
# Technical Report

## Interaction Design CA

Alexander Barrett

## Word count

Summary: 138 | Main text:2260

# Table of Contents

Table of Contents ..... 2
1. Summary ..... 3
2.1. Hotjar ..... 4
2.2. User testing ..... 6
3. Improvements and Technical upgrades ..... 8
3.1. Updated home page, appearance changes and de-cluttering ..... 8
3.2. Contact form validation ..... 8
3.3. Added products page filtering ..... 8
3.3. Product page ..... 9
3.4. Cart page ..... 11
3.5. Payment and confirmation pages ..... 12
3.6. Account Page and order history ..... 13
3.7. Testing the upgrades ..... 14
4. Screen reader and keyboard user considerations. ..... 15
4.1. Issues found when attempting to navigate. ..... 15
4.1. Solutions attempted for problems. ..... 15
5. References ..... 17
5.1 filter hell ..... 17
5.2 Web accessibility research ..... 17
6. Acknowledgements ..... 18
7. Appendices ..... 18

# 1. Summary

Looking back at my Rainydays cross-course project, try to ensure that the website is more user-centric with a better focus on helping users achieve their goals as effortlessly as possible.

Then using data gathered from Hotjar to determine aspects of my site that caused problems for users. Then do some contextual inquiry interviews to see how users interact with these aspects and the rest of the site. Using what I learned from Hotjar and the user interviews, improve these aspects and any other areas that caused problems as well as apply further improvement based on subjects learned throughout the course.

Then perform further testing on these improvements to see if they improve on the problems, or created new ones.

With the basic requirements to create a JS validated contact form, a functioning cart, and a purchase system.

# 2. Initial data collection and testing

## 2.1. Hotjar

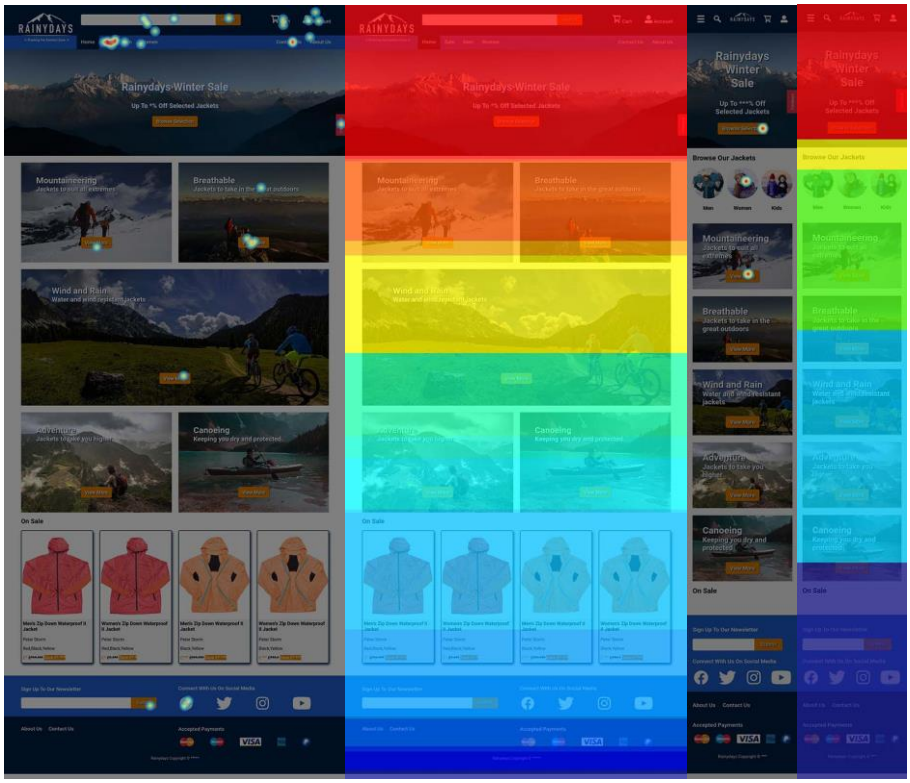

Figure 1. Hotjar maps for the homepage on mobile and desktop.

On the home page many users never got to the bottom of the page. The main banner link at the top of the page was never clicked, on desktop requiring greater emphasis. The recordings from Hotjar show no problems using the navigation, although mobile users didn't use the hamburger-menu on the homepage, opting for the call-to-action buttons and quick-links.

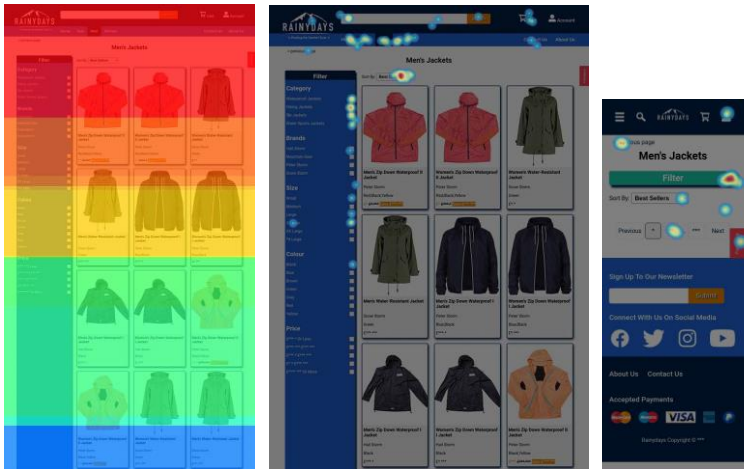

Figure 2. Hotjar maps for products page.

The products page showed many users trying to use the filter, as well as limiting the results on the page to manageable amounts. I also found a bug on mobile as a result, where the products failed to display on some devices.

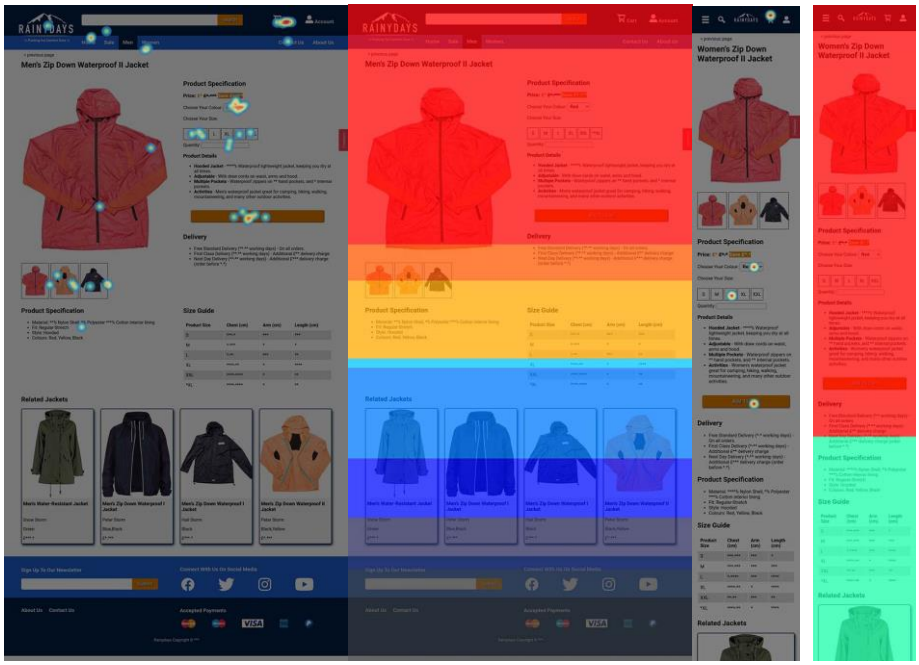

Figure 3. Hotjar maps for product page.

On the product page many users clicked on the cart icon and repeatedly on the add to cart button. The recordings show many users failed to fill out a quantity or select a size. Once again, many users never scrolled to the bottom of the page, and no clicks were registered on the related items.

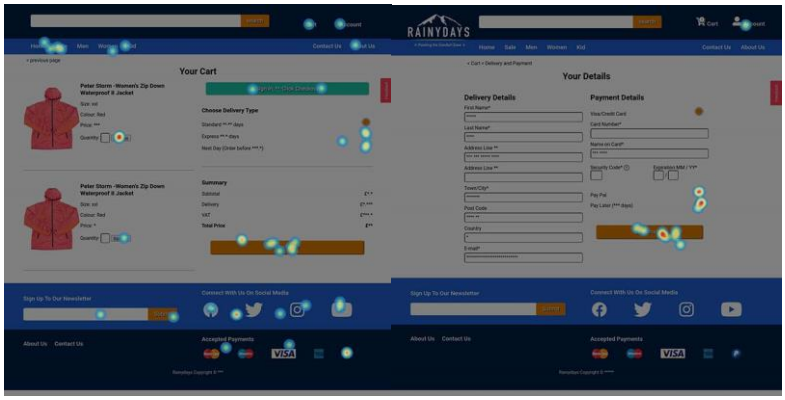

Figure 4. Heat maps from cart and payment details page.

Heat maps for the cart show a lot of users trying to remove items, and change delivery options, before proceeding or going back to browsing products.

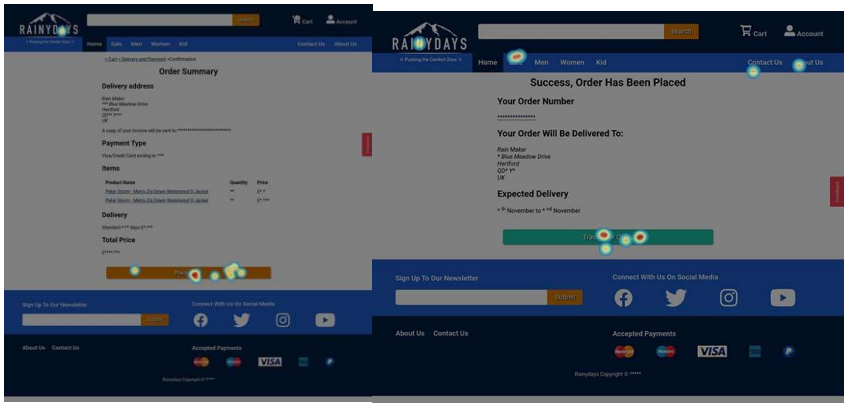

Figure 5. Heat maps for confirmation and success pages.

These pages were simple enough with clicks through, on the order success page having a link on the order number appeared redundant as no one clicked it in favour of the button.

### 2.2. User testing

For my user testing I studied the recording of users navigating my website on Hotjar, as well as sitting down with my wife, and three other family members and getting them to navigate through the site on various devices, making comments on why they did things, taking notes throughout.

For the homepage, I asked my users what drew their focus and why they wanted to click on various sections. From this I found;

- The top banner sale didn't stand out verse other links.
- Users chose a link with a picture that best represented their interests at a glance.

Summarised areas users struggled or commented on;

- Cart page;
    - Two buttons added confusion.
    - One-click button was on top of delivery selection on mobile and tablet adding further confusion.
    - Cart items needed to be more compact on mobile.
- Contact form no success message.
- The product page;
    - No feedback when item is added to the cart.

    - Item should change colour on colour select.
    - More images of product.
    - To much clutter of details.
    - Labels for inputs not standing out.
- Products page;
    - Some users wanted to click on the name.
    - On mobile product filter was so large you had to scroll, and then when closed you skipped an item or two.

From these notes I identified areas most wanting of functionality;

- Greater emphasis on homepage sale button.
- Working products page filter.
- Add and remove items from the cart.
- An account page with order history.

# 3. Improvements and Technical upgrades

## 3.1. Updated home page, appearance changes and de-cluttering

For my site's navigation, I removed links for brands and kids as they were never clicked on.

For my home page on desktop, I have enlarged the button, and added zoom in and out animation to the background image to draw the user's eye into the button as well. I left the rest of the content as is, since it offered enough variety for users pick a picture to follow.

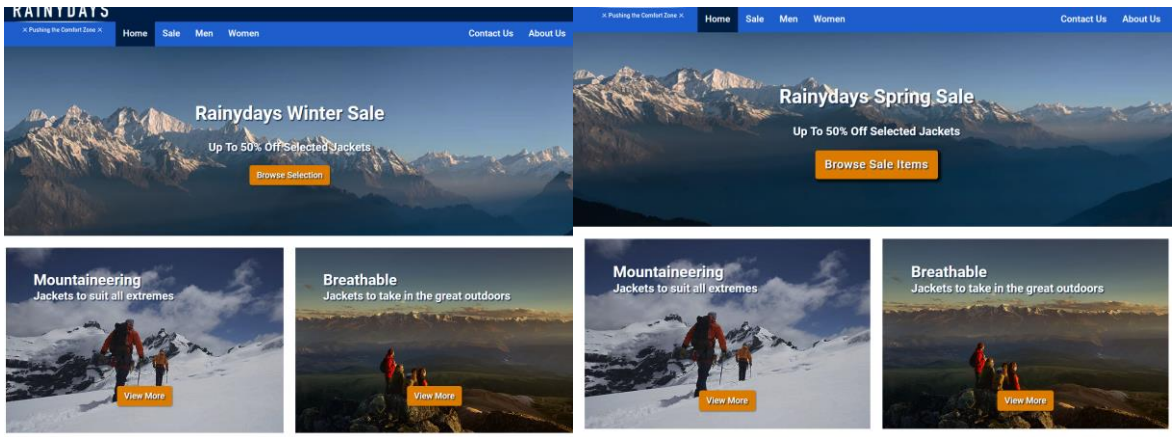

Figure 7. Old sale link vs new.

## 3.2. Contact form validation

I added some form validation to the contact form, with auto-generated error messages for each input, and a success container at the top of the form upon successful submission, the JS also scrolled the screen to it for phones and tablets. I adjusted the size of the inputs to try and match the size of the expected input, to avoid spanning the width of their container.

## 3.3. Added products page filtering

For my products page, I created a JS data file with a selection of products swapping around their details to create some variation. I then filtered these by sex or if they were on sale depending on the query string passed, with no query string displaying all items.

I applied an event listener to each checkbox on the page, which would loop through all the checked boxes and apply their key and name value as an array to another array. I created an object with filter categories as properties, looping through the created array and pushing the relevant values into their corresponding categories in the object. I used this object to filter my current page's products. I looked at a lot of sources on stack overflow to achieve this listed in my references.

The items generated then contained links with query strings to pass onto the product page so the correct item could be displayed.

I expanded the product grid on larger screens to allow 4 products per row and shrank the filter on bigger screens. I added more variety of images so the page didn't look too much like the same jacket on repeat.

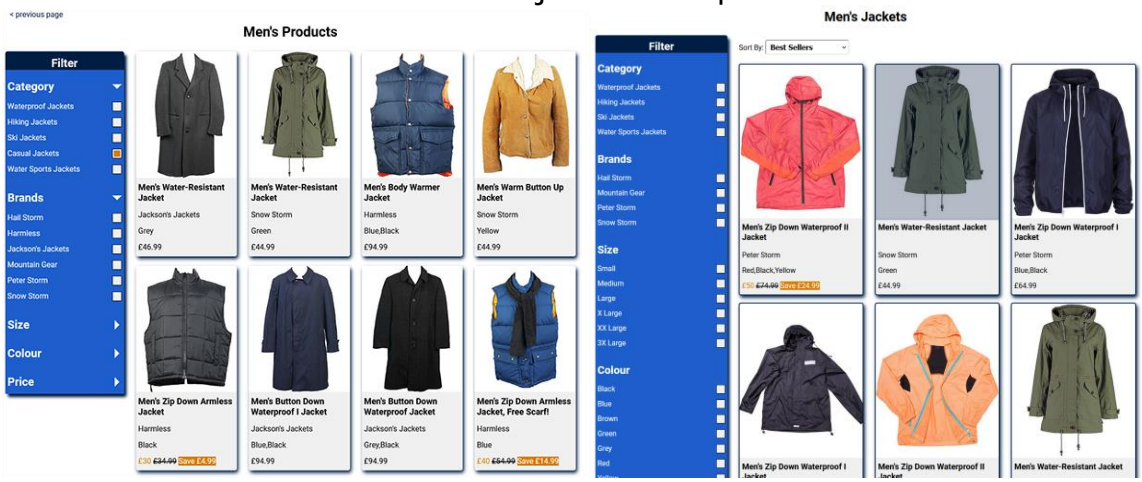


Figure 7. The final look of products page vs old.

I removed borders of the product images as their drop shadows added enough definition. I added JS to toggle classes on clicking filter sections headings so that users can open/close the option and to shrink it for mobile users.

### 3.3. Product page

On my product page, the query string was grabbed to generate the detailed content for the item from my data file. For my image selector I used the image alts to connect the labels and radio buttons so the main image could be switched, the JS would generate this based on how many images were in the image array for the item. For the size and colour selectors, the JS would produce options or radio buttons based on the size and colour arrays for the

product. Added the product details and specification with JS, with the same toggle to display as the filter menu.

I made the labels for the selectors on the page bold to gain the users attention, preventing users adding to cart without selecting a size, adding an error message just in case. I set the quantity input to a default value of 1 as many users left it blank otherwise.

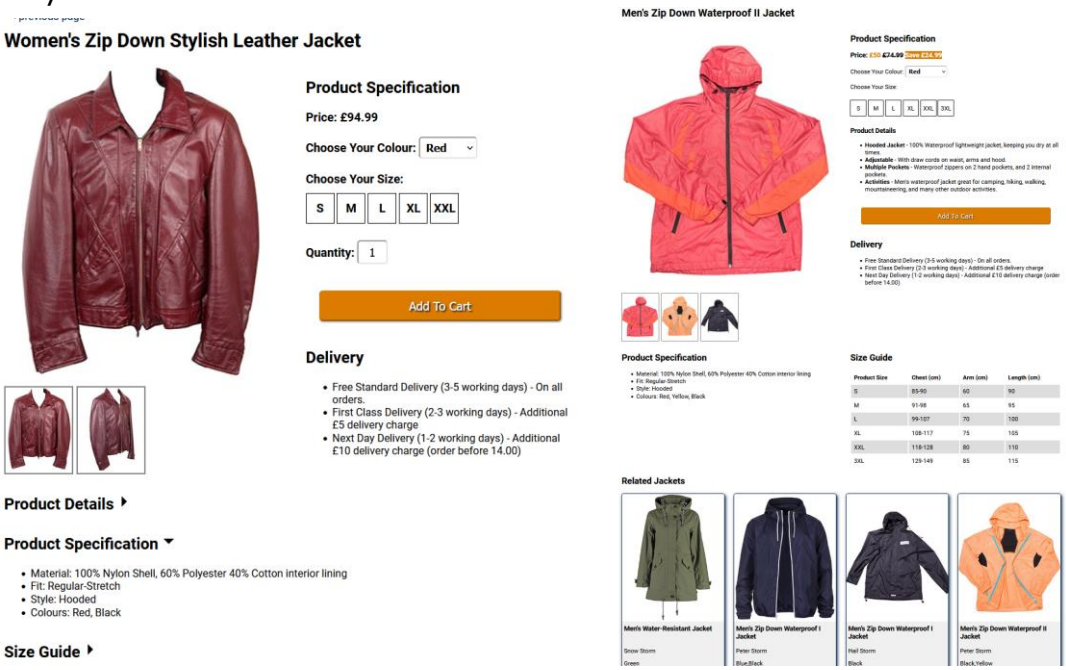

Figure 8. The final look of product page vs old.

Upon clicking the added to cart the JS creates a cart array or add to the existing one, in here I would log the item's id, colour, size, and quantity, for use in the cart page. I added a loop to check the existing cart for duplicates to avoid repeats of the same item and just update the property. I created JS to detect if the cart had items in and update the navigation icon for the cart to a full cart.

I then added a lightbox, by filling an empty div on the page with a background and content container showing the item that was added to the cart and giving the user options to close the box, or proceed to the cart page.

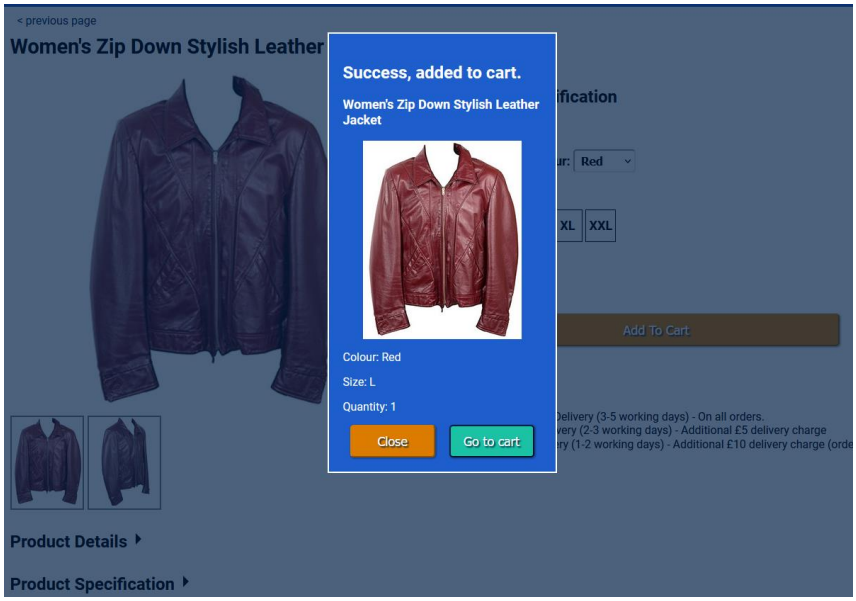

Figure 9. Lightbox popup, upon adding item to cart.

## 3.4. Cart page

I removed the one-click checkout button, requiring all users to go through the full process but auto-filling the forms if they were logged in or had entered their details before.

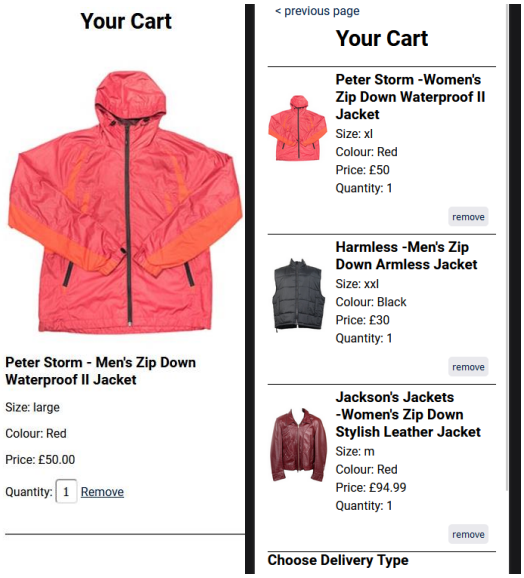

Figure 9. Old mobile layout vs new mobile layout.

I then edited the cart items layout to be more compact, which benefited larger screens, giving a greater summary of the cart items without a need to scroll.

The cart content was created based on the stored local data, adding the size, colour, and quantity, looking up the data file for the rest of the item's info. Added a remove button and pushed it to the bottom right corner to avoid accidental pressing.

I added event listeners to the radio buttons for the delivery type and updated the price based on the selection, with this information being stored in local storage for later in the payment process upon submitting the form and proceeding to the payment page.

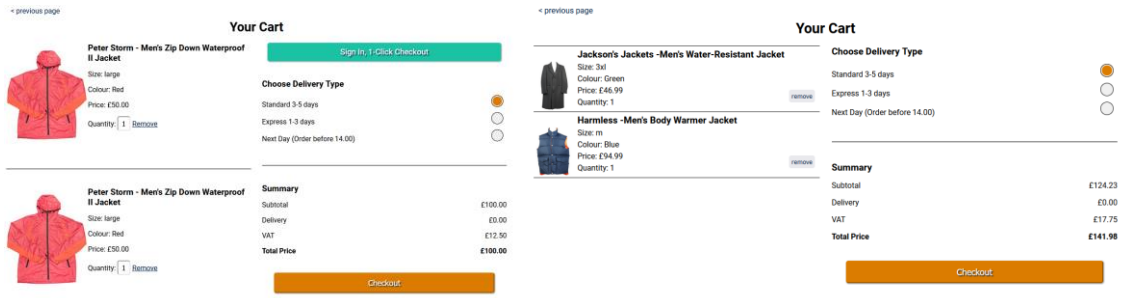


Figure 10. Old cart vs new cart on desktop.

## 3.5. Payment and confirmation pages

For my payment page I have added validation and error messaging for all inputs. I have also shrunk down the inputs so they do not all span the size of the container. I added a remember details button which stores the user's data in local storage if checked or session storage if unchecked. Once validated the inputs store the user data and proceeds to the confirmation page.

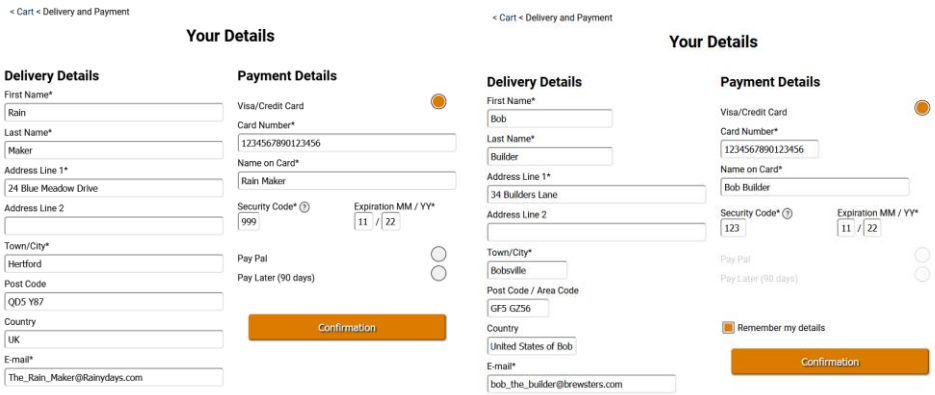


Figure 11. Old vs new delivery and payment details.

The order summary takes the user payment details, delivery choice and cart from local storage to generate a summary for the order before confirmation. Once confirmed the cart was cleared and the order added order history in local storage with a success page.

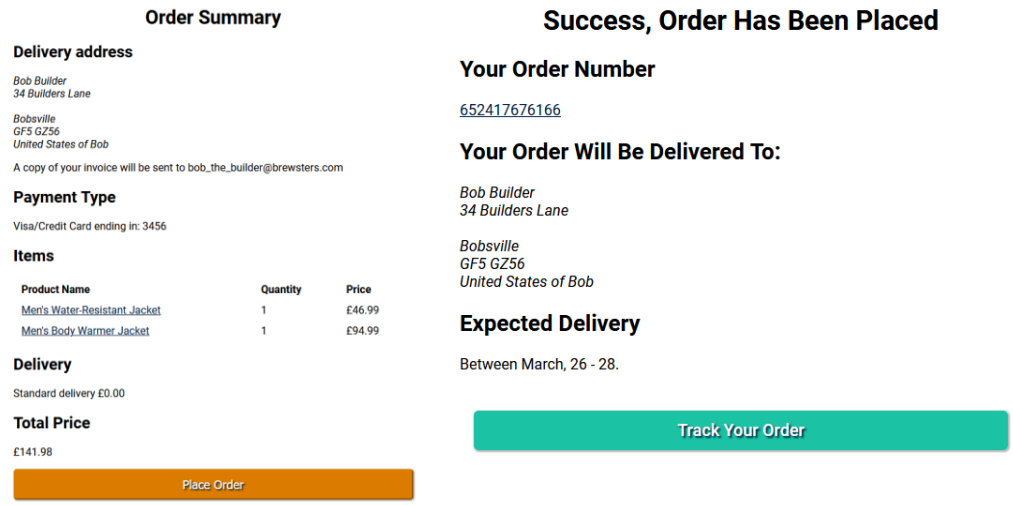


Figure 12. Order summary and success pages.

## 3.6. Account Page and order history

Added a login or sign-up form which toggles when pressing the bottom button, hiding the confirm password input for login, and dictating the validation performed on submission. To simulate the process when signing up the user's login details are stored in local storage with a true indicator to log them in after signing up. I have not sorted for orders from different emails yet, so all orders stored in local storage will display.

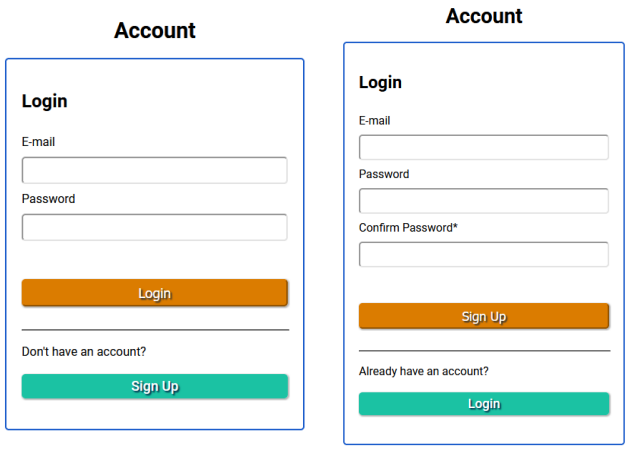


Figure 13. login/sign up toggle.

When logged in the account page will display a summary of all the orders placed and stored in local storage, with links to the items, an order number and total price. I also included the payment and details form for users to update the info. I will expand the options on this page further in the future.

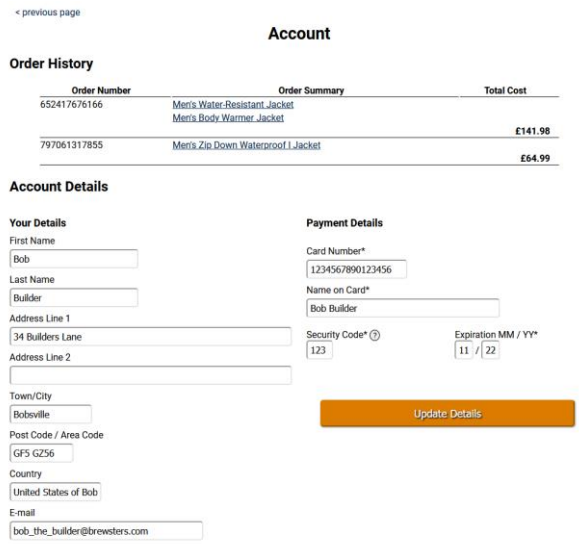


Figure 14. Logged in account page.

### 3.7. Testing the upgrades

Users were happy with the homepage update, the larger button and zooming animation on the image making them want to press the button.
The smaller, collapsed filter sections were well received on mobile and desktop allowing users to choose what they wanted. Additional item images on the products pages made the site feel more real.

The removal of clutter on the product page by turning the details sections into toggle and increasing the label text font weighting allowed the user to see the important options before adding to cart, with the lightbox pop up confirming the addition and directing them to the cart.

The smaller layout for items on the cart page reduced scrolling on mobile and added a greater overview on tablets and laptop screens. The removal of the one-click checkout helped reduce confusion on which button to press. One comment users, did make is additional options to edit items in their cart.

The ability to login/sign-up and see an order history was a plus but greater functionality was wanted in the account section as well as detailed order information.

# 4. Screen reader and keyboard user considerations.

### 4.1. Issues found when attempting to navigate.

I installed a screen reader for google chrome and began tabbing through my pages I noticed a series of problems;

1. Smaller screens reader ignored navigation links as they were hidden in a menu drop down.
2. Skip to main content on each page.
3. More descriptive image alts on products.
4. Products page filter needs a to skip to products link.
5. Product page can't tab to size selector as the inputs are display none.
6. When adding to cart screen reader needs to be taken to the lightbox links.
7. Can't select delivery options, due to hidden inputs.

### 4.1. Solutions attempted for problems.

For my page navigation I changed the inputs for the hamburger and search menu drop downs to be visually hidden but not set to display none allowing the item to be selected with tab. I made similar changes to my product page and cart page so the user could get to the selection radio inputs. Upon doing this I realised the need for more description on my size selector inputs for better clarity for screen readers.

I then used some code from an article on webaim.org about "Invisible Content Just for Screen Reader Users" to add a skip to main content at the top of my pages, allowing the user to skip the navigation on the pages, but also displayed the skip link for visual keyboard users, further JS could be added to make the link linger in case a user skips rapidly over it. In the case of the products page the user was skipped to the products list but a redesign of the filter will be required to allow keyboard users to easily toggle open the filter sections and tab through them.

For the images I updated my alts to include the jacket colour and product name allowing a user to get a better idea of what item they are focused on, further details such as price could be added too for screen readers.

For the lightbox I placed the container below the submit button so when the JS fills the container it will be the next tab along for the close and proceed to cart buttons.

While keyboard and screen reader support on the website is improved there is still plenty more to do, and testing with a disabled user would be helpful to highlight further problems in this area.

# 5. References

## 5.1 Products Page Filter Hell

Stackoverflow, "change an array depending on whether the checkbox is checked or unchecked using vanilla JavaScript", 2021. https://stackoverflow.com/questions/69088879/change-an-array-depending-on-whether-the-checkbox-is-checked-or-unchecked-using [accessed: Mar – 2022]

Stackoverflow, "addEventListener to multiple checkboxes ", 2020. https://stackoverflow.com/questions/51433092/addeventlistener-to-multiple-checkboxes [accessed: Mar – 2022]

Stackoverflow, "addEventListener using for loop and passing values [duplicate]", 2018. https://stackoverflow.com/questions/19586137/addeventlistener-using-for-loop-and-passing-values [accessed: Mar – 2022]

Stackoverflow, "How to check if array of objects that contains another array of object has property", 2021. https://stackoverflow.com/questions/69975512/how-to-check-if-array-of-objects-that-contains-another-array-of-object-has-prope [accessed: Mar – 2022]

Stackoverflow, "Check if an array contains any element of another array in JavaScript", 2013. https://stackoverflow.com/questions/16312528/check-if-an-array-contains-any-element-of-another-array-in-javascript [accessed: Mar – 2022]

## 5.2 Web accessibility research

WebAIM, "Invisible Content Just for Screen Reader Users", Last updated: Sep 25, 2020. https://webaim.org/techniques/css/invisiblecontent/ [accessed: Mar – 2022]

## 6. Acknowledgements

## 7. Appendices