Coursework Assignment

Due No due date **Points** 0

Assignment

The aim of this assignment is to introduce you to some of the practical skills required to create a functional, standards-compliant web page using HTML, CSS and Javascript. The assignment assesses your ability to implement a webpage from a given textual and visual specification.

Objectives

- To create a cleanly structured, valid HTML web page from a plain text document (provided), based on a visual representation of the end result
- To correctly include specified images and other external page objects within the final document
- To use clean valid CSS to layout and present a HTML document
- To provide Javascript that enhances the usability of the web page

Getting started

Read through the specification carefully before starting.

Download the following files from the specification folder at http://homepages.cs.ncl.ac.uk/harold.fellermann/csc8018/ocean_cleanup/specification/ (http://homepages.cs.ncl.ac.uk/harold.fellermann/csc8018/ocean_cleanup/specification/) :

- `ocean_cleanup.txt`
- `ocean_cleanup-HTML.png`
- `ocean_cleanup-CSS-wide.png`
- `ocean_cleanup-CSS-narrow.png`

Part 1: HTML for Structure

Instructions

Use HTML tags and attributes to mark up the contents of `ocean_cleanup.txt` for display on the web, as shown in the resource file `ocean_cleanup-HTML.png`. Save your file as `ocean_cleanup.html`.

Marking Criteria

Structure and organisation [4 marks]: Appropriate, content-specific, clean semantic markup that reflects the document structure must be used throughout the document. Your page must correctly link to all required external resources. Your finished `ocean_cleanup.html` must contain a suitable DTD and

validate automatically as HTML5 when checked by file upload at http://validator.w3.org/ (http://validator.w3.org/) .

Links, images & media [4 marks]: Images and other external media objects must be appropriately marked up and displayed correctly. All images should be linked using full absolute URLs (see Assets & resources section).

Accessibility [3 marks]: Your markup should follow accessibility best practices for non-textual content such as images, tables and forms.

Visual comparison [1 mark]: Your file `ocean_cleanup.html` should look like the screenshot example shown in the resources file `ocean_cleanup-HTML.png` when the page is displayed without styles. In particular, you are not allowed to add, remove, or rearrange the supplied content.

Part 2: CSS for Style

Instructions

Add valid CSS to style your `ocean_cleanup.html` as shown in the resource files `ocean_cleanup-CSS-wide.png` and `ocean_cleanup-CSS-narrow.png`. All your CSS must be contained inside a single external file called `ocean_cleanup.css`. You are not permitted to use any external CSS libraries (such as jQuery-UI or Bootstrap).

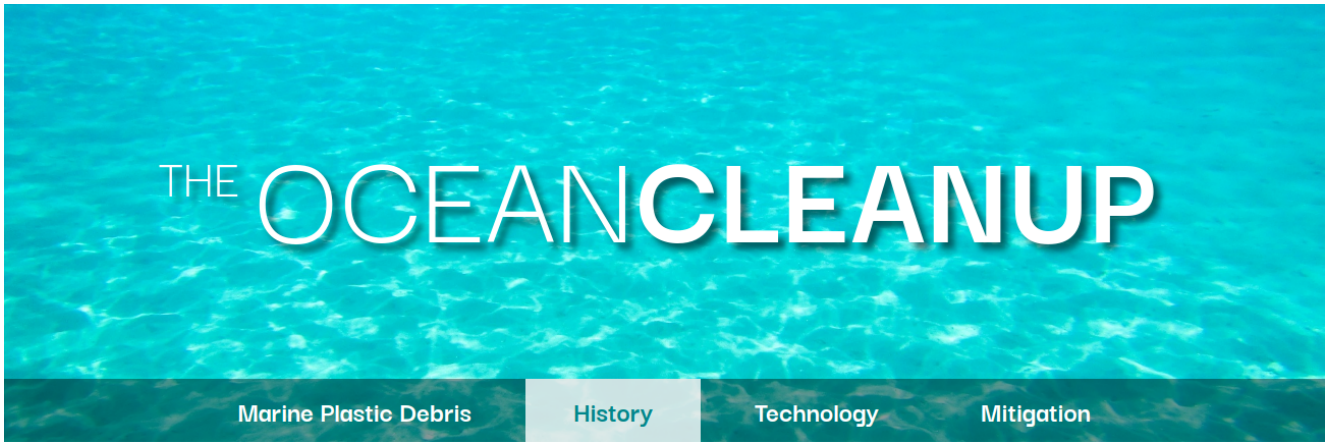
Marking Criteria

Overall page layout [3 marks]: The main page content should be centered within the viewport, with the text not extending approximately 80 characters in width. Header and footer should extend over the entire viewport width. Whitespace should be coherent and generally follow proportions of the provided graphical specifications.

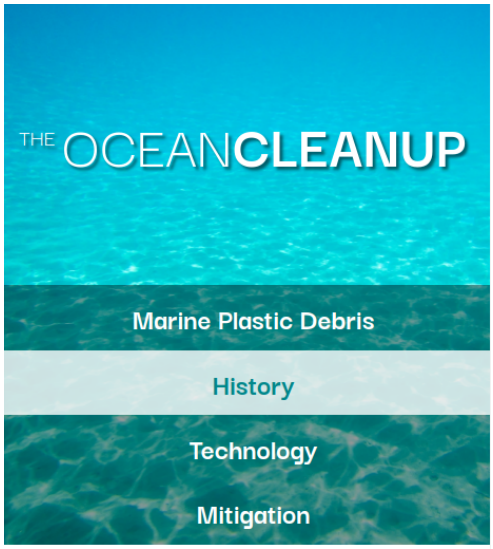
Header and footer [3 marks]: Header text and background should appear as similar to the provided specification as possible. The header font size should scale to ensure that the heading fits into a single line on narrow viewports. On wide displays, however, it should not significantly exceed the width of the main text body (c.f. screenshots below).

Navbar [2 marks]: The navigation bar should render as a single horizontal line on viewports of sufficient width. It should toggle into a vertical arrangement on viewports that do not fit the horizontal layout. At no point should a horizontal navbar break over multiple lines. Submenus do not need to be displayed.

When hovering over a menu item, background and text color should highlight the hovered item as in the following screenshots:



Header and navbar on wide display



Header and navbar on narrow display

Side element [3 marks]: On sufficiently wide displays, the plastic footprint calculator should be placed to the right of the main text, with its bottom aligned with the bottom of the main text. The calculator should be separated from the main text by a modest amount of whitespace, even on very large displays or when the page is zoomed out. On smaller displays, the calculator should be displayed under the main text – again separated by a modest amount of white space.

Responsive content layout [3 marks]: The website should render nicely for any viewport width, including displays as narrow as 300px. Images and other elements should scale down in size to fit the viewport if needed. The page should not cut off any content or introduce horizontal scrolling.

Colours, typography and effects [4 marks]: You should be resourceful enough to find out the correct hexadecimal codes for the colours used in the specification. Do so … and use them correctly.

The core typeface in use is 16pt “EB Garamond”, with “Darker Grotesque” for the page title and navigation, and “Special Elite” for subheadings and figure captions. You should *not* assume that they are installed on the viewer’s computer for the page to render as intended. A little research should enable you to build simple font stacks to implement them correctly using CSS. Your font stacks should provide appropriate alternatives if these typefaces are not loaded on the client.

Effects such as text and box shadow should be used as in the graphical specification.

Special page elements [8 marks]: Non-textual page content (images, videos, tables, forms, quotation) should render as close as possible to the given visual specifications.

Underlying framework [2 marks]: Your solution should employ, well structured and decently commented CSS that employs reasonable selectors to achieve its effects.

Your finished `ocean_cleanup.css` must employ valid CSS level 3. You can use the W3C validator http://jigsaw.w3.org/css-validator/ (http://jigsaw.w3.org/css-validator/) to test whether your solution is valid. Be aware, however, that the validator does not support the full feature range of the CSS3 specification and might report errors for valid CSS.

Part 3: Javascript for Behaviour

Instructions

Provide interactive functionality to your webpage by providing and linking to a file `ocean_cleanup.js`. The content of this file should modify the default browser behaviour to improve the usability of the calculator under “Check Your Own Plastic Footprint”.

Personalized plastic waste calculation [3 marks]: Whenever any input field of the calculator is changed, the webpage should recalculate the overall estimated plastic waste footprint. This functionality should not rely on the browser reloading the page. Instead, calculation results should be updated immediately whenever a field content changes.

Your script should calculate ther overall plastic footprint per person in the user’s household, as well as the item that accounts for the highest amount of plastic waste.

For the calculation, assume the following conversion between unit values (e.g. 1 plastic bottle) and kg plastic / year. Note that all numbers here are given in kg/year, even where the calculator shows a different time interval in the interface.

Item	kg/year
Plastic bottles	0.730
Plastic bags	0.417
Food wrapping	0.583
Yogurt, cream, etc. containers	0.383
Take-away plastic boxes	0.383
Take-away cups	0.240
Plastic-wrapped packages	0.834
Detergent & cleaning product bottles	0.120
Shampoo, conditioner & toiletries	0.080

Item	kg/year
Plastic toothbrushes	0.020
Toothpaste	0.015

Your script should add up the contributions of all input fields and devide this sum by the number of people selected by the user in the section “Household size”, to produce an estimation of the user’s overall plastic waste footprint.

Display of results [2 marks]:

The total plastic waste footprint in kg/year must be displayed under the heading “Your Plastic Footprint” and should rounded to no more than three digits after the period.

The label of the item that accounts for the highest source of plastic waste should be displayed into the paragraph starting with “Most of your plastic waste originates from …” under the heading “Tip”. For example, if food wrapping is the category that produces the most waste, the respective paragraph should read “Most of your plastic waste originates from food wrapping”.

The script should also display one tip associated with this biggest item, chosen from the following list:

Item	Behavioural tip
Plastic bottles	Many beverages can be purchased in glass bottles. Consider to bring reusable bottles for water and hot beverages when you are out and about.
Plastic bags	Bring reusable fabric totes for shopping and refuse plastic bags when offered.
Food wrapping	Consider to buy more unpackaged food at local markets.
Yogurt, cream, etc. containers	Some places offer dairy in glass containers. You could even explore recipes to make your own yogurt.
Take-away plastic boxes	Cut down on take-out packaging by preparing more meals at home.
Take-away cups	Bring your own tumbler when ordering hot beverages to go.
Plastic-wrapped packages	Try to purchase more products in shops rather than online.
Detergent & cleaning product bottles	Explore refill stations in your neighborhood to cut down on bottles from detergents and cleaning products.
Shampoo, conditioner & toiletries	Explore refill stations in your neighborhood to cut down on plastic waste from toiletries.
Plastic toothbrushes	Seriously? How often do you brush your teeth? Anyway, Did you know there are toothbrushes made from wood?
Toothpaste	Seriously? How much toothpaste do you use? Did you know there are plastic-free alternatives available?

If the total plastic footprint adds up to zero, the webpage should display “Most of your plastic waste originates from unknown sources” and should not display any tip.

Reset [2 marks]: The webpage should support to reset all input fields to their initial value when the user presses the “Reset calculator” button. The result section and behavioural suggestions (tip) should reset to their initial content whenever all input fields are set to their initial value.

Implementation [3 marks]: Your Javascript must not cause any errors or warnings on the Browser console. Your code should be clean and concise with good use of comments.

Hints

Redundant or extraneous mark-up will cost you marks. Think “lean and clean”. If you find yourself asking, “have I put too many tags in here?”, then you probably have…

The final page layout and functionality should appear and behave identically in recent versions of Firefox and Google Chrome. Your page will be tested in both browsers on a Windows platform. For the purposes of this exercise, other browsers do not have to be explicitly catered for.

The screen shot `ocean_cleanup-CSS-wide.png` is taken from a browser window set to 1920 pixels width, while `ocean_cleanup-CSS-narrow.png` is taken from a browser window of 360 pixels width. You can make measurements off it if you wish, however this may not help you much beyond relative proportions for margins, borders etc. You do not have to pixel perfect to pass. You should make sure that the page renders well on any viewport size, not only the two provided in the visual specification.

In order to achieve some of the “special effects” employed in this design, you might want to do some research into the following CSS directives: `background-position`, `background-size`, `box-shadow`, `text-shadow`, `text-transform`, `transform` in addition to what has been presented in the lecture material.

Assets & Resources

Image sets used in the assignment can be found at http://homepages.cs.ncl.ac.uk/harold.fellermann/csc8018/ocean_cleanup/resources/ (http://homepages.cs.ncl.ac.uk/harold.fellermann/csc8018/ocean_cleanup/resources/) .

The YouTube video to be embedded is located at https://www.youtube.com/watch?v=ROW9F-c0kIQ (https://www.youtube.com/watch?v=ROW9F-c0kIQ)

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All fonts are provided by GoogleFonts at https://fonts.google.com/ (https://fonts.google.com/) .

Submission

You will need to submit the following three files for this assignment to NESS:

File	Description
`ocean_cleanup.html`	Your HTML markup of the original document
`ocean_cleanup.css`	An external file, linked to `ocean_cleanup.html`, containing all the style information for the final presentation
`ocean_cleanup.js`	An external file, linked to `ocean_cleanup.html`, containing all your Javascript source code

The due date for this assignment is specified on NESS.

Remember your submission is timed when it *finishes*, not when it starts, so allow time before the deadline to submit your files.

All parts of the assignment will be assessed together and you will receive a single mark returned.