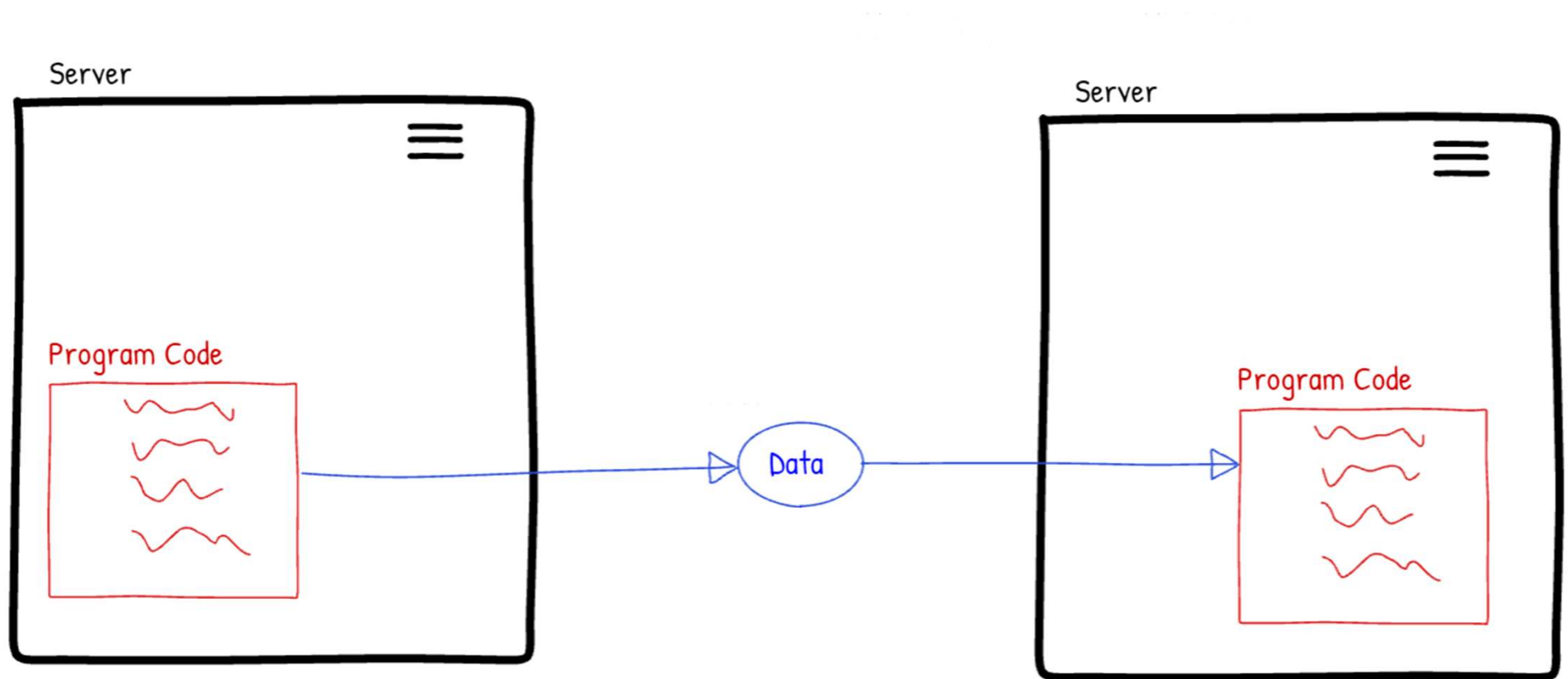


REST

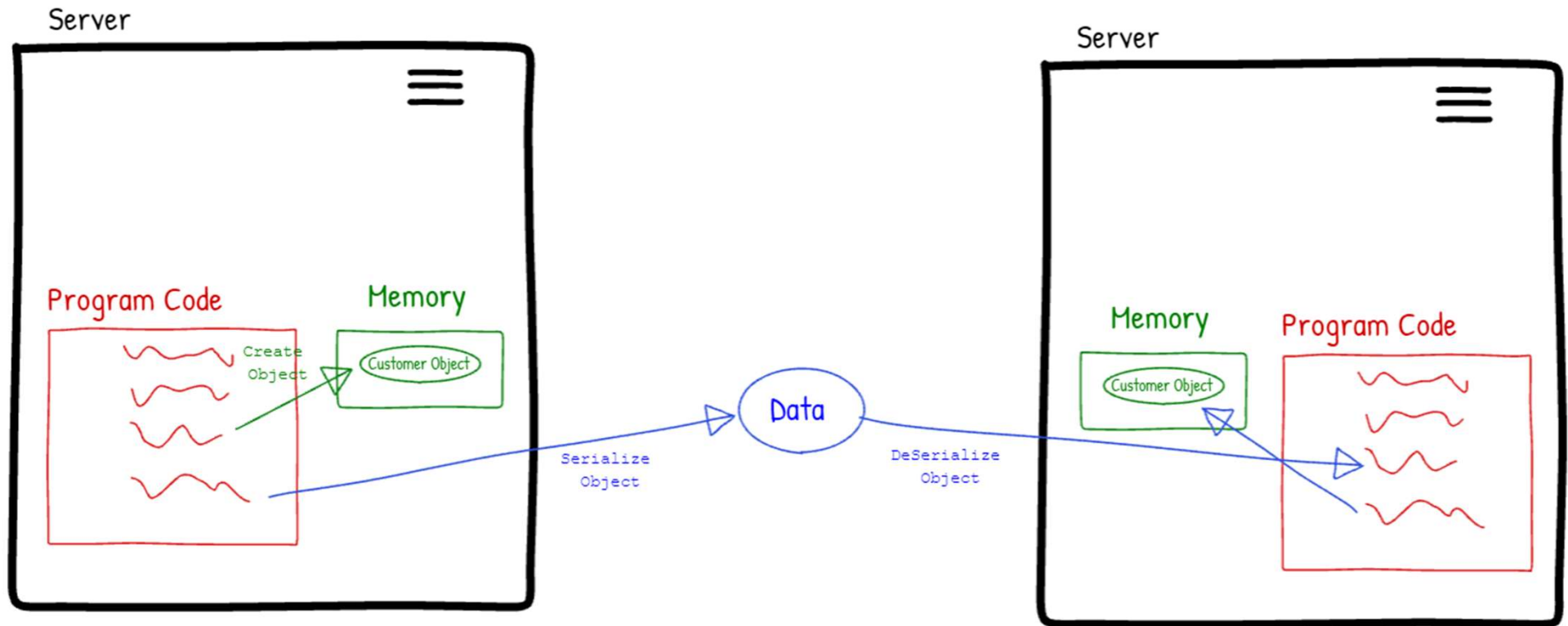
Representational State Transfer

by Mark Walsh (AIICT)

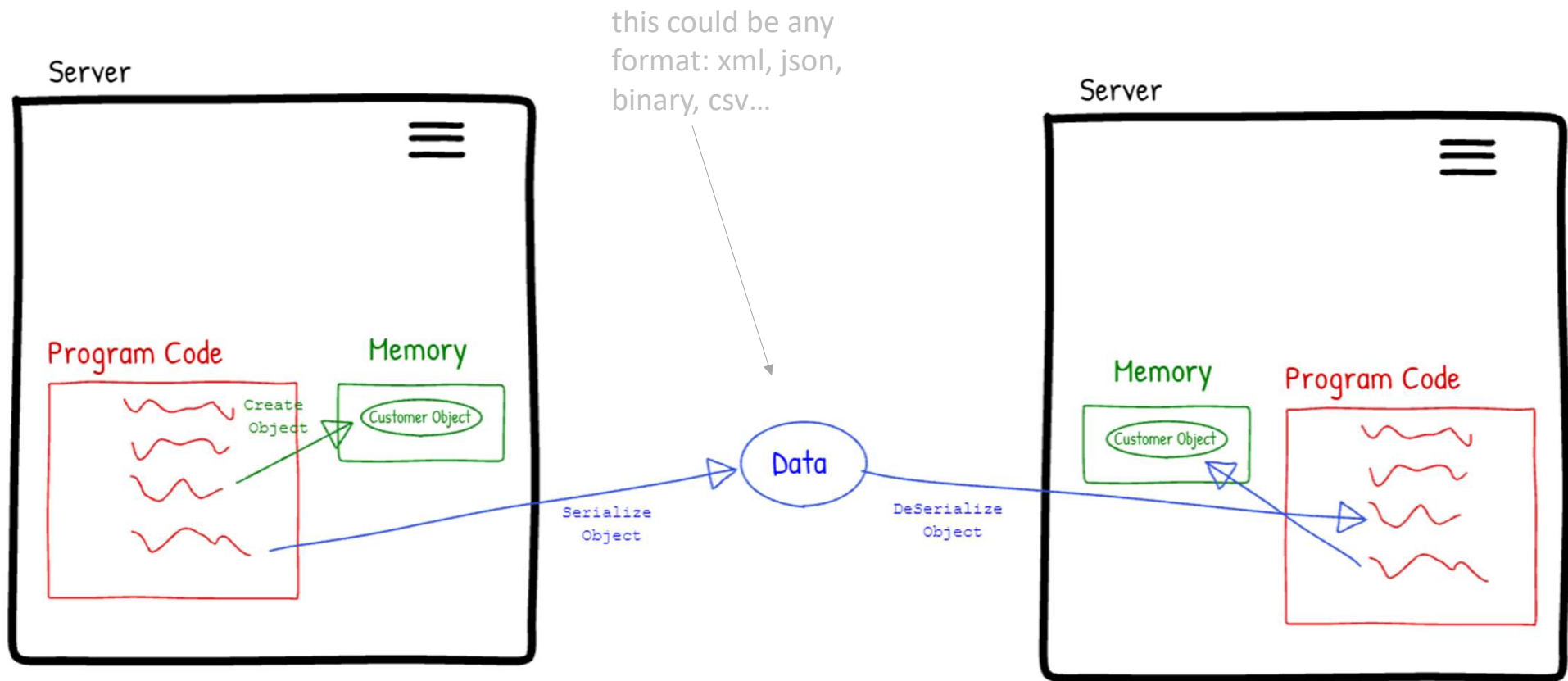
How does a program send an object to another program?



How does a program send an object to another program?



How does a program send an object to another program?



What is XML?

XML = eXtensible Markup Language

XML is not a language

Languages (e.g. Chemical Markup Language) use an XML syntax

XML is typically used to hold structured data

XML has a few key concepts:

- Elements
- Attributes
- Content

What is JSON?

JSON = JavaScript Object Notation

JSON is typically used to hold structured data

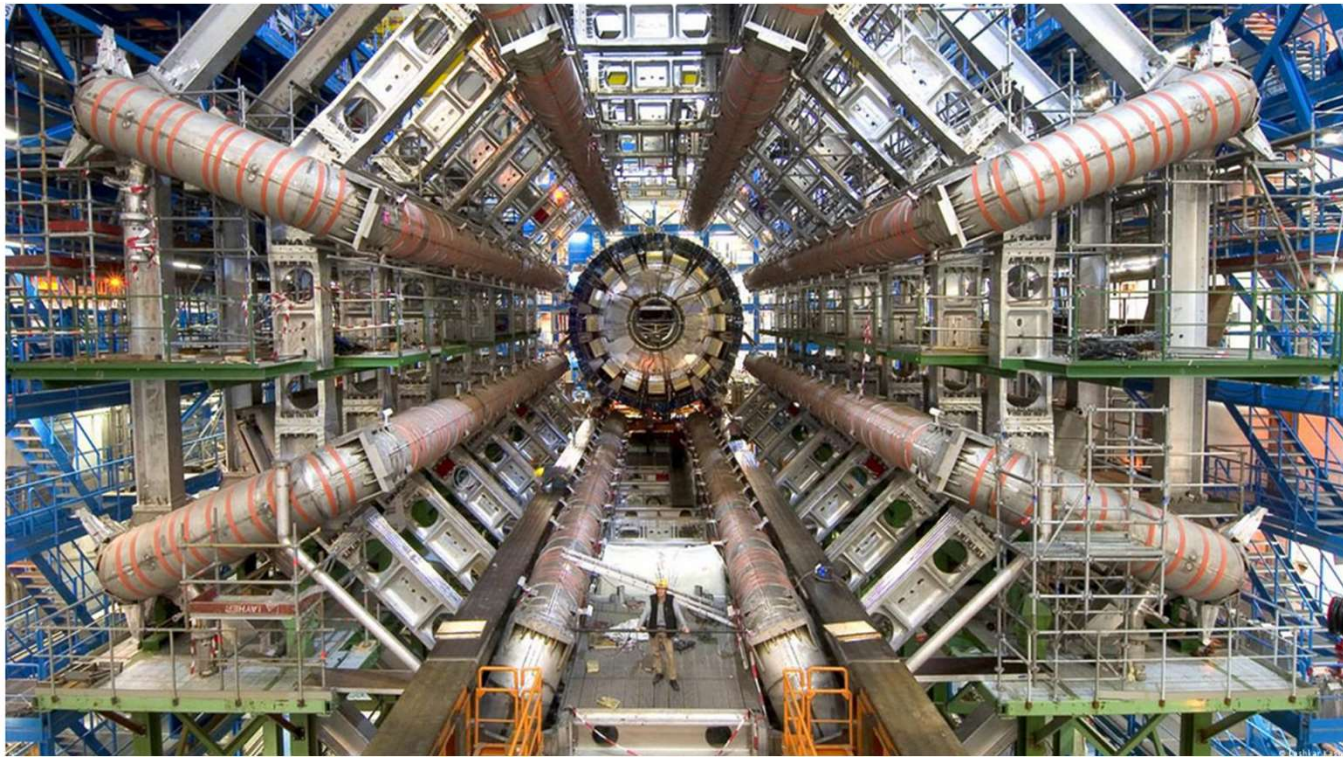
JSON has a few key concepts:

- Key-Value pairs
- DataTypes
 - strings
 - numbers
 - objects
 - arrays
 - Booleans (true or false)
 - null
- Nested Objects
- Nested Arrays

What is JSON?

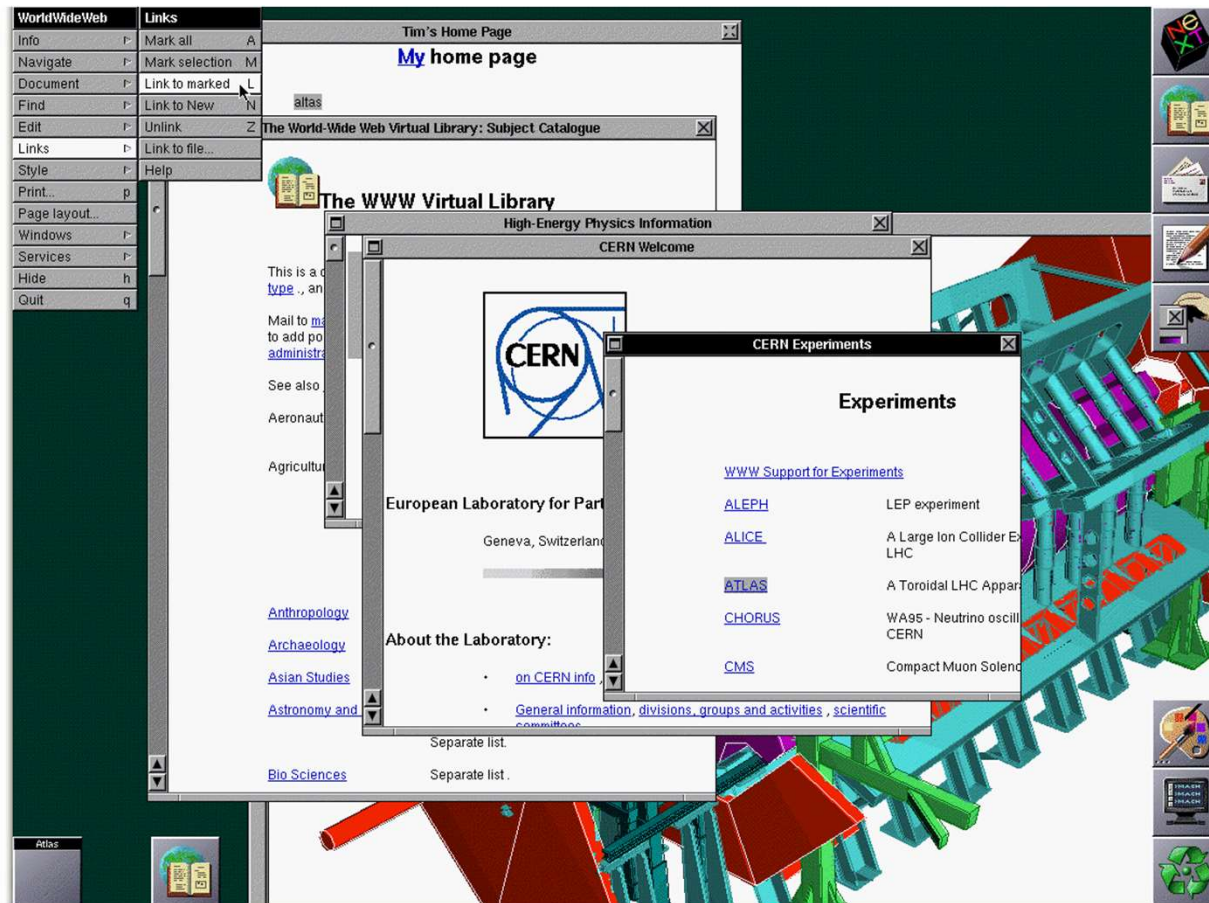
```
{
  "first_name" : "Hunstman",
  "last_name" : "Spider",
  "location" : "In Your Car",
  "websites" : [
    {
      "description" : "work",
      "URL" : "https://aiict.edu.au/"
    },
    {
      "description" : "tutorials",
      "URL" : "https://www.aiict.edu.au/community/tutorials"
    }
  ],
  "social_media" : [
    {
      "description" : "twitter",
      "link" : "https://twitter.com/aiict"
    },
    {
      "description" : "facebook",
      "link" : "https://www.facebook.com/aiictCloudHosting"
    },
    {
      "description" : "github",
      "link" : "https://github.com/aiict"
    }
  ]
}
```

What is 'the Internet'? What is 'the Web'?



The large Hadron Collider,
CERN

What is 'the Internet'? What is 'the Web'?

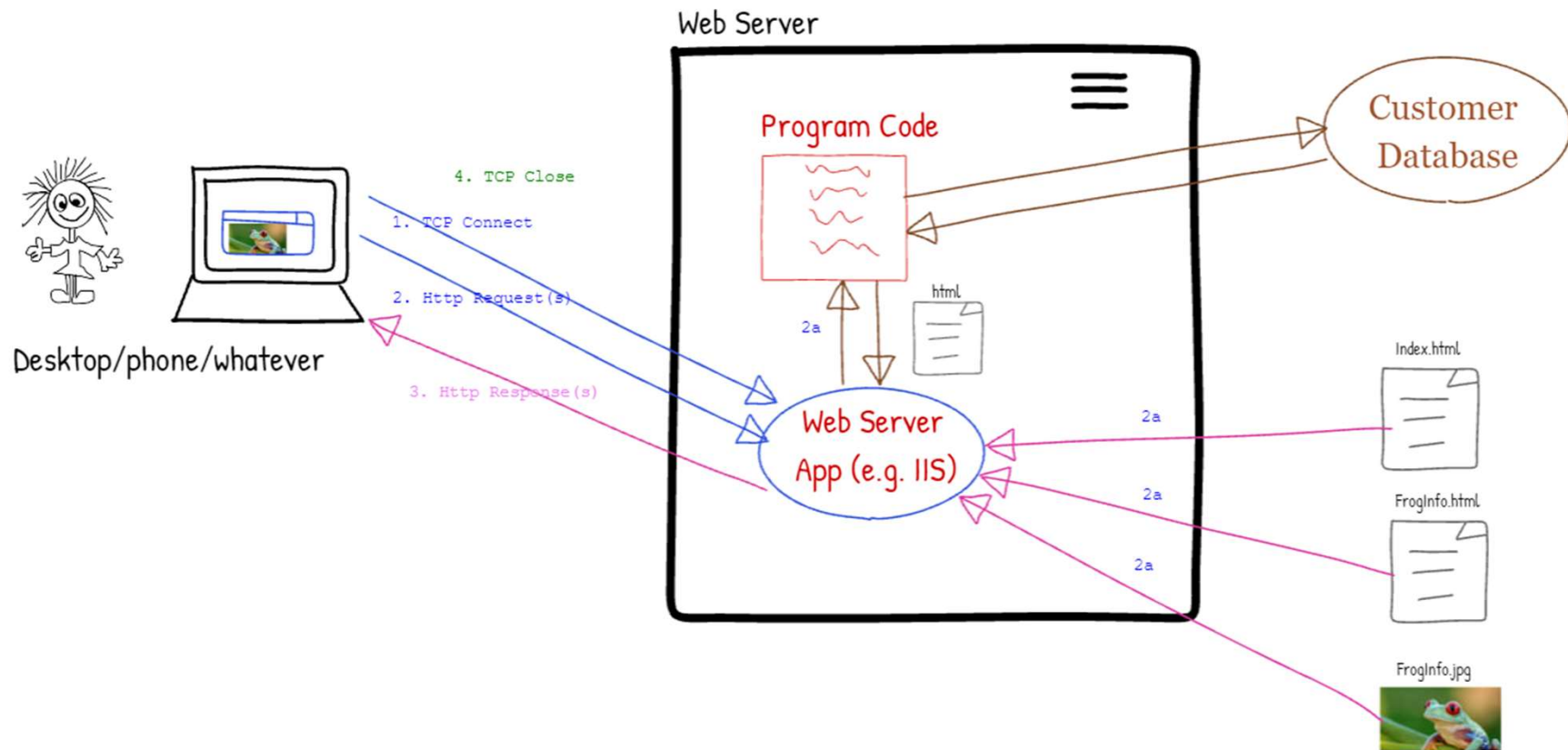


1990:

A "hypertext project" called "WorldWideWeb" in which a "web" of "hypertext documents" could be viewed by "browsers"

← The first 'browser'

Key elements of the 'the Web'



What is an API?

API = Application Programmer Interface

Not just seen in Web Applications

Is for *Application Programmers* rather than *Users*

What is REST?

REST is not a protocol

REST is not a standard

REST is not a new idea

REST is not a formula

REST is a set of semantics, REST is a style

What is REST?

Need a diagram of REST here (or several to show different Verb semantics)

What is REST?

[What is REST? | Codecademy](#)

What is Swagger?

Run API, Show swagger

[API Documentation & Design Tools for Teams | Swagger](#)

How do I call a REST API?

The older way

```
HttpWebRequest req = (HttpWebRequest)WebRequest.Create("uri goes here");  
Stream responseStream;  
  
req.Method = "GET";  
  
HttpWebResponse res = (HttpWebResponse)req.GetResponse();  
responseStream = res.GetResponseStream();  
  
StreamReader sr = new StreamReader(responseStream, Encoding.ASCII);  
  
string s = sr.ReadToEnd();
```


Let's Try it

Call Book API (the old way)

[https://www.googleapis.com/books/v1/volumes?q=isbn:*isbn-goes-here*](https://www.googleapis.com/books/v1/volumes?q=isbn:<i>isbn-goes-here</i>)

How do I call a REST API?

The newer way

```
static void Main(string[] args)
{
    Action task = new Action(RestCalls);
    Task.Run(task).Wait();
}

static async void RestCalls()
{
    HttpClient client = new HttpClient();

    Console.WriteLine("Retrieving....\n\n");
    var response = await client.GetAsync("uri goes here");
    var s = await response.Content.ReadAsStringAsync();

    Console.WriteLine($"s={s}");
}
}
```

Let's Try it

Call Book API (the new way)

[https://www.googleapis.com/books/v1/volumes?q=isbn:*isbn-goes-here*](https://www.googleapis.com/books/v1/volumes?q=isbn:<i>isbn-goes-here</i>)

Let's Try it

Draw picture of Towns & Postcodes app

Let's Try it, HTTP Get

Run API, Write Code, get one town

Let's Try it, HTTP Get

Run API, Write Code, get all towns

Let's Try it, HTTP delete

Run API, Write Code, Remove a Town

Let's Try it, HTTP Patch

Run API, Write Code, update a Town

That's all I've written