

# DCU School of Computing

## Assignment Submission

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Signed: Kyrylo Khaletskyy, Ben Kelly, Alex Murphy, Eoin Molloy

Date: 12/12/2017

## Introduction

The website we have chosen to evaluate and improve is <http://www.pennyjuice.com>. This is a website where customers can buy childrens juice for their child care centers. The website is primarily targeted at people in the US who are more than likely nurses or managers in these establishments, we can see this by examining the customer reviews on the website itself. Throughout the entire website the colour contrast makes it hard to read for people. The website contains an abundance of customer reviews of the juice none of which can be read clearly. Various links are broken and do not lead anywhere, and when a user enters the home page he will be stuck on it as the homepage does not contain any links. All pictures on this website are not tagged and therefore cannot be read by screen readers for a person with vision deficit. One method used to understand the user's requirements is to first understand what the intended target audience is. Some customers may not be very "tech savvy" and would find it hard to navigate through this poorly laid out website. From this a user requirement would be to keep information on one page of the website to a minimum as well as possibly using icons and bold text to lead to other parts of the website with more information. Another method I plan to use to identify user requirements is to use a Cognitive Walkthrough. Our team would expose first-time-users to the Penny Juice website to give us an understanding of the website's usability issues as well as functionality issues.

When designing the website we tried to keep to the same theme as before that would appeal to the users. Using familiar style of colours and background which would be best described as a childrens play room. Colours were kept to a minimum with strong contrast between background and text colours to avoid where the previous website went wrong. The checkout area has also been completely redesigned to allow users to order with a Paypal account as this was our most popular payment method in our research. More details on User and Payment area testing and evaluation can be found below.

## Website Content

In the original implementation of Penny Juice's web page, the text was not only a bit of an eye sore but was difficult to read. This is down to two main factors, the contrast ratio between the text colour and the background colour and the text would be capitalised in one place but is lowercase in another, seemingly at random.

In the original implementation the contrast ratio between the text and the background varied greatly. This was due to a myriad of colours being used as background to text while the text only showed in black or white. There are so many different colours that the contrast ratio ranges from as low as 2.14: 1 all the way up to 15: 1. The Web Content Accessibility Guidelines (WAGB) provide a contrast ratio guideline. They suggest a contrast ratio of at least 4.5:1 for small text and a contrast ratio of 3.5: 1 for larger texts. In our team's

implementation of the Penny Juice website, the background colour as well as the text colour is constant throughout each web page. This ensures a contrast ratio of 18.51: 1 throughout the website.

Another problem with the original website is the text itself. Some of the text is capitalised but some is also lowercase. For example, in the reviews section, more than half of the reviews are capitalised and full spelling mistakes and typos. However, the remaining reviews are all lowercase. This caused great confusion when trying to read the content of the web page for users, especially if the user is visually impaired. In our implementation the text format is uniform throughout the website and is evenly spread out so the user is not faced with a wall of text to read through.

## **Order Page**

The original Penny Juice website utilised a rudimentary purchasing form with a different colour for every product that was difficult to look at. The user was required to input the quantity required into each field and order them without any feedback on the price or total quantity. Once ordered the user could only pay for the goods by invoice which is neither convenient nor what the average user prefers. It was learnt through a public survey presented to a group of people that most users want to be able to pay for their online goods through PayPal or with their Visa/Debit card.

With this in mind when designing the order page on the new and improved site we added some features and toned down the colour scheme for the products. The new order page utilises JavaScript to calculate the total cost of goods in real time while the user inputs the quantities. Through user testing it was noted that this feature was received well. A lot of users were surprised that this feature was not available on the original site.

The order page now links to PayPal to process payments as it is the most secure and trusted way to pay for goods and it a favourite amongst users. PayPal itself, once setup, is most definitely the easiest way to pay for goods. The user just has to login and accept the payment and then the goods are ordered. this method also provides consumers the extra safety of not having to provide their personal details to Penny Juice directly.

While designing the JavaScript to calculate the total price, the code had to be tested constantly as one character out of place between the script and the html caused the whole script to fail. Once the script was complete multiple tests were performed using different values in each field to ensure all calculations were being carried out properly. It doesn't make sense that the original site did not utilize this feature as any user would have to manually calculate their order before placing it.

It was important that all of this page's functionality could be used without the mouse for accessibility. This was achieved without much difficulty but it revealed an unforeseen error in the page. If the user pressed the enter button if not tabbed onto the PayPal button it hit

the reset button instead. This obviously was not ideal and is an example of how agile scrum testing helped reveal problems as they appeared. This problem was easily remedied once noticed.

Another problem that arose from testing was while checking that the calculations were being carried out correctly, it was noticed that the site didn't realise if a quantity entered was not an integer. This caused a problem as the system wouldn't be much use in Penny Juice consistently got orders for "H" bottles of apple juice. Another script had to be written to check the quantity fields and make sure no invalid characters are present, and if they are display a warning message to the user.

While on the topic of invalid form entries it was realised that the required forms above (Name, email, etc.) were not really required by the site as it would let them pass unfilled. Obviously this couldn't be left unchecked or orders would be processed without any of the customers details. This was easily remedied by a small amount of JavaScript added to the same file as the valid quantity checker. These functions are in the same file as to keep all related functions together. In the same way the calculations functions are both in their separate file. This makes future editing much easier, especially if the editor is not one of the original authors.

## Order Page Unit Testing

| Part tested:   | Input:                                     | Output:                  | Message:                                      | Action:                                      |
|----------------|--|--------------------------|---|--|
| Quantity Field | 3 in each field                            | *Blank* -Total           |   | Reviewed code & fixed error                  |
| Quantity Field | 3 in each field                            | (3*3.29)*No. of products |   | None - Output correct                        |
| Quantity Field | 3 in each field except 'a' in the last one | *Blank*                  | "Invalid character in quantity field."        | None - Output correct                        |
| Name field     | *Blank*                                    |                          | "Please enter a value for the "Name" field."  | Return                                       |
| Name field     | 'Joe Bloggs'                               |                          |   | No error as required field filled            |
| Email field    | *Blank*                                    |                          |   | Review code - forgot to make email required. |
| Email field    | *Blank*                                    |                          | "Please enter a value for the "Email" field." | Return                                       |
| Email field    | "Joe_Bloggs@mail.com"                      |                          |   | No error as required field filled            |

# User Testing

Procedure :

1. Test participants were given the original Penny Juice website to navigate on the tester's mobile phone.
2. They were then presented the improved website.
3. They were then given a set of questions to answer
4. Answers are recorded below

| Name           | Age | Employment               | Level of UI competence (1-5) (self assessed) | Rate the usability of Penny Juice (original) (1-5) | Rate the usability of Penny Juice (post improvements) (1-5) | Comments  |
|----------------|-----|--------------------------|--|--|---|---|
| Joe Kelly      | 17  | Secondary School student | 4  | 2  | 4   | Original website was nearly impossible to navigate. The home page was the major difference.   |
| Paula Moriarty | 50  | Child minder             | 2  | 1  | 3   | The first website was a nightmare to look at but the second website looked more revised and complete.   |
| Ken Moriarty   | 40  | Architect                | 5  | 1  | 4   | Initial 'PennyJuice' website had major flaws. Refined website fixed some bugs and improved aesthetics. The original website had more detail, not sure if this is important but worth reviewing. |
| Ed Meade       | 21  | CA student               | 4  | 2  | 5   | Usability of Penny Juice website is much improved.  |
| Alex Forde     | 20  | Engineering student      | 3  | 2  | 4   | Major difference was the overall look and feel to the website. Definitely an improvement.   |
| Michael Lawlor | 70  | Retired chauffeur        | 1  | 1  | 4   | Difference between the two web pages are night and day. I found the second one to be a massive upgrade.   |

Below is a scanned document of the survey we gave to our test participants.

Name: PAULA MARIARTY

Age: 50

Employment: CHILDMINDER

How would you rate your competence of User Interfaces on a scale of 1-5. 1 being a complete novice and 5 being an expert: 2

How would you rate the usability of the first website you were shown? On a scale of 1-5. 1 being extremely hard to navigate. 5 being completely intuitive. 1

How would you rate the usability of the second website you were shown? On a scale of 1-5. 1 being extremely hard to navigate. 5 being completely intuitive. 3

Any comments? Was the second website an improvement on the initial website you were shown? What did you feel were the major differences?

The first website was a nightmare to look at but the second website looked more revised & complete.

In terms of the accuracy of the test. We tried to aim for as broad a spectrum as possible when it came to users and their ability to navigate websites. Rather than having 6 computer science students who are all well educated when it comes to User Interfaces and their intricacies we tried to pick test subjects that ranged from school kids to OAPs. We felt that this would give us a more accurate understanding of how usable the new UI was and how each group of people found the new website.

All subjects were friends and family but were falsely informed that this was the project of another group in our class. This was to avoid any biases when it came to rating the new system. The new system was certainly an improvement on the original website. Every individual score was higher for the second website than it was for the first. This above all else indicated an enhancement of the user experience.

Upon reflection there are a few improvements that could have been made to the survey itself.

1. The questions could have been worded clearer. A few test participants didn't know what a User Interface was. The question should have perhaps been written as "On a scale of 1-5 how would you rate your knowledge of website navigation" or simply "How Tech Savvy are you on a scale of 1-5?"
2. Despite the fact that the test was purely done to see if we had improved the Penny Juice website. We should have included a question as to what could we do to further improve the website. Making the test non-binary in this sense would have aided further development of the UI.
3. It may have been easier for the test participants if they were given a fully fledged desktop version of the websites rather than the mobile equivalent. This may have yielded a clearer understanding of how both websites were intended to be navigated.

Revisions made as a result of User Testing

1. There was a minor bug with one of the links that one of the test participants noticed which was fixed more or less immediately
2. As per Ken Moriarty's observation more data was added to the Penny Juice website. Not critical as we were solely testing the UI at this stage.