Data Representation and Querying

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About this module

Learning outcomes

On completion of this module the learner will/should be able to:

- Explain the benefits and the limitations of a variety of data models.

- Determine the most appropriate data model given a set of requirements.

- Represent, integrate and querying large datasets using existing API's and frameworks.

- Describe the principles behind both the linked data and the open data movements.

Examinations

Type	%	Date
Project	50	Week 8
End of Semester Exam	50	See exams timetable

HTTP

HyperText Transfer Protocol

HyperText Text with links.

Transfer Communication of data.

Protocol Set of rules for communication.

http://www.reddit.com:80/r/funny/?limit=1

http	Protocol
80	Port
www	Subdomain
reddit.com	Domain
/r/funny/	Path
limit=1	Parameter

Resources

File

Database

HTTP is used to transmit resources . . . A resource is some chunk of information that can be identified by a URL . . . The most common kind of resource is a file, but a resource may also be a dynamically-generated query result . . .

HTTP Methods

GET Retrieve information from the server.

HEAD Like get, but retrieve only the response header.

POST Send data to the server.

PUT Set the resource at the URI to the request data.

DELETE Delete the resource at the URI.

CONNECT Set up tunnel for other traffic to pass through HTTP.

OPTIONS Find the allowable operations at the given URI.

TRACE Echo the received request.

PATCH Partial resource modification.

Request (GET)

```
GET /path/file.html HTTP/1.0
From: someuser@jmarshall.com
User-Agent: HTTPTool/1.0
```

Response

```
HTTP/1.1 200 OK
Date: Mon, 27 Jul 2009 12:28:53 GMT
Server: Apache/2.2.14 (Win32)
Last-Modified: Wed, 22 Jul 2009 19:15:56 GMT
Content-Length: 88
Content-Type: text/html
Connection: Closed

<html>
  <body>
    <h1>Hello, World!</h1>
  </body>
</html>
```

Request (POST)

```
POST /path/script.cgi HTTP/1.0
From: frog@jmarshall.com
User-Agent: HTTPTool/1.0
Content-Type: application/x-www-form-urlencoded
Content-Length: 32

home=Cosby&favorite+flavor=flies
```

URL encoding

HTML form data is usually URL-encoded by changing;

- Unsafe characters to % xx where *xx* is the ascii value.
- All spaces to plusses.
- Names and values to: name1=value1&name2=value2.

    GET The parameters tag onto the URL with a ?, e.g.
http://www.google.ie?q=Funny+cats.

    POST Parameters go in the body.

Diagram