Contents

SECTION - HTTP BASICS

Overview of Section - HTTP Basics

- What is a Web Application?
- What is an HTTP Request?
- Viewing/Making HTTP Requests in Browser
- Using Browser Dev Tools

Exercises: in browser - GET, viewing traffic, Ajax requests

What is a Web Application?

- A web hosted HTTP accessed application with a GUI and possibly an API

Examples of Web Applications

- Google
- Twitter
- etc.

Overview - Browser - Web Application

Example - A Web Application

- Diagram showing browser making GET, POST requests to Server

What is HTTP?

- Verbs - GET, POST, DELETE, PUT, HEAD, OPTIONS, PATCH
- URL (URI)
- Headers - cookies, accept formats, user agent, content of message, authentication, etc.
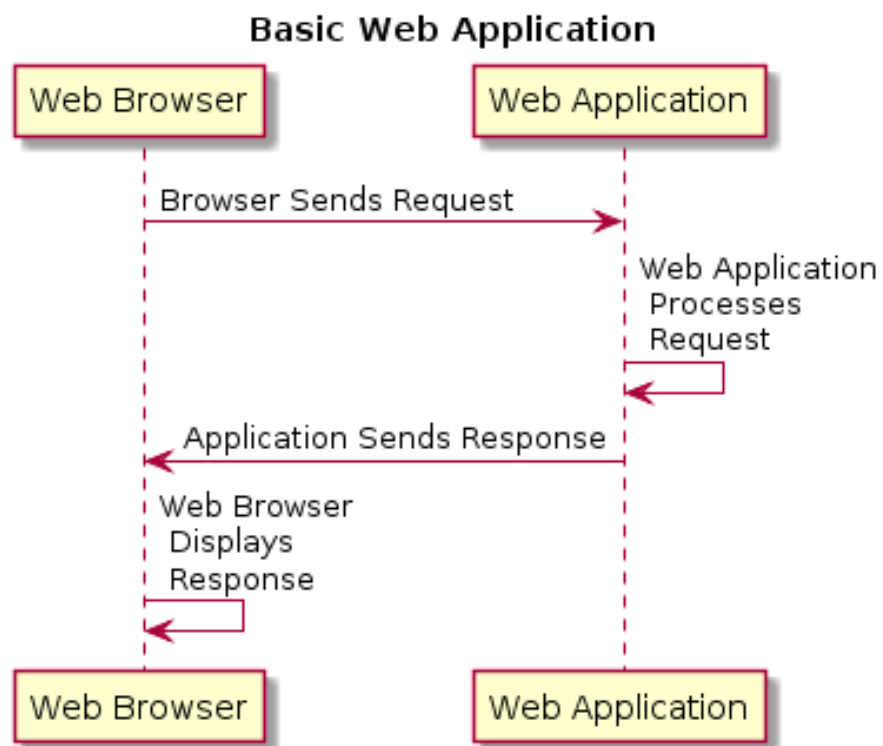- Data contained in message body - Form, JSON, XML
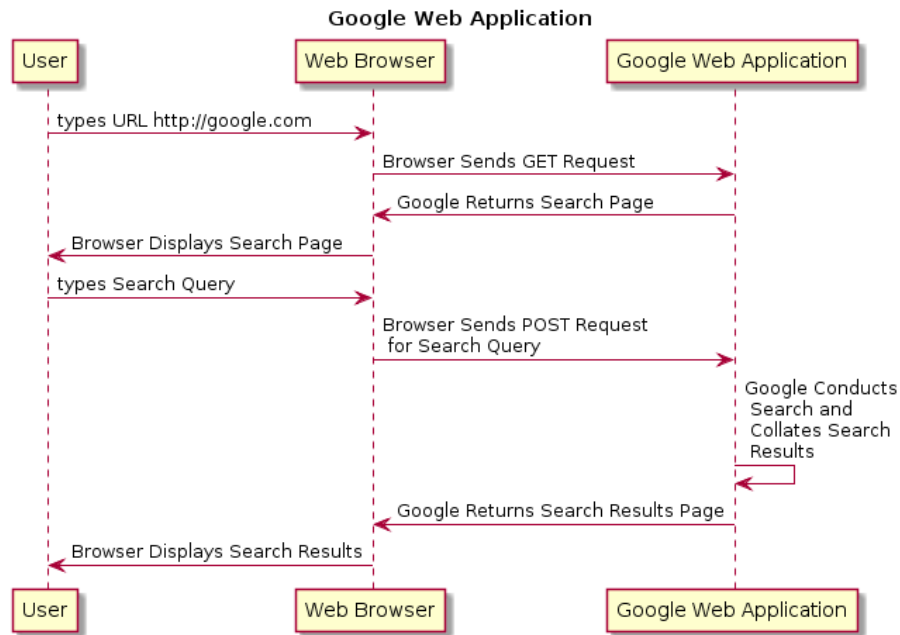
Figure 1: Browser to Web Application

Figure 2: A Web Application

Example HTTP Request

use browser to GET http://compendiumdev.co.uk/apps/api/mock/reflect

Formatted for readability - headers are normally on one line.

```
GET http://compendiumdev.co.uk/apps/api/mock/reflect HTTP/1.1
Host: compendiumdev.co.uk
Connection: keep-alive
Cache-Control: max-age=0
User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64)
            AppleWebKit/537.36 (KHTML, like Gecko)
            Chrome/60.0.3112.90 Safari/537.36
Upgrade-Insecure-Requests: 1
Accept: text/html,application/xhtml+xml,
        application/xml;q=0.9,image/webp,image/apng,*/*;q=0.8
Accept-Encoding: gzip, deflate
Accept-Language: en-US,en;q=0.8
```

HTTP Requests - Human or System

- Human
    - user types URL into browser search bar (GET)
    - user submits form (POST)
- System -System automatically polls server for new content via JavaScript - AJAX (Asynchronous JavaScript and XML) - XHR (XML HTTP Request) - GET / POST - often returns JSON

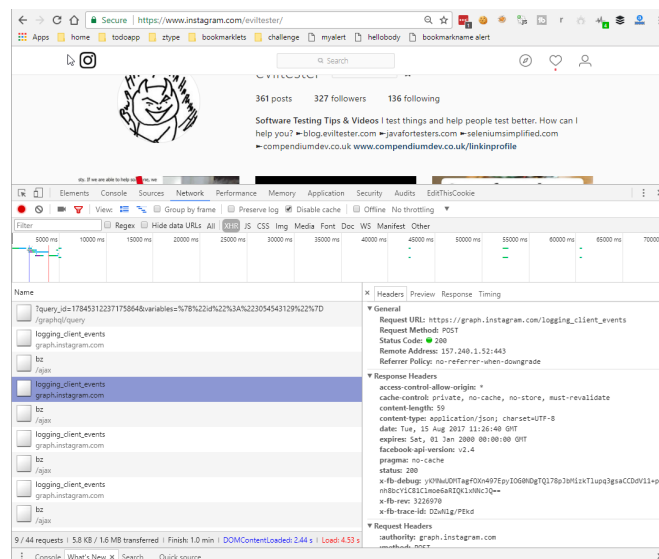# View Browser Requests in Dev Tools Network Tab

Figure 3: View Browser Requests in Dev Tools Network Tab

Demo: View Browser Requests in Dev Tools

- instagram.com/eviltester
- Chrome
    - Inspect Element or ctrl+shift+i or tools\more tools\Developer Tools

- – Network Tab
- Edge
  - – F12 Developer tools
  - – Network Tab
- Firefox
  - – Inspect Element
  - – Network tab

Make sure 'All' or 'XHR' is selected.

Group Exercise: View Browser Requests in Dev Tools Network Tab Examples

- Twitter Feed?
  - – e.g. https://twitter.com/eviltester/lists/work
- WebGraphViz?
  - – e.g. http://www.webgraphviz.com/
- Instagram?
  - – https://www.instagram.com/eviltester
- etc. probably app or web page that updates automatically

Exercise: View Browser Requests in Dev Tools Network Tab

- Open browser, Visit a site, Open Network Tab, Inspect XHR requests
- visit a twitter feed, inspect the update XHR requests
  - – e.g. https://twitter.com/eviltester/lists/work
- visit an Instagram feed, inspect the update XHR requests
  - – e.g. https://www.instagram.com/eviltester/
- Find other sites, inspect the update XHR requests
  - – e.g. Gmail, Ebay, what else?

JavaScript AJAX/XHR Browser Risks

- Memory Leaks
- Blocking Code (JavaScript is single threaded) crashing browser

- Cross browser compatibility issues

Bonus: In Chrome try the Task Manager (shift+esc) and see if these JavaScript pages have any issues. - Chrome Menu More Tools Task Manager - ebay often has memory leaks, or just doesn't care about your browser

These risks are not present with an API.

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What is a Web Application?

- A web hosted HTTP accessed application with a GUI and possibly an API
- Did any of the previous Web Application examples use an API?

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