**COMP1710/6780: Laboratory 7**

**Human Computer Interactions Continued, Web Statistics and Cybersecurity**

1. **Objectives**

This lab aims to further deepen your knowledge on website usability/accessibility and give you a practical appreciation of good design. You will also look at some web statistics.

Specifically, you will:

* Think about the design of your website.
* Create a ‘bad’ version of your website
* Document the design flaws
* Explore some web statistics
* Learn more about Phishing.
* Learn more about online protection tools.

1. **Accessibility and Usability**

When developing a website, it is important to think about the usability of your website. In week 7, we spoke about the connection between web aesthetics and usability. Aesthetics refers to the emotional components while the usability of an interface refers to its capacity to support task completion. By understanding how design factors can affect users, it is possible to build systems targeted to certain effects and outcomes.

As a developer, it is your responsibility to ensure that your systems/websites are not only usable but fully accessible. In fact, Accessibility is something that should be planned and built into the design from the start and not something to do when you get to it. In an earlier lab we looked at some examples of ‘good’ and ‘bad’ websites, the following tasks will explore the concept of ‘good’ and ‘bad’ websites further.

**2.1 Review & Check your website**

Go through your existing website and have a think about whether any of your pages might be inaccessible or hard to use by some users.

Think about:

* The colour used; Are you using Primary colours, Secondary colours, Tertiary colours?
* The colour schemes; Are you using Monochrome, Complementary, Analogous, Triadic?
* Are your colours Websafe colours?
* Are you providing Textual alternatives for media items?
* Are you using a Proper Headings?
* Are your website components accessible using the tab key on your keyboard?
* Are your icon sizes at least 45 x 45 pixels?
* Do your href links have an aria-label associated with them?
* Do abbreviations in your content have an abbr tag associated with them?

Make sure to correct if any of the above apply to your website.

**2.2 Create a ‘bad’ version of your web site**

This task is to create a copy of your home page (index.html) as a separate page (eg bad.html), and make changes to it which makes it still usable (by you), but is really, really bad from a design viewpoint.

The 'bad' web site should have 6 design flaws. Please note that I do mean design flaws (meaning mistakes in web design or lack of usability), not simple and obvious errors, such as broken links or empty pages/content.

**2.2 Document the design flaws**

Creating web pages with design flaws is easy, and is done all the time, by people all over the world.

If you document which design flaws you intend to make, we can be sure which flaws you are aware of (and maybe help you identify the ones you didn't intend to make :-).

Your description of the design flaws should be among your bad pages. As part of these descriptions, please indicate how you use the new page if it’s not obvious.

Don't forget to have a link from your assignment.html web page to your new BAD web page i.e. to public\_html/bad.html file to access the bad pages. The bad page is NOT part of your assignment, but this is a good place to link it in.

1. **Web Statistics**

In Week 7 we looked at some of the components involved in maintaining a website, including; monitoring your site and considering your website’s SEO. There are very important tools to gather these statistics, for example, Google Analytics is a huge platform used to gather information like: Traffic sources, Engagement and Location tracking. However, a big part of gathering web statistics is to improve the website experience and/or engagement.

**3.1 Using Google Lighthouse to gather data and improve performance, quality and correctness.**

In this exercise, you will use a 3rd party tool “Google Lighthouse” to audit a website and review its performance and accessibility.

1. Firstly, browse to the [Lighthouse - Chrome Web Store (google.com)](https://chrome.google.com/webstore/detail/lighthouse/blipmdconlkpinefehnmjammfjpmpbjk?hl=en) website and install the extension. Note: This extension will only work on Chrome, Edge and Firefox.
2. Add the Lighthouse extension to your toolbar
3. Browse to a website of your choosing and click on the extension button on the toolbar. A report should start to generate.
4. You can see a generated report of the Apple website as an example below.

Graphical user interface, application

Description automatically generated

1. Scroll through the responses and have a focus on the Accessibility report.

**3.2 Using Google Lighthouse to analyse your own website.**

In this exercise, you will use Google Lighthouse to audit your website and review its performance and accessibility. Make sure to address any issues that pop up.

1. **Phishing**

**Tasks**

**Task 1: Review**

Make sure you are up to date on course online notes.

**Task 2: Anti-phishing videos**

You might like to watch a YouTube video on anti-phishing such as [Phishing: would you fall for that?](https://www.youtube.com/watch?v=auvXhfuLHHw), [Phishing and Little Red Riding Hood](https://www.youtube.com/watch?v=HUUDOZthaaw&feature=endscreen&NR=1), or others. If you find one you think is particularly useful, please post it on the student forum.

**Task 3: Explore online protection tools and services**

Protection against ISP tracking -visit [Tor](https://www.torproject.org)**,** free software which prevents ISP tracking by routing through a server network with cryptography (Normally data packets indicate the IP address of the last server it passed through.)

To learn more about tracking users without cookies: "[secret recipe behind undeleted cookies](https://www.theregister.co.uk/2011/08/16/cookie_respawning_secrets_revealed/)" e.g. web cache validation [ETag](https://en.wikipedia.org/wiki/HTTP_ETag)**.** See also "[Five ways to avoid being tracked on the Web](https://www.cnet.com/how-to/five-ways-to-avoid-being-tracked-on-the-web/)"

**Task 4: Discuss and Reflect**

This task is most easily done in parallel with the other tasks.

Reflect on (think about) and discuss with the person sitting next to you about what you've learnt in this lab.

*In Assignment Release 3 you will be providing some reflections in your website, so you might like to use this as a practice for that assignment component.*