

2023-2024 ASSESSMENTS

Undergraduate

Workbook 2: Responsive and Accessible Web Design

SCC.306 Internet Applications Engineering

Recommended Completion Time	[30 Hours]
Assessment Weighting	[20%]

Academic Honesty and Integrity

Students at Lancaster University are part of an academic community that values trust, fairness and respect and actively encourages students to act with honesty and integrity. It is a University policy that students take responsibility for their work and comply with the university's standards and requirements- found in the Manual of Academic Regulations and Practice. By submitting their answers students will be confirming that the work submitted is completely their own. Academic misconduct regulations are in place for all forms of assessment and students may familiarise themselves with this via the university website:

<https://www.lancaster.ac.uk/academic-standards-and-quality/regulations-policies-and-committees/manual-of-academic-regulations-and-procedures/>

Plagiarism

Plagiarism involves the unacknowledged use of someone else's work and passing it off as if it were one's own. This covers every form of submitted work, from written essays, video vignettes, and coding exercises. However, deliberately plagiarism with the intent to deceive and gain academic benefit is unacceptable. This is a conscious, pre-meditated form of cheating and is regarded as a serious breach of the core values of the University. More information may be found via the plagiarism framework website. All coursework is to be submitted electronically and will be run through our plagiarism detection mechanisms. Please ensure you are familiar with the University's Plagiarism rules and if you are in any doubt please contact your module tutor.

<https://www.lancaster.ac.uk/academic-standards-and-quality/regulations-policies-and-committees/principles-policies-and-guidelines/plagiarism-framework/>

Learning Outcomes

Details of the Learning Outcomes of this module can be found in the Module Programmes catalogue: <https://portal.lancaster.ac.uk/intranet/mpc/modules/016886/000123>. This table specifies which learning outcomes are assessed and in which way they are assessed.

Subject Specific Learning Outcomes: Knowledge, Understanding and Skills		
<i>Outcome</i>	<i>Covered</i>	<i>How is it covered</i>
Understand web architectures, standards, and business practices.	Yes	Students need to understand the web standards that exist, how to explore what they standardise and then apply that knowledge.
Empirically assess the performance of a web site	No	
Understand and alleviate potential performance bottlenecks.	No	
Address issues and limitations of scale.	No	
Accessibility and Internationalisation	Yes	Students need to develop websites that are accessible and broadly usable.
Design for Heterogeneous platforms (Responsive web design)	Yes	Students need to develop a website that is responsive.
Establish a quality process for web sites	Yes	Students need to understand how to ensure the quality of a website.
Security threats and hardening of web sites	No	
General Learning Outcomes: Knowledge, Understanding and Skills		
<i>Outcome</i>	<i>Covered</i>	<i>How is it covered</i>
Establish performance metrics	No	
Interpret quantitative data to identify performance problems	No	
Make informed choices about complex distributed and networked architectures	No	

Feedback and Deadline

Feedback on this workbook will be provided continuously in the labs. Please ensure you attend them. The feedback on your submitted workbook will be a response to the entire cohort. If you wish to receive more detailed individual feedback, you will need to go through the cohort-wide feedback and identify and comment on which pieces of feedback do/do not apply to your work. You can then contact Phil and Matthew to discuss your comments on the feedback. The expected return of feedback is 4 weeks after the coursework deadline. The deadline for this work is **Friday 4pm Week 9**.

Introduction

In this workbook, you will be looking at both responsive and accessible web design. In Part 1, you will focus on how to build an accessible website, whilst Part 2 looks at how to approach responsive web design.

It is important that you read all instructions given in this coursework specification.

For both parts of the exercise, you will use and build upon the same template website. In other words, once you have completed Part 1, the same website will be used for Part 2 – there is no need to start again.

The template website is provided on Moodle. The template consists of these files:

- index.html
- style.css
- adysonbeneath-the-screen-638106667407073410.jpg
- leadershipheroheading-638150801817086193.jpg
- location-map.svg
- lu-logo.svg
- pint-of-science-morecambe-637848439194681824.jpg
- qs-top-150.svg

Submission

Once you are finished with both parts of this workbook, please submit all of your code and this workbook (as a single zipped folder) using the submission point provided in Moodle.

You should not need to submit a copy of the website for both Part 1 and Part 2. A single copy of the website after Part 2 should be sufficient.

If during Part 2 you implement additional features that changes the layout away from the specified layout, then you should include a second copy of the website that contains those additional features.

References

This is an academic piece of work and you are expected to use correct academic citations. No specific style is mandated; however, you should be consistent and use the same style throughout this document. The library provides a guide on the Harvard style (<https://lancaster.libguides.com/harvard>) and resources are available for SCC-specific tools (<https://lancaster.libguides.com/computing/referencingtools>).

If you use (or adapt from) code taken from third party sources (i.e., code that you have not written and code that we have not provided to you), then you must cite where this code has come from (use the same referencing style as for this document). You should include references in your source files and explain how code has been adapted from its source.

Part 1: Accessible Web Design

The first part of this workbook is to examine the accessibility of the supplied website. This involves identifying the issues that are causing the web page to be poorly accessible to some audiences, and then fixing a subset of these by modifying the web page.

To begin with, we recommend you review the BBC's Standards and Guidelines for Mobile Accessibility: <http://www.bbc.co.uk/accessibility/forproducts/> and the W3C web content accessibility guidelines <https://www.w3.org/TR/WCAG22/>.

You may also find the following resources useful:

- <http://wave.webaim.org/>
- <https://www.w3.org/WAI/standards-guidelines/>
- <https://developer.mozilla.org/en-US/docs/Web/Accessibility>

Throughout this section you should refer to appropriate accessibility standards or guidelines by citing them. You may choose which citation style you use, but should be consistent throughout the workbook. You must use academic reference styles, simply providing hyperlinks is insufficient.

An example entry in your bibliography might look like:

1. 1.4.3 Contrast (Minimum) - Level AA (2019) Web Content Accessibility Guidelines 2. W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG21/quickref/#contrast-minimum> (Accessed: October 1, 2023).

You can then cite this in-text like this (WCAG2 1.4.3). Typically, you would cite this as (WCAG2 2019a) and then other references from WCAG2 as (WCAG2 2019b) etc. However, we are happy for you to use the standard number in the in-text citation.

Alternatively, you could number each reference and cite it like so [1].

Accessibility Issues [16.66%]

For the first task, and using the resources given above, review the existing website and assess to what extent it meets the criteria, particularly those described by the Web Content Accessibility Guidelines (WCAG) 2.

Create a list of issues, being clear at each stage what the issue is, and citing the guidelines to identify which specific accessibility guideline is being violated. You should identify **at least six issues**.

You should explain how the issue violates the guidelines/standards/recommendations you reference.

To accompany this text, provide evidence of each using a screenshot, you may include a screenshot of the DOM if necessary.

You should identify at least six unique issues.

List of Issues

Accessibility Issue 1: There is a lack of image text alternatives:

Below are all the examples of where there is an instance accessibility issue 1:

```


<br>
<br>
 
```

Guideline Violated: 1.1.1 Non-text Content - Level A (2023) WCAG 2. W3C Web Accessibility Initiative.

Explanation: On the provided webpage every image is lacking text alternatives which means that users with visual impairments can't understand the current content being displayed and so this violates WCAG 2.0 guideline 1.1.1 in which all non-text content must have text alternatives.

Accessibility Issue 2: There is a low contrast of colour:

Below are all the examples of where there is an instance accessibility issue 2:

Guideline Violated: 1.4.3 Contrast (Minimum) - Level AA (2023) WCAG 2.2. W3C Web Accessibility Initiative and 1.4.6 Contrast (Enhanced) - Level AAA (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative.

Explanation: On the provided webpage the menu bar is having lower colour contrast which effects the readability of the labels on the menu bar and as stated in the web accessibility initiative guideline 1.4.3, text and images of text should have a contrast ratio of at least 4.5:1, ensuring sufficient foreground-background separation. The dark grey background and dark blue text in the navigation menu bar fail to meet this contrast requirement, making it challenging for users to perceive the text content. Additionally, there should be a success Criterion 1.4.6 specifies an enhanced contrast ratio of at least 7:1, but even the minimum requirement of 4.5:1 is not met in this case.

Accessibility Issue 3: Lack of Visual Hierarchy in News Section:

Below are all the examples of where there is an instance accessibility issue 3:

```
<h2>Latest news from Lancaster University</h2>
Here are the latest updates from Lancaster University.
```

```
|   <h3>Professor Daniel Prince on developing cyber security leadership</h3>
```

```
<h4>Grab a pint, of science</h4>
```

Guideline Violated: 2.4.6 Headings and Labels - Level AA (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative.

Explanation: On the webpage provided there has been a few instances where the heading and labels were incorrectly placed but some also missing and in the example above the second news article (`<div id="new1">`) violates the guidelines for headings and labels as there is a use of `<h1>` for subheading. Also, for the "Here are the latest updates from Lancaster University" which doesn't even use the heading which misses the logical aspect of why the sentence is there. In the last example for one of the news articles the subtitle is using h4 when the other titles every other article uses a `<h3>`. The success criterion emphasises the importance of using headings to create a logical and meaningful document structure. When headings are not applied appropriately, it can lead to confusion for users relying on screen readers or other assistive technologies and makes it harder for users to understand the hierarchy and relationships between different sections of the page.

Accessibility Issue 4: Oversized images:

Below are all the examples of where there is an instance accessibility issue 4:

```



.
```

Guideline Violated: 1.4.10 Reflow - Level AA (2023) WCAG 2.2. W3C Web Accessibility Initiative.

Explanation: On the provided webpage some of the images are oversized compared to other images for example the logo image example has a width of 800px which is more taking more than reasonable space on the webpage and as it is stated in the guidelines according to WCAG 2.2 guideline 1.4.10, content should be presented in a way that does not require users to scroll horizontally or vertically to read and operate it. An image with a fixed width of 800 pixels might contribute to a need for horizontal scrolling on smaller screens, violating this guideline and the other two images located at the bottom of the webpage is just as much of a contributor as they are their original size due to a style not being specified.

Accessibility Issue 5: Link purpose:

Below are all the examples of where there is an instance accessibility issue 5:

```
<a href="#">Read More</a>
```

Guideline Violated: 2.4.4 Link Purpose (In Context) - Level A (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative.

Explanation: On the webpage provided some articles have an additional link to follow up with a lack of clarity. Links should have clear and concise text that conveys their purpose or destination. In the case of "Read More" links, it's important to provide additional context to indicate what content users will find when they click the link. This enhances the user experience, especially for those who rely on screen readers and need clear information about the function of each link.

Accessibility Issue 6: Lack of visible label for Search bar:

Below are all the examples of where there is an instance accessibility issue 6:



```
<div class="search">
  <form role="search" action="#" method="get">
    <input name="q" type="search" placeholder="Search Lancaster University">
    <button type="submit">Search</button>
  </form>
</div>
```

Guideline Violated: 3.3.2 Labels or Instructions - Level AA (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative.

Explanation: On the webpage provided there is an issue with the search bar where it is missing a label which can be important for users and form controls, including search input fields, should have associated labels or instructions that describe their purpose. This is

crucial for users with disabilities who may rely on assistive technologies to navigate and understand the content.

Accessibility Fixes

From the list you have identified above, choose 4 unique issues, each of which require a different *type* of fix. In the following section, work through each of these issues, first by identifying the offending code/content, using a snippet to highlight exactly where the issue has occurred.

Then, using the knowledge you have gained from the Accessibility lecture and associated readings, provide the fix to address each accessibility problem. To do this, document the fix using code/content snippets, and provide *evidence* of how it resolves the accessibility problem in the rendered web page. Use a small textual description to aid your explanation of *how* you achieved the fix. Cite appropriate guidelines/standards/recommendations in order to present an argument that your change has now resolved the accessibility problem.

Accessibility Fix 1

Explanation, code extracts, screenshots/ evidence

The first issue to resolve is the accessibility issue 1 where images of the provided webpage were lacking their text alternatives which can be challenging for users with visual impairments that rely on screen reader or assistive technologies to understand the context of an image. The provided webpage violates 1.1.1 Non-text Content - Level A (2019) WCAG 2. W3C Web Accessibility Initiative where all non-text content must have text alternatives.

Below is the initial html code that determined that corresponds to the images that lack the alt tag with image alternatives:

Before

```

```

This image is the Lancaster university logo but it lacks text alternatives so users wouldn't know what they see.

```

<br>
<br>
```

These images is of the articles located in the webpage but all of them lack corresponding tags.

```
 
```

These 2 images are at the bottom of the webpage where "location-map.svg" is the location of the university in the map of UK and the second image is Lancaster placing top 150 in the qs world rankings for 2022.

After

The changes that must take place to not violate the 1.1.1 non-text content guidelines requires us to add an alt tag to every image which can be seen below:

```

<br>
<br>


```

As you can see above all the images now have alt tags explaining what the image consists of so users who rely on screen readers can understand the context of images on display

Accessibility Fix 2

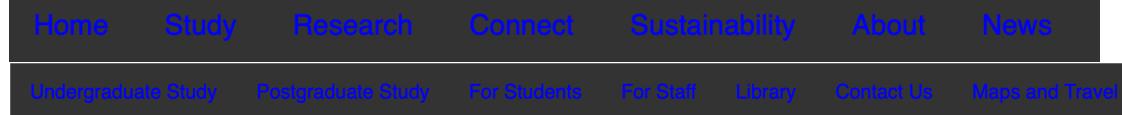
Explanation, code extracts, screenshots/ evidence

To fix accessibility issue 2 where there is low contrast in colour on the menu bar which makes it visually challenging to identify their links which violated this guideline 1.4.3 where text and images of text should have a contrast ratio of at least 4.5:1, ensuring sufficient foreground-background separation.

Below is the initial code in CSS that determined the colour of the menu bar and how the menu bar looks like before changes:

Before

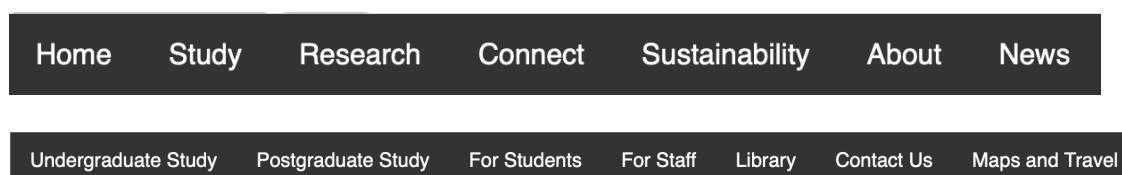
```
li a {  
    display: block;  
    color: blue;  
    text-align: center;  
    padding: 14px 16px;  
    text-decoration: none;  
    outline: none;  
}
```



To rectify the issue of the low contrast we would need to change the colour of the font to be in contrast with the background so there is a good separation for readers to view and understand the menu bars without having to look closer. The colour that suits this would be white as it has the biggest separation.

After

```
li a {  
    display: block;  
    color: white;  
    text-align: center;  
    padding: 14px 16px;  
    text-decoration: none;  
    outline: none;  
}
```



Accessibility Fix 3

Explanation, code extracts, screenshots/ evidence

To fix accessibility issue 3 for the lack of visual hierarchy in the news section so readers don't get confused when reading content on the webpage and to not violate the web accessibility guideline 2.4.6 Headings and Labels we need to change the headings in the html code to fit their purpose.

The below examples are the initial header tags within the webpage provided which can be confusing to readers:

Before

```
<h2>Latest news from Lancaster University</h2>
Here are the latest updates from Lancaster University.
```

The above image shows the first heading in the webpage, and it is using h2 which is a subheading, but it should be

as it is the heading of that webpage.

```
<h3>Professor Daniel Prince on developing cyber security leadership</h3>
```

All the news articles on the webpage should use a subheading tag of

but they use as the "Latest news from Lancaster University" is higher priority heading but it should be higher.

```
<h4>Grab a pint, of science</h4>
```

This heading should match the titles of the other news articles which were

which is also another issue.

To fix this we will change the header tags based on the significance such as a title of a news article is more important and should stand out more to the reader which can be seen below:

After

```
<h1>Latest news from Lancaster University</h1>
```

To rectify the issues shown before the changes was to update the header tag from

to as there was no being used.

```
<h2>Lancaster researcher wins national photographic competition with image depicting human connections to smartphones</h2>
```

The news articles have gone up from a header tag of

to to be standing part of the news articles.

```
<h2>Professor Daniel Prince on developing cyber security leadership</h2>
```

This was changed from a header of

to just like the image above as these are news article titles.

```
<h3>Grab a pint, of science</h3>
```

The news article header for this image was initially

when it was meant to be but as all the tags on the webpage has been updated for clarity the header tag has been changed from to and after all these changes the guidelines 2.4.6 will not be violated.

Accessibility Fix 4

Explanation, code extracts, screenshots/ evidence

To fix accessibility issue 4 where there are oversized images which make it challenging to navigate for users and relates to violating the web accessibility guideline of 1.4.10 Reflow - Level AA (2021) WCAG 2.2. W3C Web Accessibility Initiative we will need to resize images dynamically so that based on the user's screen size or the device they are using it is scaled appropriately.

Below are the areas of accessibility issue 4 being displayed on the webpage:



Latest news from Lancaster University

Here are the latest updates from Lancaster University.

Lancaster researcher wins national photographic competition with image depicting human connections to smartphones



A Lancaster University researcher has won a national photographic competition aimed at illustrating human interactions with cyberspace. Anna Dyson, a PhD researcher in International Relations at Lancaster University won Best Overall Photo in the external category of the competition, run by the University of Kent's Institute of Cyber Security for Society (ICSS). The theme of the competition was Living, Learning and Connecting in Cyberspace and people were invited to submit photographs which engage with the human experience of cyberspace and its interconnected hardware and software. Anna's research focuses on complex socio-technical systems and their implications for defence and security, with a specific interest in remote technologies, robotics, and the contemporary conflict environment. Her image Beneath the Screen explores people's deep-rooted and often unconscious dependence on connected devices. She said: "The image seeks to capture the intertwined nature of humans and their smartphones, which sometimes feel like an essential part of, or even extension of ourselves. Smartphones can be a portal to the wider world, giving us access to goods, services, and



TOP 150

2022



Below is the initial code within the provided webpage where the above guideline is violated is shown below:

```



```

The first line in the example above has a style of width 800px which is a fixed size, and the other two images below have no style being specified so the original image size is being displayed and this causes users in the different form factors to scroll more horizontally or vertically to navigate through the webpage. The reflow guideline states that content should be presented in a way that does not require users to scroll horizontally or vertically to read and operate it.

Below is the fixed code and the result of changes on the webpage:

```
<style>
  /* Adjust the maximum width for the logo */
  #header img {
    max-width: 100%;
    height: auto;
  }

  #images-container {
    display: flex;
    width: 100%;
    justify-content: space-between;
    margin-top: 10px;
  }

  #images-container img {
    width: 48%;
  }
</style>
```

The styling techniques above is required to follow the web accessibility guidelines of Reflow where appropriate techniques would be the use of flexbox to reflow content with

the adjustment of width and height for both the header image being the logo and the last two images which have no current styling.

Below are the adjustments made to the lines including the images:

```

..
<div id="images-container">
  
  
</div>
```

The container inside the menu-bar div is image container which can be edited using the CSS within the provided webpage which allows us to change it to be more suitable for users navigating the page. Below are the changes that is displayed on the webpage:

The screenshot shows the Lancaster University homepage. At the top is a dark navigation bar with the university's name and crest. Below it is a main content area featuring a large image of hands interacting with a digital interface. A caption below the image discusses a researcher's win in a national photographic competition. At the bottom of the page is another dark footer navigation bar.

The screenshot shows the Lancaster University homepage. In the center is a graphic for 'TOP 150' ranking, featuring a red location pin icon, the 'QS' logo, and the text 'WORLD UNIVERSITY RANKINGS 2022'. The background of the main content area has a subtle grid pattern.

The header image and the footer images have been adjusted to be more scrollable for users and meet the success criterion of the 1.4.10 Reflow - Level AA (2021) WCAG 2.2. W3C Web Accessibility Initiative.

Part 1 Bibliography

1. 1.1.1 Non-text Content - Level A (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG22/quickref/#non-text-content> (Accessed: November 27, 2023).
2. 1.4.3 Contrast (Minimum) - Level AA (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG22/quickref/#contrast-minimum> (Accessed: November 27, 2023).
3. 1.4.6 Contrast (Enhanced) - Level AAA (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG22/quickref/#contrast-enhanced> (Accessed: November 27, 2023).
4. 1.4.10 Reflow - Level AA (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG22/quickref/#images-of-text-no-exception> (Accessed: November 27, 2023).
5. 2.4.4 Link Purpose (In Context) - Level A (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG22/quickref/#link-purpose-in-context> (Accessed: November 27, 2023).
6. 3.2.2 Link Purpose (In Context) - Level A (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG22/quickref/#labels-or-instructions> (Accessed: November 27, 2023).
7. 2.4.6 Headings and Labels - Level AA (2023) Web Content Accessibility Guidelines 2.W3C Web Accessibility Initiative. Available at:
<https://www.w3.org/WAI/WCAG22/quickref/#headings-and-labels> (Accessed: November 27, 2023).

Part 2: Responsive Web Design

In this part of the workbook, you will adapt the provided website to be responsive to changes in viewport size. You will use the same code/content you have worked on and have improved in the previous part of this coursework.

To begin with, you will familiarise yourselves with the techniques, tools and approaches necessary to build a responsive website. You will then move on to applying these concepts to make the existing website responsive.

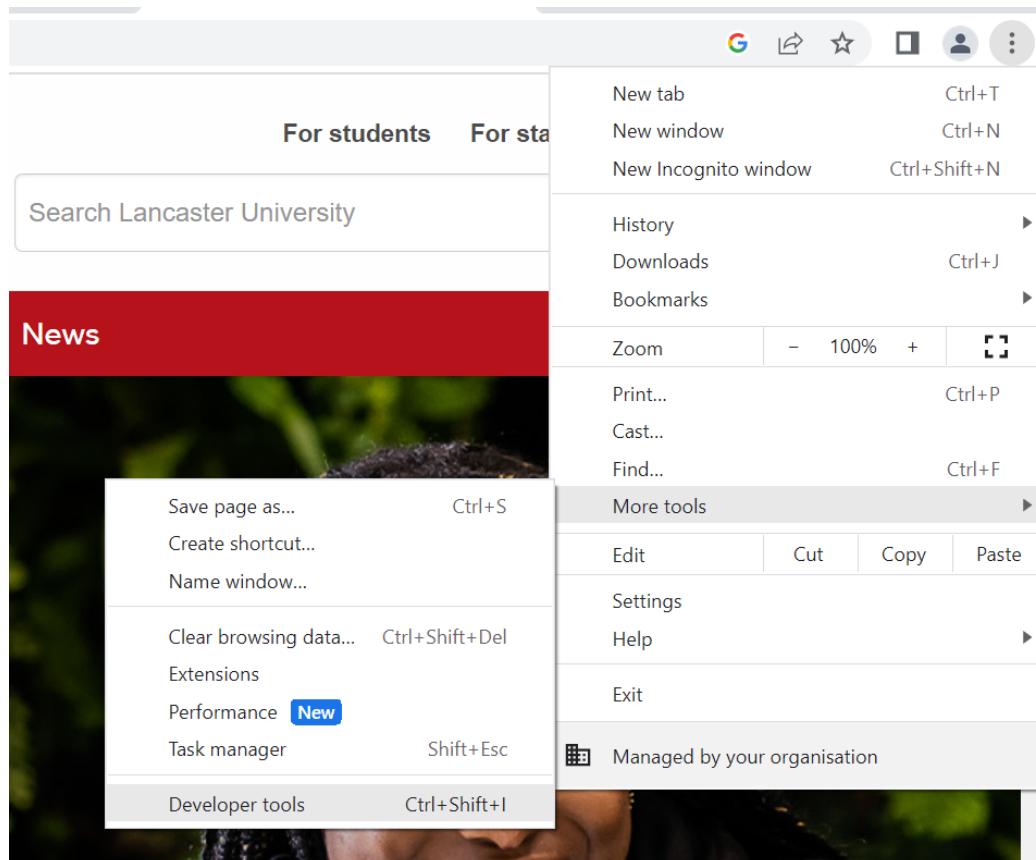
Getting Started

These initial exercises will help you to get started with this element of the coursework.

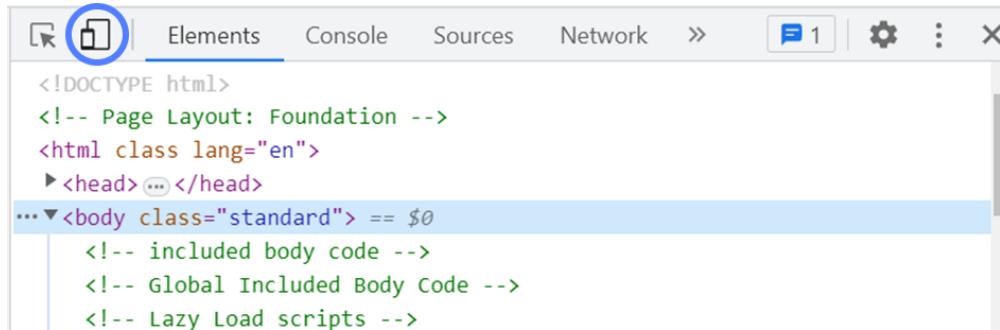
Exercise 1: Chrome developer tools device mode

In this exercise, you will use the Chrome developer tools with device mode enabled. Device mode allows you to spoof the User Agent (UA) and emulate screen sizes of different mobile devices. This tool is particularly useful for checking if your website will be viewable on a range of devices and can also be used to identify the breakpoints of existing responsive websites.

To use device mode in Google Chrome, first go to developer tools:



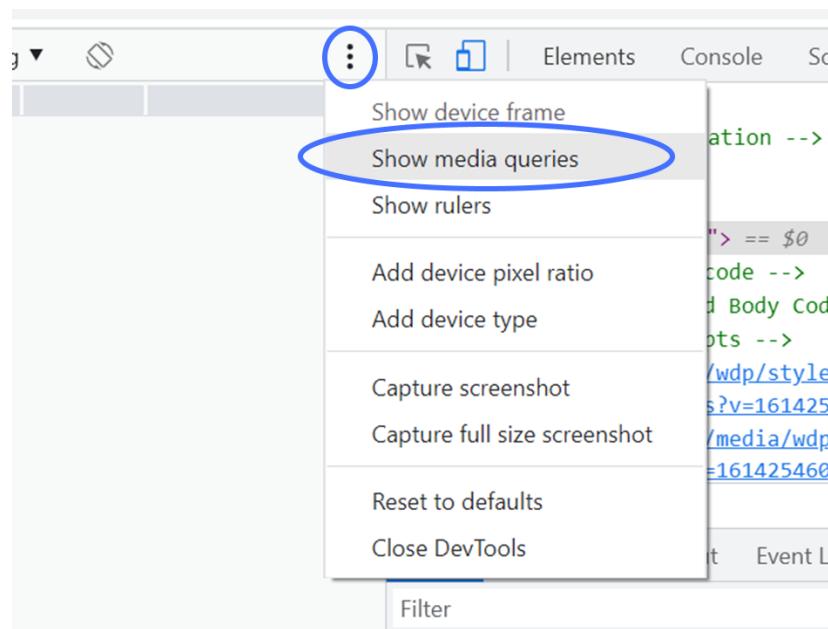
In developer tools, select device mode:



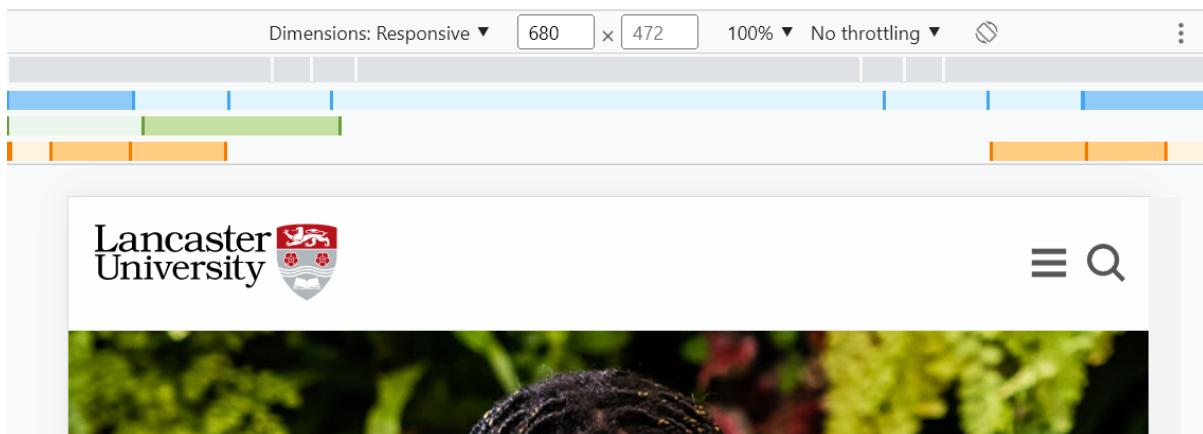
The screenshot shows the Chrome DevTools interface with the 'Elements' tab selected. A blue circle highlights the icon for device mode, which is a small monitor icon. Below the tabs, the page's HTML code is displayed, with the body element highlighted in blue.

```
<!DOCTYPE html>
<!-- Page Layout: Foundation -->
<html class="lang=en">
  <head></head>
  ... <body class="standard"> == $0
    <!-- included body code -->
    <!-- Global Included Body Code -->
    <!-- Lazy Load scripts -->
```

Click on the settings button on the top right-hand corner of the page and enable “Show media queries”:



At the top of your browser, there will be the breakpoints for the webpage. Go to <http://www.lancaster.acs.uk/> and see what breakpoints they have designed, e.g.:



More information about device mode is available at:

<https://developer.chrome.com/docs/devtools/device-mode/>

Next, examine how these websites change when you select devices of different resolutions. Identify the breakpoints of each site (resize the page until a change is triggered):

- <http://www.youtube.com>
- <https://modules.lancaster.ac.uk>

Exercise 2: W3schools responsive web design

We **strongly** recommend that you go through the *entire* responsive section available at W3Schools to familiarise yourself with the fundamentals.

http://www.w3schools.com/css/css_rwd_intro.asp

Exercise 3: Mozilla Developer Network

We **strongly** recommend that you go through the MDN guides on CSS layout including their guides on flexboxes, grids, and responsive design.

https://developer.mozilla.org/en-US/docs/Learn/CSS/CSS_layout

Responsive Web Design Assignment

For this exercise, you will make changes to the web page you have already been working on to enable a responsive design. This website should react to different screen sizes and widths. To do this, you need to provide screenshots of your website at each breakpoint as instructed. Use the Chrome developer tools in device mode to capture the **entire page** (use the Chrome full page screenshot tool by pressing CTRL + SHIFT + I and selecting “Capture full size screenshot”). You must also provide an explanation of the methods used to make the website look the way it is at **each breakpoint**. To support this, include extracts of your code accordingly.

For any additional features you may have added, show and explain code and screenshots. Finally, explain how the feature improves the responsiveness of the website.

Once you have completed both parts of this workbook, upload your website and workbook to Moodle (include all files, this lab book document, and any other files you may have used).

In this new website, we expect to see the following principles:

- Media Queries
- Fluid grids of content and fluid images

There are a variety of different approaches you can take to implement a solution. You may also consider using features that facilitate intrinsic web design, such as with intrinsic grids and the intrinsic sidebar. The coursework should target the feature set of Chrome 112.

The responsive website you create should cater for a range of devices:

- Mobiles (425px)
- Tablets (768px)
- Laptops (1024px)
- Large Laptops/Desktops (1440px)

Additional marks will be available to students who provide and *justify* up to two other responsive features appropriately. Examples include but are not limited to:

- Using a touch friendly ‘burger’ or vertical menu on a break in design.
- Creating a collapsible box, only showing the most important content until expanded.
- Other suitable additional features.

The following are mock-ups of what we expect the website to look like at each breakpoint. Whilst you are free to experiment with the design, when making your website aim to replicate the **structure** shown in the mock-ups. Your website should resize smoothly between breakpoints and not simply show a different layout at each breakpoint.

You may use any framework, tools, or techniques that you wish to complete this task. For example, if you wish to use Javascript libraries such as JQuery these are permissible. If you use such libraries then they must be included in your submission. The submission must be viewable standalone without needing to install any dependencies. However, this assignment can be accomplished with the use of CSS alone.

Large Laptop/Desktop (1440px)



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Latest news from Lancaster University

Here are the latest updates from Lancaster University.

Lancaster researcher wins national photographic competition with image depicting human connections to smartphones



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Laptop (1024px)

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Laptop Large/Desktop (1440px)

Screenshot at 1440px (website and breakpoint using device mode)

Dimensions: Responsive ▾ 1440 × 763 95% ▾ No throttling ▾

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Code extracts and explanation

I initially had to make changes to the header section to make sure the search bar was positioned at the top right of the webpage instead of it being below the Lancaster University logo and so I added its styling to the CSS as shown below:

```
.search {  
    display: flex;  
    align-items: center;  
    padding: 10px;  
    position: absolute;  
    top: 0;  
    right: 0;  
}
```

I changed the display property of the search bar to flex allowing it to use flexbox properties and made it become centred with some padding. I positioned the search bar to the top and made it move to the right to get it aligned to the top right of the webpage.

I have also edited the footer area of the webpage. Initially quick links was in another div with the id as menu-bar which was the same as the menu bar at the top of the webpage and so I completely changed it and created a footer section which can be seen below:

```
<div id="footer">  
    <div id="footer-content">  
        <div class="footer-section">  
            <h2>Quick Links</h2>  
            <ul>  
                <li><a href="https://www.lancaster.ac.uk/study/undergraduate/">Undergraduate Study</a></li>  
                <li><a href="https://www.lancaster.ac.uk/study/postgraduate/">Postgraduate Study</a></li>  
                <li><a href="https://portal.lancaster.ac.uk/ask/">For Students</a></li>  
                <li><a href="https://www.lancaster.ac.uk/current-staff/">For Staff</a></li>  
                <li><a href="https://www.lancaster.ac.uk/library/">Library</a></li>  
                <li><a href="tel:+44-1524-65201">Contact Us</a></li>  
                <li><a href="https://www.lancaster.ac.uk/about-us/maps-and-travel/">Maps and Travel</a></li>  
            </ul>  
        </div>  
  
        <div class="footer-section" id="footer-images">  
              
              
        </div>  
    </div>  
</div>
```

The above code was changed from menu-bar to a new id called footer where it had multiple IDs below such as footer content and footer section to assist with how the quick links and the images within the footer area is shared with the footer images. Below is the additional styling created to assist in creating the newer version of the footer section:

```

/* Footer styles */
#footer {
    background-color: #818589;
    padding: 20px;
}

#footer-content {
    display: flex;
    justify-content: space-between;
}

.footer-section {
    width: 48%;
}

#footer h2,
#footer li a {
    color: white;
}

#footer ul {
    list-style-type: none;
    margin: 20px;
    padding: 0;
}

#footer li a {
    text-decoration: underline;
    display: block;
}

#footer-images {
    display: flex;
    gap: 75px;
    justify-content: flex-end;
}

#footer-images img {
    max-width: 100%;
}

#footer-images img:first-child {
    width: 20%;
}

#footer-images img:last-child {
    width: 40%;
}

```

The footer was given a background colour like the mock-up given with some padding of 20px surrounding it to move the quick links closer to the middle of the footer but also given flexbox properties which allowed me to space the content between the quick links and images.

The footer section is given an assigned width of 48% to not take more than half the space within the footer area. This is used for the quick links part of the footer. The header within the footer section with the addition of the quick links were made to be white and all the quick links below are underlined.

The images are also given flexbox properties and are moved to the right using flex-end the two images are given different max widths to make sure they look like the mock-up.

I have changed the menu bar background colour to white like it is in within the mock up and reverted the text colour back to blue which is shown below:

```

/* Navigation styles */
#menu-bar {
    text-align: center;
    background-color: white;
    overflow: hidden;
}

#menu-bar ul {
    list-style-type: none;
    margin: 0;
    padding: 0;
}

#menu-bar li {
    display: inline-block;
}

#menu-bar li a {
    display: block;
    color: blue;
    text-align: center;
    padding: 14px 16px;
    text-decoration: none;
    outline: none;
}

```

The menu bar has the text aligned to the centre, so they are all vertically centred and the background colour is white, and the link text is blue to match the colour scheme of the mock-up examples.

All menu bar defaults are removed, and the elements of the menu bar are displayed inline.

Each of the links on the menu bar are centred and have appropriate padding with no text-decoration or outline.

The code below shows the media query to run when the webpage resolution reaches above 1024px and up to 1440px.

```

/* Large Laptop/Desktop Styles (1025px to 1440px) */
@media screen and (min-width: 1025px) and (max-width: 1440px) {
    #news1, #news2, #news3 {
        width: 32.33%; /* Set width to approximately 1/3 of the container so we can fit all three */
        box-sizing: border-box; /* Applies the box-sizing property to the news articles making sure */
        margin-right: 1%; /* Add some space between articles */
        float: left; /* Float left to achieve side-by-side layout */
        margin-bottom: 10px; /* Optional: Add margin at the bottom */
        height: 1055px; /* Set a fixed height for all boxes */
    }
}

```

To match the webpage to the example mock-ups given I had to change how the layout of the articles from horizontal to vertical alignment and to do that I created a container where each article can take a third of the space and surrounded it by a border box style as this allows the addition of a thin outline around each article. As shown in the example each article has content of various lengths and so I set a height for the boxes surrounding each news article at 1055px as this allows content sit in an appropriate position without overflowing into the footer section.

```

#footer {
    clear: both;
    margin-top: 20px; /* Adds spacing between the footer section and the articles above */
}

#footer-content {
    display: flex;
    justify-content: space-between; /*Creates space inbetween the quicklinks and the images*/
}

#footer-images img:first-child {
    width: 30%;
}

#footer-images img:last-child {
    width: 40%;
}

```

I also made sure the footer had a margin of gap above it like in the example at 20px above and spaced out the links and images within it. I also ensured enough space between the quick links and images within the footer section but also chose to scale both images to follow the sizes shown in the mock-up examples.

I have also changed the html file to adapt to the way content is being presented for the articles by sorting them into paragraphs shown below:

```

<div class="news-article" id="news1">
    <h2>Lancaster researcher wins national photographic competition with image depicting human connections to smartphones</h2>
    <br>
    <p>A Lancaster University researcher has won a national photographic competition aimed at illustrating human interactions with cyberspace.</p>
    <p>Anna Dyson, a PhD researcher in International Relations at Lancaster University won Best Overall Photo in the external category of the competition, run by the Royal Photographic Society. Her photograph, titled 'Beneath the Screen', depicts a person's hand interacting with a smartphone screen. The image highlights the complex relationship between humans and their digital devices. Anna's research focuses on complex socio-technical systems and their implications for defence and security, with a specific interest in remote technologies and their impact on society. She said: "The image seeks to capture the intertwined nature of humans and their smartphones, which sometimes feel like an essential part of, or even extension of, ourselves. With such dependence on our smart devices, it can be easy to overlook the data we sometimes unknowingly offer up about our lives, and the ways this data is used."</p>
    <a href="#">Read More</a>
</div>

```

Laptop(1024px)

Screenshot at 1024px (website and breakpoint using device mode)

The screenshot shows the Lancaster University website as it would appear on a laptop screen set to 1024px width. The top navigation bar includes links for Home, Study, Research, Connect, Sustainability, About, and News. A search bar is located in the top right corner. The main content area features a section titled "Latest news from Lancaster University" with a sub-section about a researcher winning a photographic competition. Below this is a large image of hands interacting with a smartphone screen. Further down, there's a quote from a professor about developing cyber security leadership, accompanied by a photo of a conference audience. To the right, there's a graphic for "Pint of Science" featuring a brain wearing glasses and a person holding a pint glass.

Dimensions: Responsive ▾ 1024 × 725 100% No throttling ▾

Lancaster University

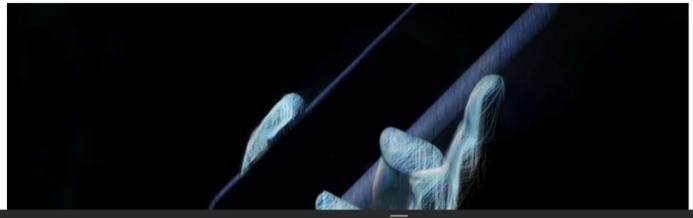
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Code extracts and explanation

The code extract below is the media query for laptop resolutions of 1024px and below:

```
/* Laptops (1024px) and below */
@media screen and (min-width: 769px) and (max-width: 1024px) {
    #news1 {
        width: 100%; /* Set width to 100% for a single column layout */
        margin-right: 0; /* Remove margin for a full-width layout */
        float: none; /* Remove float for a stacked layout */
        margin-bottom: 5px; /* Optional: Add margin at the bottom */
    }

    #news2, #news3 {
        width: 48%; /* Set width to approximately 1/2 of the container */
        box-sizing: border-box;
        margin-right: 2%; /* Add some space between articles */
        float: left; /* Float left to achieve side-by-side layout */
        margin-bottom: 10px; /* Optional: Add margin at the bottom */
        height: 810px; /* Set a fixed height for all boxes */
    }

    #footer {
        clear: both;
        margin-top: 20px;
    }

    #footer-content {
        display: flex;
        justify-content: space-between;
    }

    #footer-images img:first-child {
        width: 30%;
    }

    #footer-images img:last-child {
        width: 40%;
    }
}
```

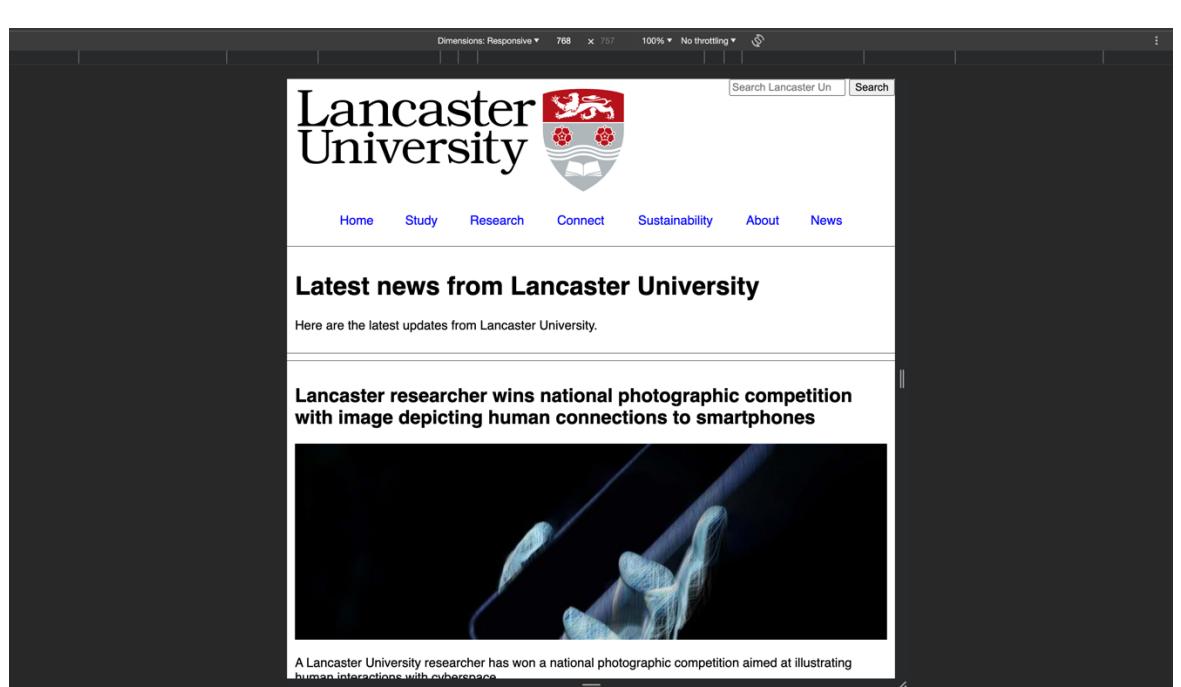
I styled news1 separately to news2 and news3 as the page layout in the mock-up shows news1 at top followed up by news2 and news 3 side by side. In the code above news1 has a width of 100% as it should cover the space from the left side of the webpage to the right side and adding a margin below it to space between the other articles.

The news2 and news3 divs are below news1 and both have a width of 48% of horizontal webspace which allows it to fit both articles within and must have the float assigned to left so they can be side by side. I set the height of the boxes to 810px so that the content can fit within the assigned space.

The additional changes were the size of footer images as they vary in resolutions on how they should be viewed so I adjusted them to fit the mock-up example.

Tablet (768px)

Screenshot at 768px (website and breakpoint using device mode)



Dimensions: Responsive ▾ 768 × 757 100% No throttling ▾

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She said:

"The image seeks to capture the intertwined nature of humans and their smartphones, which sometimes feel like an essential part of, or even extension of ourselves. Smartphones can be a portal to the wider world, giving us access to goods, services, and social spaces at our fingertips. But they can also be a portal into us as people."

"With such dependence on our smart devices, it can be easy to overlook the data we sometimes unknowingly offer up about our lives, and the ways this data might be harvested or exploited. Similarly, it can be easy to overlook the complex array of components, networks, and activity that goes on beneath the surface of that glossy screen, even when it is not in use."

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Professor Daniel Prince on developing cyber security leadership



Dimensions: Responsive ▾ 768 × 757 100% No throttling ▾



Leadership requires more than just an understanding of your own organisation's vulnerabilities as many other factors can come into play. Professor Daniel Prince, a Professor in Cyber Security within Security and Protection Science at Lancaster University, explains.

Even major organisations like the NHS are vulnerable

He says:

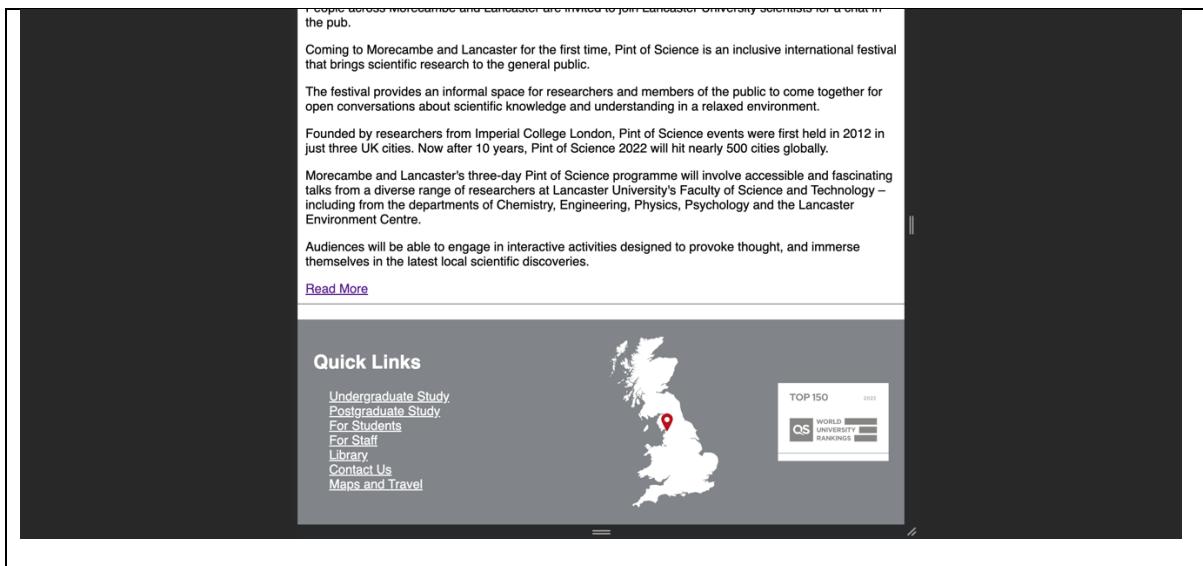
"Not a day goes by without some news story regarding a cyber security incident. One recent example is the attack on a technology supplier for the NHS 111 service. The fear is that patient records and ultimately patient health could be affected."

The NHS has some of the most stringent codes of connection and information governance requirements in order to work with them as part of their supply chain. They have well-articulated technical and technology requirements regarding security. So, the question that is often asked as a result is, if it can still happen to one of their suppliers what is the point in us doing anything?"

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Grab a pint, of science





Code extracts and explanation

The resolution of 768px reflects on how the initial template webpage was given as all articles are below each other in order and all the changes to styles were shown in the 1440px resolution and so the only difference in the media query for 768px being the max resolution would be the way the footer images are being displayed. In the mock-up image the map of where Lancaster university is located is bigger than the qs world rankings image, so the width of the map image was increased to 40% and due to that it appears bigger than the rankings image even though they are given the same width value which is shown below:

```
/* Laptops (768px) and below */
@media screen and (min-width: 426px) and (max-width: 768px) {
    #footer {
        clear: both;
        margin-top: 20px;
    }

    #footer-content {
        display: flex;
        justify-content: space-between;
    }

    #footer-images img:first-child {
        width: 40%;
    }

    #footer-images img:last-child {
        width: 40%;
    }
}
```

Also, the clear line removes any styling on the footer that currently exists as different resolutions have different ways of presenting the footer area.

Mobile (425px)

Screenshot at relevant breakpoint

The screenshot shows a mobile browser window displaying the Lancaster University website. The header features the university's name and crest, followed by a navigation menu with links to Home, Study, Research, Connect, Sustainability, About, and News. A search bar is also present. Below the header, a section titled "Latest news from Lancaster University" displays a single news item. The news item's title is "Lancaster researcher wins national photographic competition with image depicting human connections to smartphones". An image thumbnail of the winning photograph is shown, which depicts a person's hand interacting with a smartphone screen. The main content of the news article discusses Anna Dyson's win in a competition organized by the University of Kent's Institute of Cyber Security for Society (ICSS). It highlights the theme of "Living, Learning and Connecting in Cyberspace" and describes the research focus of the winning photo. The article quotes Anna Dyson and provides her perspective on the significance of the image. At the bottom of the news item, there is a "Read More" link.

Dimensions: Responsive 425 x 757 100% No throttling

Lancaster University

Home Study Research Connect

Sustainability About News

Search Lancaster Un Search

Latest news from Lancaster University

Here are the latest updates from Lancaster University.

Lancaster researcher wins national photographic competition with image depicting human connections to smartphones

A Lancaster University researcher has won a national photographic competition aimed at illustrating human interactions with cyberspace.

Anna Dyson, a PhD researcher in International Relations at Lancaster University won Best Overall Photo in the external category of the competition, run by the University of Kent's Institute of Cyber Security for Society (ICSS). The theme of the competition was Living, Learning and Connecting in Cyberspace and people were invited to submit photographs which engage with the human experience of cyberspace and its interconnected hardware and software.

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[Read More](#)

Dimensions: Responsive ▾ 425 x 757 100% No throttling ▾

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Dimensions: Responsive ▾ 425 x 757 100% No throttling ▾

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Grab a pint, of science



People across Morecambe and Lancaster are invited to join Lancaster University scientists for a chat in the pub.

Coming to Morecambe and Lancaster for the first time, Pint of Science is an inclusive international festival that brings scientific research to the general public.

The festival provides an informal space for researchers and members of the public to come together for open conversations about scientific knowledge and understanding in a relaxed environment.

Founded by researchers from Imperial College London, Pint of Science events were first held in 2012 in just three UK cities. Now after 10 years, Pint of Science 2022 will hit nearly 500 cities globally.

Morecambe and Lancaster's three-day Pint of Science programme will involve accessible and fascinating talks from a diverse range of researchers at Lancaster University's Faculty of Science and Technology – including from the departments of Chemistry, Engineering, Physics, Psychology and the Lancaster Environment Centre.

Audiences will be able to engage in interactive activities designed to provoke thought, and immerse themselves in the latest local scientific discoveries.

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Code extracts and explanation

```
@media screen and (max-width: 425px) {  
    #header {  
        flex-direction: column; /* Stack items vertically */  
        align-items: center; /* Align items to the start (left) */  
        position: relative; /* Add relative positioning to the header */  
    }  
  
    #menu-bar {  
        margin-bottom: 10px; /* Add some space below the menu bar */  
    }  
}
```

The above code snippet is showing the beginning of the media query for resolutions up to 425px and as shown the header is aligned to the centre of the webpage at the top but also the addition of a margin below the menu bar for the search bar to be positioned there as shown in the examples.

```
.search {  
    width: 100%;  
    margin: 10px auto; /* Center horizontally using margin and auto */  
    position: relative; /* Change position to relative */  
    top: initial; /* Remove top positioning */  
    right: initial; /* Remove right positioning */  
    text-align: center; /* Center the text within the search box */  
}
```

As the search bar is assigned the top right of the webpage, I removed the positioning and placed the search bar at the centre of the webpage using the margin but also made changes to the html by switching the position of the search div and menu dive shown below:

```
<body>  
    <div id="header">  
          
    </div>  
    <div id="menu-bar">  
        <ul>  
            <!-- Assume these links point to valid pages -->  
            <li><a href="#">Home</a></li>  
            <li><a href="#">Study</a></li>  
            <li><a href="#">Research</a></li>  
            <li><a href="#">Connect</a></li>  
            <li><a href="#">Sustainability</a></li>  
            <li><a href="#">About</a></li>  
            <li><a href="#">News</a></li>  
        </ul>  
    </div>  
  
    <div class="search">  
        <form role="search" action="#" method="get">  
            <input name="q" type="search" placeholder="Search Lancaster University">  
            <button type="submit">Search</button>  
        </form>  
    </div>  

```

This change allowed me to position the search bar below the menu bar without any interference and as stated before the search bar can be positioned at the top right of the webpage with the media query below with a minimum width of 426px:

```
@media screen and (min-width: 426px) {  
    .search {  
        position: absolute;  
        top: 0; /* positions the search bar to the top */  
        right: 0; /* positions the search bar to the right */  
        text-align: right; /* Align the text to the right within the search box */  
    }  
}
```

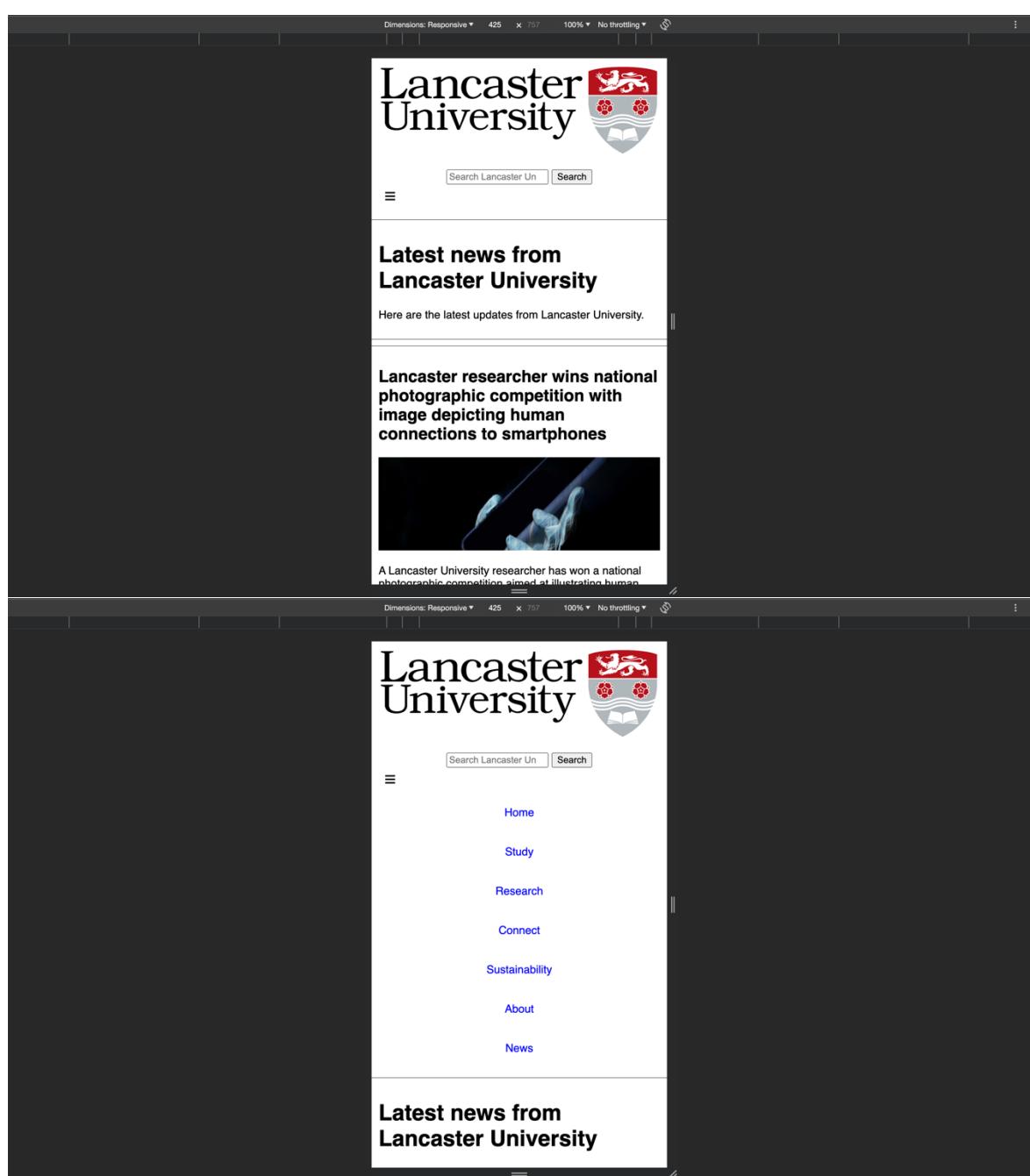
For all resolutions in the examples the footer section has a few differences and for the case of the resolution being below 425px the qs world rankings image is not visible in the footer area and so I made a few changes to the footer seen below:

```
#footer {  
    clear: both;  
    margin-top: 20px;  
}  
  
#footer-content {  
    display: flex;  
    justify-content: space-between;  
}  
  
#footer-images img:first-child {  
    width: 80%;  
}  
  
#footer-images img:last-child {  
    display: none;  
}
```

I increased the size of the map image by increasing the width to 80% whereas I also changed the width line for the rankings image by making it's display none, so the map image is pushed to the right side of the page and giving it more space to have a scaled-up version of the map.

Additional Feature 1

Screenshot at relevant breakpoint



Code extracts and explanation

```

<div class="search">
    <form role="search" action="#" method="get">
        <input name="q" type="search" placeholder="Search Lancaster University">
        <button type="submit">Search</button>
    </form>
    <button id="mobile-menu-btn">&#9776;</button>
</div>

```

I initially added a button in the search div so when it expands there is an expandable menu bar and so I called it mobile-menu-btn which was more suitable for the lower resolutions.

```

<script>
    document.addEventListener('DOMContentLoaded', function () {
        var mobileMenuBtn = document.getElementById('mobile-menu-btn');
        var mainMenu = document.getElementById('menu-bar').getElementsByTagName('ul')[0];

        mobileMenuBtn.addEventListener('click', function () {
            if (mainMenu.style.display === 'block') {
                mainMenu.style.display = 'none';
            } else {
                mainMenu.style.display = 'block';
            }
        });

        // Ensure that the menu is visible when the screen size changes
        window.addEventListener('resize', function () {
            if (window.innerWidth > 425) {
                mainMenu.style.display = 'block';
            } else {
                mainMenu.style.display = 'none';
            }
        });
    });
</script>

```

In the above JavaScript that is part of the index.html file there is an action event listener placed on the mobile-menu-btn so that when it is clicked there is an initial check if the main menu display is block which is visible or none when it isn't visible and based on it the opposite take places so the menu bar can expand and retract. There is also an action event listener to check if the resolution of the window is above 425px which means the menu bar should be visible.

```

#mobile-menu-btn {
    display: none;
    background: none;
    border: none;
    font-size: 1.5em;
    cursor: pointer;
    margin-left: 10px; /* Adds some space between the search bar and the button */
}

```

The above code is part of the CSS where it is initially not visible using the display style and it has no background or border with a 1.5em font size and a slight gap between it and the search bar.

```
#menu-bar ul {
    display: none;
}

#menu-bar li {
    display: block;
    text-align: center;
    margin-bottom: 10px;
}

#menu-bar li a {
    display: block;
    color: blue;
    text-align: center;
    padding: 14px 16px;
    text-decoration: none;
    outline: none;
}

#mobile-menu-btn {
    display: block;
}
```

This is the styling within the media query where the resolution is below 425px and so this causes the menu bar to appear when the mobile-menu-btn has its current state to block allowing the user to click it to expand the menu bar.

Additional Feature 2

Screenshot at relevant breakpoint

Dimensions: Responsive ▾ 1440 × 796 95% No throttling ▾

Latest news from Lancaster University

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TOP 150 2022

QS WORLD UNIVERSITY RANKINGS

Code extracts and explanation

```
<script>
  // JavaScript function to toggle content visibility
  function toggleContent(newsId) {
    var expandedContent = document.querySelector('#' + newsId + '.expanded-content');
    var toggleButton = document.querySelector('#' + newsId + '.toggle-button');

    // Toggle the visibility by adding/removing classes
    if (expandedContent.style.maxHeight) {
      expandedContent.style.maxHeight = null;
      toggleButton.textContent = "Read More";
    } else {
      expandedContent.style.maxHeight = expandedContent.scrollHeight + "px";
      toggleButton.textContent = "Read Less";
    }
  }
</script>
```

The JavaScript code above is a function that takes in the news article id and then makes it so that when the read more button is clicked the expanded content is displayed which is part of a separate class in the same article div for the additional content and the use of if statements check if the max height of the expanded content is reached and if it is has, and the button is clicked, the expanded content retracts and the opposite takes place.

```
<div class="news-article" id="news1">
  <h2>Lancaster researcher wins national photographic competition with image depicting human connections to smartphones</h2>
  <br>
  <p>A Lancaster University researcher has won a national photographic competition aimed at illustrating human interactions with cyberspace.</p>
  <p>Anna Dyson, a PhD researcher in International Relations at Lancaster University won Best Overall Photo in the external category of the competition, run by the University</p>
  <div class="expanded-content">
    <p>Anna's research focuses on complex socio-technical systems and their implications for defence and security, with a specific interest in remote technologies, robotics and automation. She said:</p>
    <p>"The image seeks to capture the intertwined nature of humans and their smartphones, which sometimes feel like an essential part of, or even extension of ourselves. Smartphones have become such an integral part of our daily lives that it can be easy to overlook the data we sometimes unknowingly offer up about our lives, and the ways this data might be harvested by others."</p>
  </div>
  <button class="toggle-button" onclick="toggleContent('news1')>Read More</button>
</div>
```

The above is an example of an article with the additional expanded-content class within it that stores more information and there is a button below with the class toggle-button which on click uses the function togglecontent to display the read more content or reduce the content with read less.

```
/* Style for the expanded content */
.expanded-content {
  max-height: 0;
  overflow: hidden;
  transition: max-height 0.3s ease-in-out;
}

/* Style for the expand/collapse button */
.toggle-button {
  background-color: #B30000;
  color: white;
  padding: 8px;
  cursor: pointer;
  border: none;
  text-align: center;
  display: block;
  margin-top: 10px;
}
```

The above code is part of the CSS where the toggle button has a background colour of red and has the text as white with a padding of 8px and is on display. There is also the expanded content where within 0.3s the content should expand downwards to the max height of the expanded content.

Part 2 Bibliography

1. Changing Layouts Based on Screen Size using CSS. Available at: <https://www.tutorialspoint.com/changing-layouts-based-on-screen-size-using-css#:~:text=To%20change%20the%20layouts%20based,%2C%20mobile%2C%20desktop%2C%20etc>. (Accessed: December 3, 2023).
2. How to use margin, border and padding to fit together in the box model? Available at: <https://www.tutorialspoint.com/how-to-use-margin-border-and-padding-to-fit-together-in-the-box-model>. (Accessed: December 3, 2023).
3. How to create a navigation bar in 6 minutes. Available at: <https://www.youtube.com/watch?v=f3uCSh6LIY0>. (Accessed: December 4, 2023).
4. How to Make a Footer in HTML and CSS for Beginners Tutorial - Fully Responsive. Available at: <https://www.youtube.com/watch?v=5WoQm7tR6EA>. (Accessed: December 4, 2023).