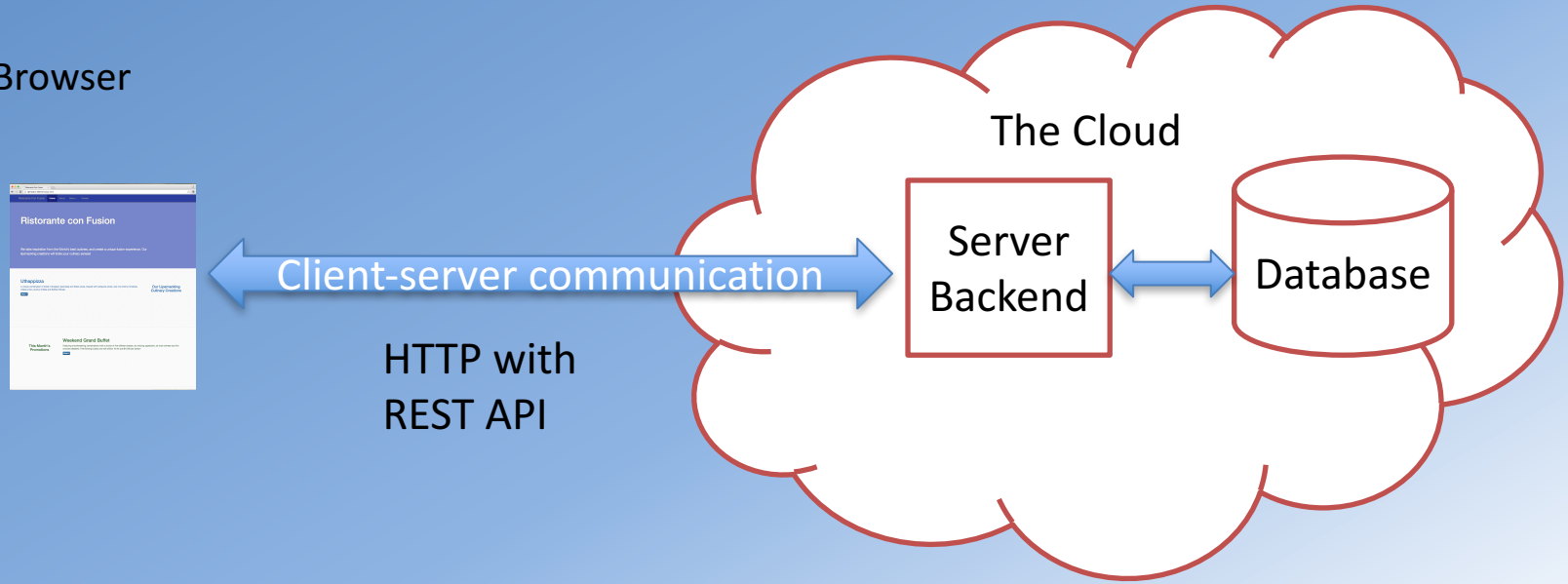
Client and Server

- Web applications are not stand-alone
- Many of them have a “Cloud” backend



The Networking Alphabet Soup

Client-Server Communication

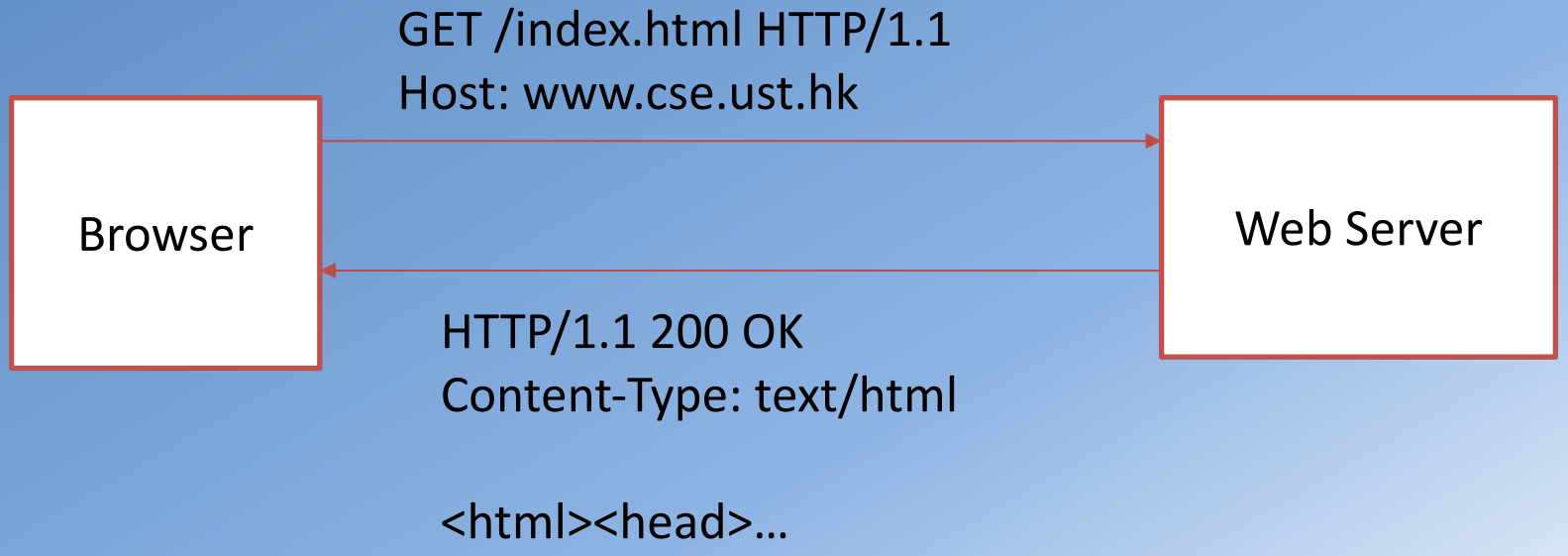
- Network operations cause unexpected delays
- You need to write applications recognizing the asynchronous nature of communication
  - Data is not instantaneously available

Hypertext Transfer Protocol (HTTP)

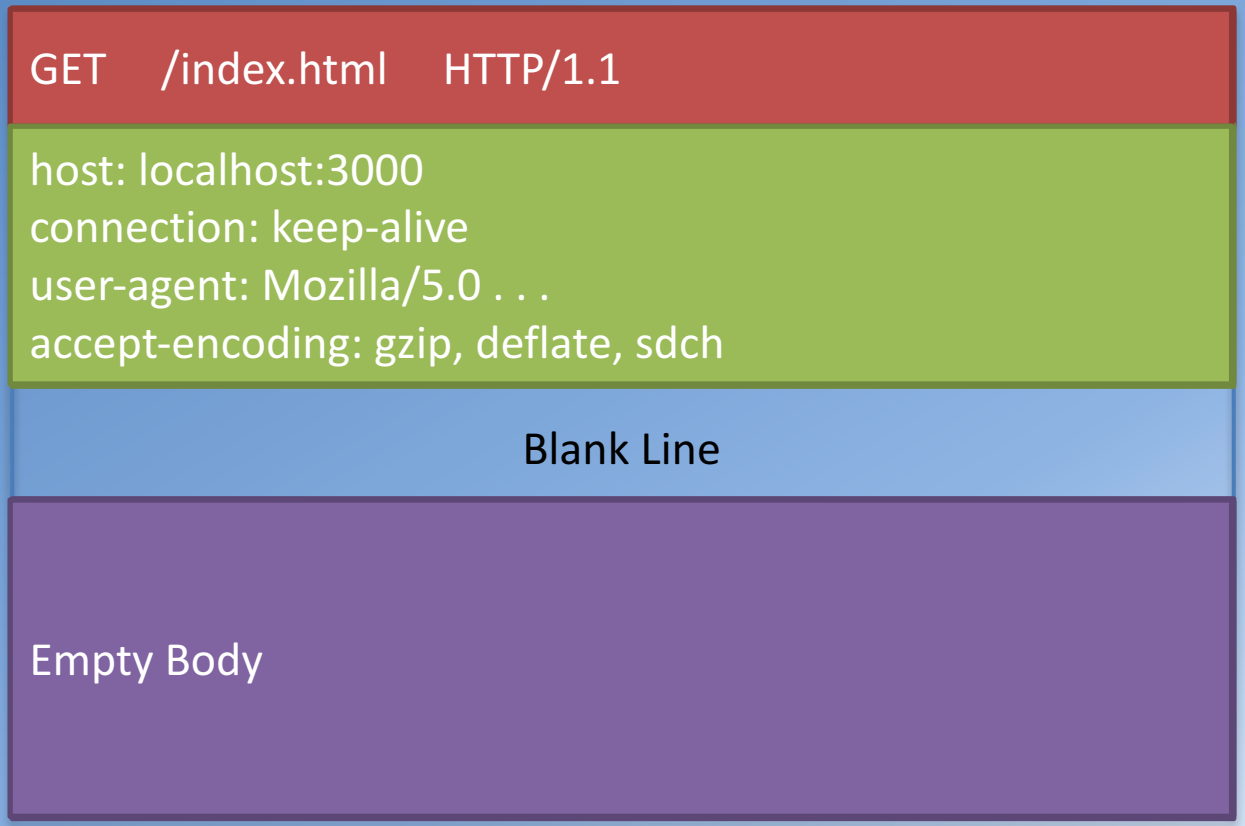
- A client-server communications protocol
- Allows retrieving inter-linked text documents (hypertext)
  - World Wide Web.

- HTTP Verbs
  - HEAD
  - GET
  - POST
  - PUT
  - DELETE
  - TRACE
  - OPTIONS
  - CONNECT

Hypertext Transfer Protocol (HTTP)



HTTP Request Message



HTTP Response Message

HTTP/1.1 200 OK

Connection: keep-alive
Content-Type: text/html
Date: Sun, 21 Feb 2016 06:01:43 GMT
Transfer-Encoding: chunked

Blank Line

<html><title>This is index.html</title><body><h1>Index.html</h1> This is the contents of this file </body></html>

HTTP Response Codes (Main ones)

Code	Meaning
200	OK
201	Created
301	Moved Permanently
304	Not Modified
400	Bad Request
401	Unauthorized
403	Forbidden
404	Not Found
422	Unprocessable Entry
500	Internal Server Error
505	HTTP Version Not Supported

HTTP Response

- Server may send back data in a specific format:
  - eXtensible Markup Language (XML)
  - Javascript Object Notation (JSON)

Javascript Object Notation (JSON)

- http://www.json.org
- Lightweight data interchange format
- Language independent *
- *Self-describing* and easy to understand

Javascript Object Notation (JSON)

- Data structured as:
  - A collection of name/value pairs
  - Ordered list of values

- Example

```
{ "promotions": [
    {
      "id": 0,
      "name": "Weekend Grand Buffet",
      "image": "images/buffet.png",
      "label": "New",
      "price": "19.99",
      "description": "Featuring mouthwatering combinations . . . "
    }
  ]
}
```