4.1 Web Applications

Notebook:	How Computers Work [CM1030]	
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Cornell Notes	**Topic:** 4.1 Web Applications	Course: BSc Computer Science
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Essential Question:

What is a website, web pages and what is the inner workings of web content consumed on the Web?

Questions/Cues:

- What is the difference between the Internet and the World Wide Web?
- What is a webpage and website?
- Where are web pages located?
- What two protocols are used by web applications?
- What is HTTP and HTTPS?
- What is the state of a web server?
- What are Cookies?
- What is a Database?
- What is a Template?
- How do Templates and databases work together to produce new pages?
- What is an API?

Notes

- Internet = underlying network that connects comps together across world
  - Network that connects computers together
- World Wide Web = way of communicating and sharing info that uses Internet, anything viewed through web browser part of WWW
  - the Web consists of pages connected by links
- Webpage = single doc on web which loaded into browser at given time
- Website = collection of page
  - interactive, make use of data from many sources, and constantly updated based on how people interacting with site
- The web not so much as people communicating with each other, but more about people getting info from organizations
- Web pages located on organization web server, no matter where they are accessed from
- Client = essentially a comp that person is working on

- o term "Clients" used both for comp and software used to access server, the web browser
- Server = comp that holds info including web pages, used by many people via different clients
- Web apps use IP (Internet Protocol) and HTTP (Hypertext Transfer Protocol) to comm over internet
- Tech def of WWW = anything that uses HTTP
- Browser send HTTP Request (packet asking for web page)
- HTTP Request consist of URL, first part is HTTP (showing it uses HTTP protocol) ie. **http://**, second is domain name ie. **london.ac.uk** (name of website), third part tells server exactly what page of website you want ie. **/search?,** and finally optional fourth part called query string because web pages are created especially for you based on requirements, query allows to specify those requirements ie. **search=computing**
- HTTPS = Hypertext Transfer Protocol Secure
  - o when using HTTPS, all data transmitted is encrypted
  - o https shows in url instead of http when https is used (padlock sign)
- Lots of websites used access control, ask user to log in before accessing parts of website using private or sensitive info
- Viewing state of website = is page you are viewing
- Website also have logged in and not logged in state each with different level of access
- Web servers, where websites stored mostly have no state
  - o Respond to every request same way, no change based on differing interaction
- Cookies = small amounts of data websites store in our comps as we use sites
  - o stored by browser software on comp not server
  - o designed to keep track of state of websites
  - o track whether logged in or not and how they know our browsing history
- Server can have different elements, basic web server consists of # of web pages, each being 1 or more files called HTML files
- Web pages created only when they needed on response to particular requests ie. profile on social media site
- Database = software platform designed to store data in structured way, easy access for comp; efficient to get data from DB but also to add new data to it
  - o make possible to extend info available on website without anyone creating new pages
- pages we see created by server using data from DB, website stores template page which contains formatting for web page. Template has lots of empty spaces to be filled with data from DB. Web server software combines templates with data from DB to create pages then transmitted to browser
- Template maybe stored as file, web page formatting done using HTML; basic lang of web
- API = Application Programming Interface
  - o gain data from other servers, version of website for comps progs to look at
  - o how we have different versions of the same app ie. mobile or desktop

Summary

In this week, we learned what is a website and what webpages are. In detail, we learned about the various components that go into making a website appear on your browser in working condition and allow you to interact with it. Alongside this, we learned modern website are much more complex than before because of the interplay between web servers, databases, templates and APIs.