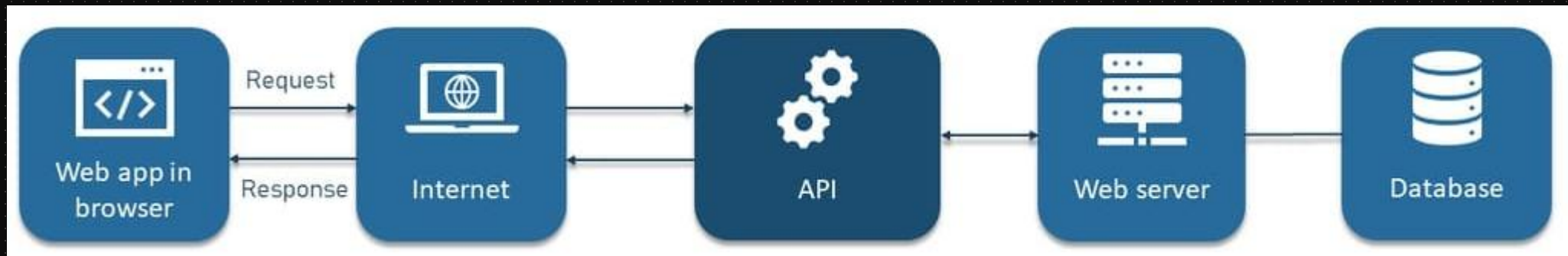
// Convert JSON to object
const jsObject = JSON.parse(jsonData);
```

Use `JSON.stringify()` and `JSON.parse()`:

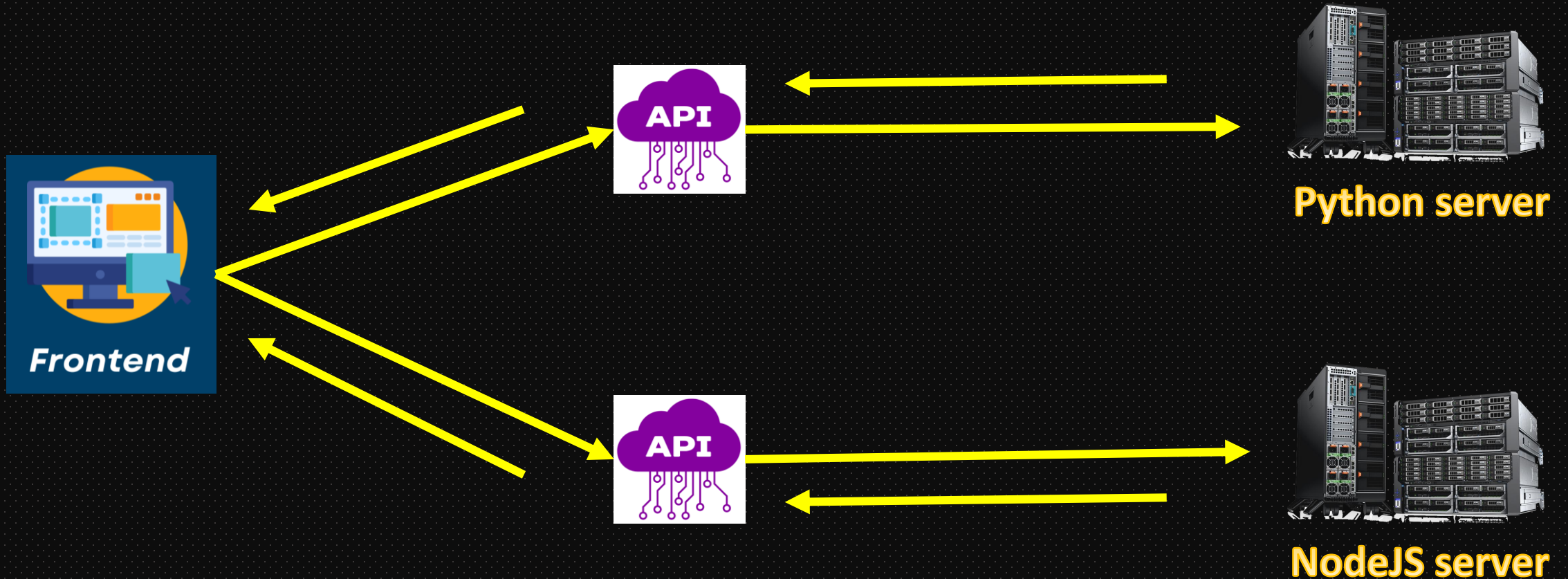
- ❑ `stringify()` → Object to JSON string
- ❑ `parse()` → JSON string to Object

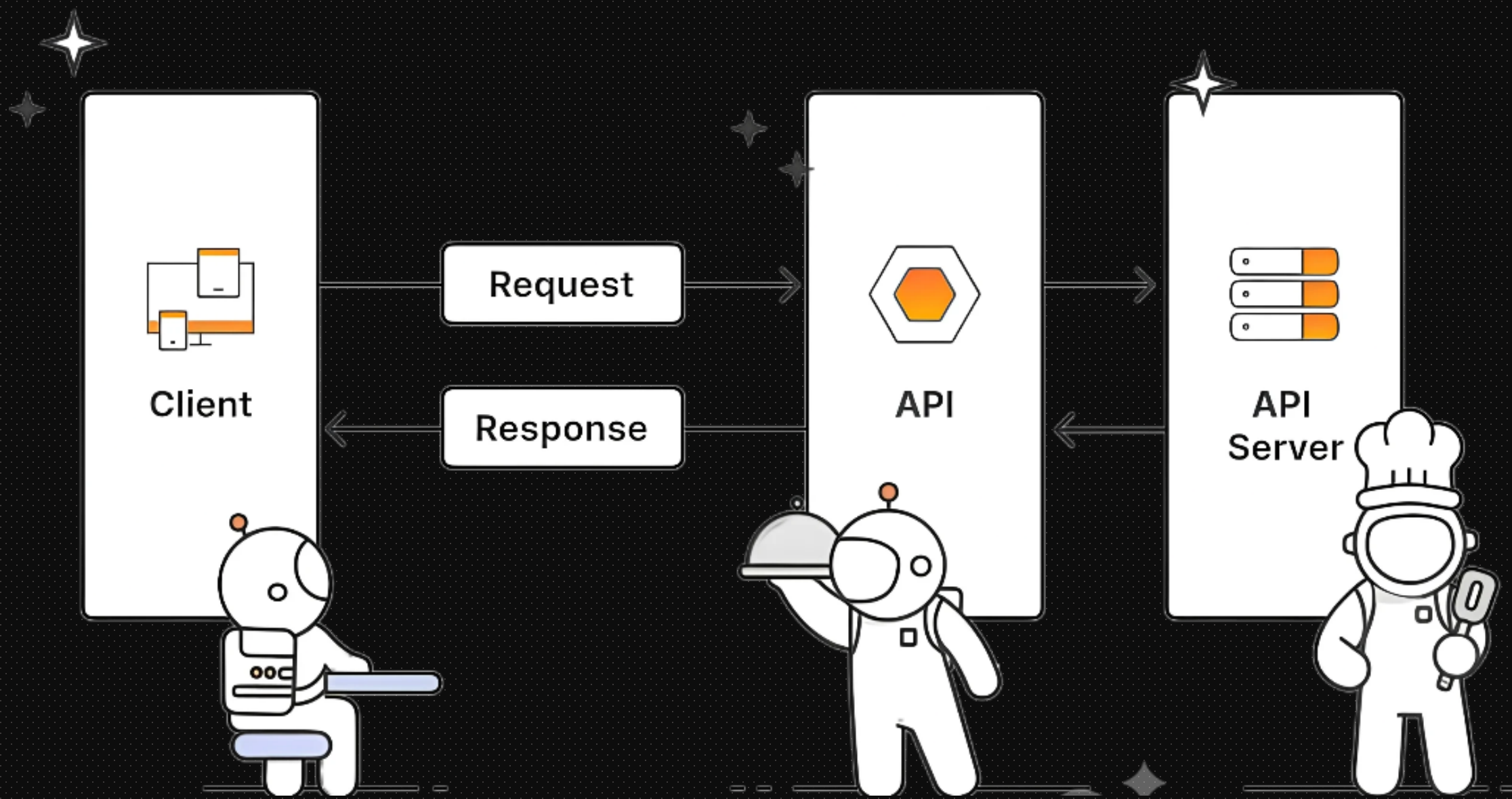
# API

- ❑ API stands for Application Programming Interface.
- ❑ Application Programming Interface, is a set of rules and protocols that allows different software applications to communicate and interact with each other.



# Communication between different languages/systems





# API





## API Uses:

1. Communication between different languages/systems
2. Controlled, secure access to data
3. Monitoring & analytics
4. Faster development with third-party services
5. Automation & integration
6. Microservices architecture
7. Easy scaling and maintenance