Article Aggregator
Usability and Accessibility Review

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As W3C (2010) explain, usability is concerned with creating an intuitive user experience which provides adequate functionality to the user. A well designed user experience will expose all the functionality a user may need to carry out whichever tasks they may deem necessary on the website whilst hiding any functionality which is not required to provide for that given user's needs. This could entail visually grouping related information, using menus to allow the user to interface with the backend and having a consistent presentation layer.

Usability also draws upon and informs human computer interface (HCI) research in order to allow the user to interact with computer systems in an optimal and comfortable way. For instance, Nielson, J. (1993) conducted research that has shown that interactions should be designed to strive for a 10ms upper bound to the response time in order for a human to feel that the system is responsive; any longer and the user will begin to lose focus. As Rademaker, R. (2014) explains, the human brain can incorporate tools into the mental model of the body, making those tools an extension of our physical selves (this phenomenon is known as kinaesthetic projection); it is this relationship that good usability strives to create. Usability can also be looked at from an advanced user standpoint; for example providing keyboard shortcuts and customizability of the interface for increasing productivity of frequent users.

Shneiderman, B. (2010) details eight rules of interface design which stipulate consistency, informative feedback, simple error handling, reversal of actions and reduction of short term memory load as important factors in good interface design and usability. With regards to the website being developed for this assignment short term memory loads are not going to be an issue, but consideration will be made for providing a consistent user experience as well as providing error handling and informative feedback. Reversal of actions will be provided in the sense a user can save/remove articles although no specific functionality for actually reverting changes will be provided.

As W3C (2010) state that accessibility is concerned with making a product useable by as many people as possible; for instance people with colour blindness, deafness or users from different countries with different languages. Richardson, R. (2014) provides a review of the use of colour in web design, explaining that reds and greens should not be used for interactions where a user needs to use the colour to inform their decision making process as colour blind people have difficulty differentiating between the two. Another example is that of website navigation for blind people; in order to make it accessible an auditory representation of the system can be used for the users understanding (for instance hovering over a button will play the text in audio form through the users speakers). As Jain, S. et al. (2014) explain, several guidelines can be followed in order to develop a web framework which will make it easier to hook the interactions up to voice synthesisers such as developing a standard for information representation, removing non-essential information and using short paragraphs so that the user doesn't have to listen to long audio playbacks before moving onto the next interaction.

Often time's accessibility and usability inform one another, a great example of which is the Facebook navigation bar:

Facebook (2016)

Regardless of the language a user speaks they will be able to intuit the function of the menu elements as they are iconic; two people are friends, a speech bubble for chatting, the globe for global updates and a lock for security functionality. A small pointing icon indicates which one the user is currently interacting with. If this bar had been designed with language in mind; the bar would need to accommodate different sized strings for the same word in each and every language that exists. Not only would this make the menu inconsistent across different regions but it would also mean more work developing and maintaining it; so applying usability/accessibility guidelines provides a benefit for the developer as well as the end user.

Application of Principles to the Article Aggregator

The first step in providing a robust user experience was designing the front end system; i.e. the part of the overall website that the user would be interacting with. In order to avoid dead ends in the navigation a UX flowchart was developed detailing the closed system.

With this system a user will never reach a page where the websites navigation does not allow them to navigate to any other part of the system. The website is effectively broken down into two states; logged in and logged out where the transitions between these states are provided by the login and logout processes respectively.

The login page contains a link to the sign up page in case a user navigated there without already signing up. If a user tries to login with an incorrect password or username the page will reflect this by displaying some error text next to the input fields.

In addition to this navigation flowchart there was consideration made in how the user would navigate the articles, including how they would save/remove articles from the account. It was decided that the articles would be displayed in such a way that a user wouldn't be bombarded with a wall of text and instead could see just the title of the article; by clicking the title hidden content would be shown detailing the article and providing a link to the user. This process will use an open source jquery extension library ('expander') that makes the opening and closing of the hidden content animate with a short delay (around 10ms) in order to avoid the pages contents suddenly 'popping'.

When a user is logged in, the index page produces a form instead of a table which contains all the articles. The visual structure of the articles is the same when a user is logged out, however toggle buttons are provided next to each article title. These are greyed out and will switch to green when activated. As there is no red on this page green could be used for this purpose; a colour blind person will be able to tell the difference between grey and green. In addition to the use of colour, text is displayed on the buttons so that a user can always use the text to know which state the button is in; also this means that automatic audio queues could be used in future (when the user hovers over the button the text is read out as audio). The user can toggle several articles at once and hit the 'Save' button at which point the database will be updated. Similarly on the saved articles page the user can view their saved articles and toggle them for removal; on this page red is used for the toggle colour (again no green is used here so colour blindness issues are avoided) and the button at the bottom says 'Remove'.

Each page of the site uses the same template; a header containing the website title and navigation bar and a footer containing a link back to the index page, in addition the footer contains a small icon which, when pressed, scrolls the page back to the top in a smooth fashion (this animation is called

from an open source jquery extension library called 'easing-sooper'). The website uses a style sheet which applies a consistent style to every page so that the site has a holistic feel to it.

The dropdown items in the menu navigation bar are animated with a short delay using another open source jquery extension library ('sooperfish'). Again, this very slight delay the menu appearing is beneficial as it gives the user a small period of time to plan their next mouse movement as the menu is appearing. Dropdown menus are indicated by a small arrow icon next to the parent menu element; this is a fairly universal icon that represents hidden information (for example Facebooks settings drop down menu).
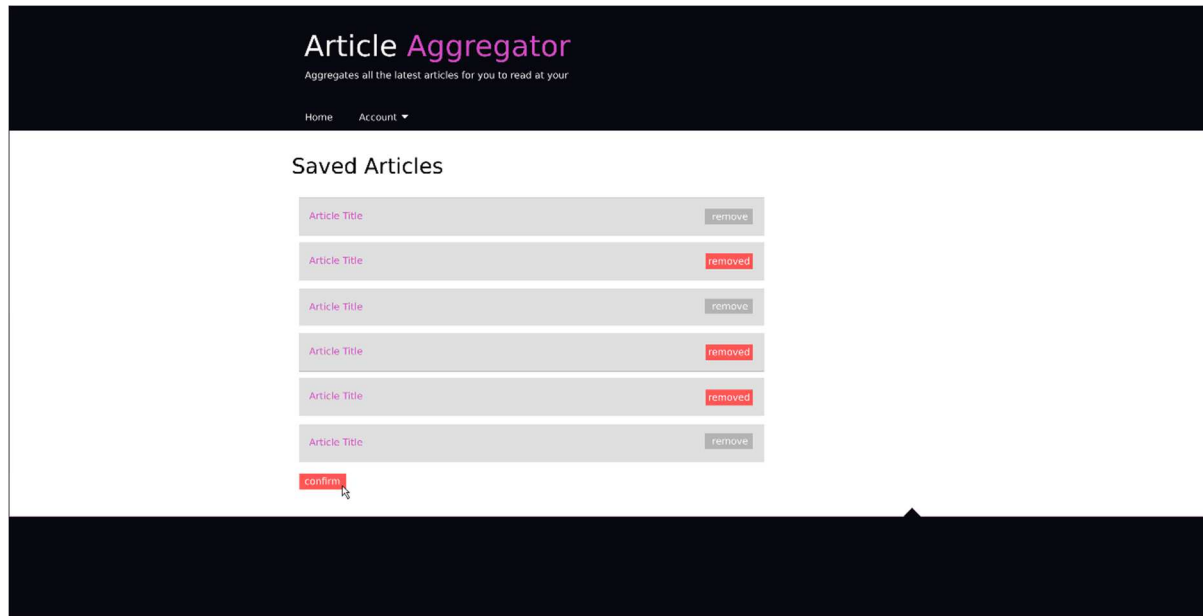
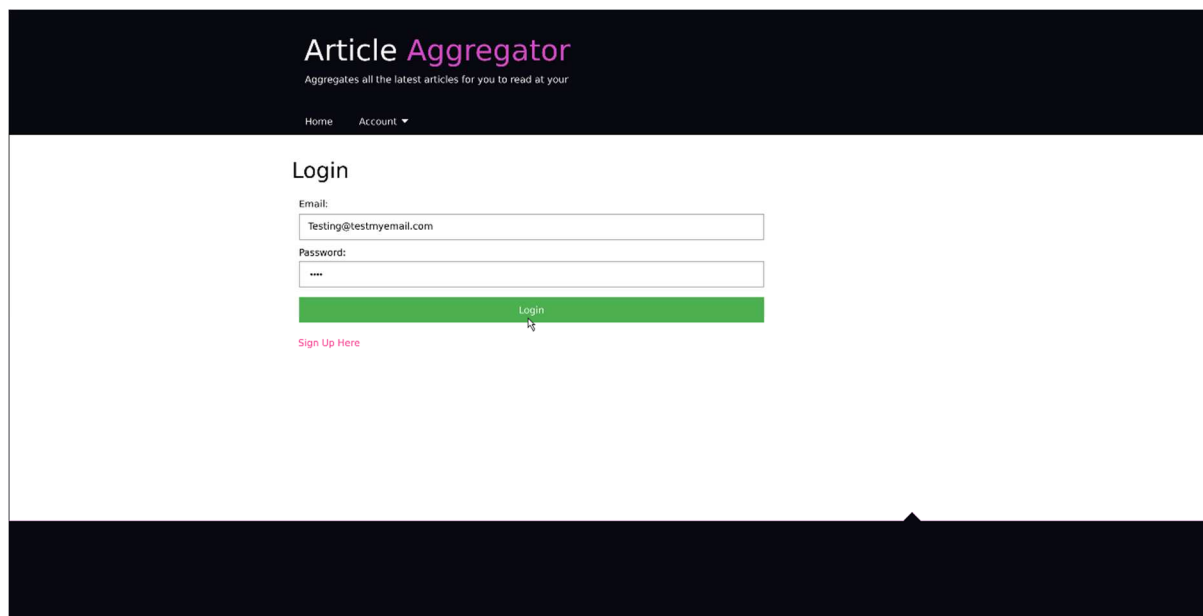## UX Flowchart
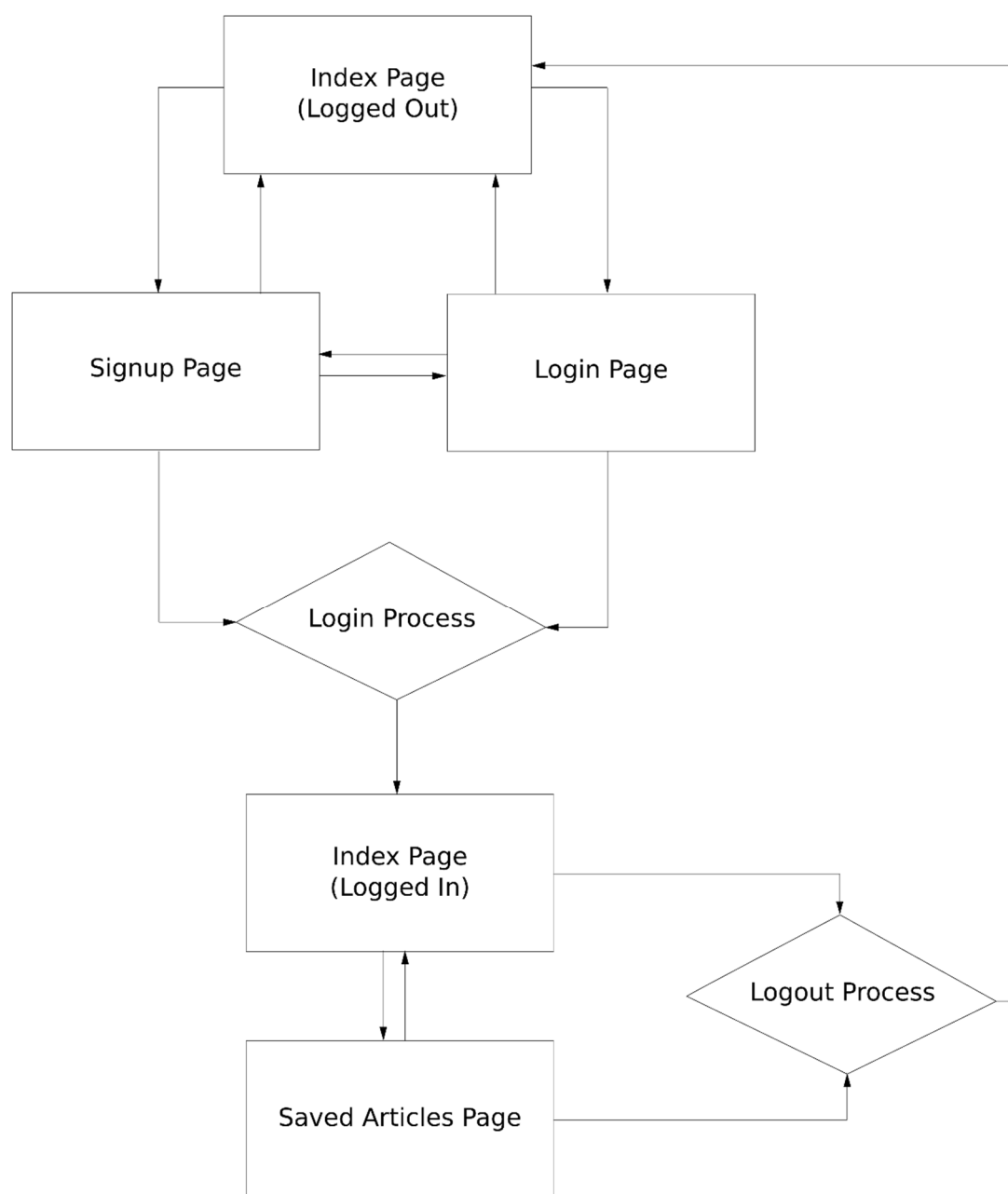
Wireframes

Index Page (Logged Out)
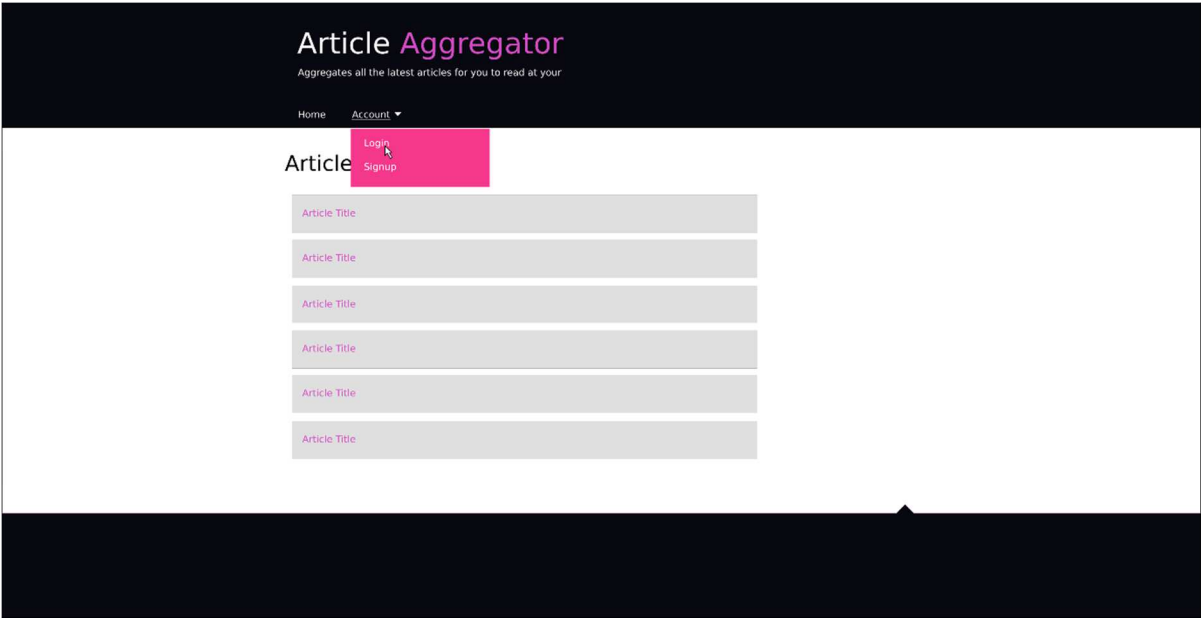
Index Page (Logged In)

Saved Articles Page

Login Page

Signup Page

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