Institute of Technology Carlow

Software Development
4th Year Project

E- Scratch Cards

Final Report

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Contents

1. Introduction

The purpose of this document is to present the result of my project E-Scratch Cards as part of the Software Development course at Carlow IT. In this document I will give a quick description of what the project is about and present the main functions of my application that I submitted. With this, I will provide diagrams of each of the screens and give a clear understanding what the application or user is doing. I will also describe both my personal and technical learning outcomes for doing this project.

2. Project Description

This project involves the development of an e-scratch card that allows people to purchase an online version of national lottery scratch cards. This project will involve client and server-side applications. Both desktop and mobile versions will be considered. This project involves security, a user-interface and e-commerce requirements. Mandatory elements include (but are not limited to): secure random generation of scratch cards, secure storage and electronic delivery of the cards to the customer, secure payment to (winnings) and from (purchases) the customer. Secure receipt of winning claims from the customer.

3. Submitted Product Description

3.1 Main Page

The Main Page interface is the first screen of the application that will be presented to the user. From the below diagram figure (1) we can see that the user has a variety of options.

Located at the top of screen, there is a Sign-In and Register links that are placed on the navigation menu. Once selected the application will directed the user to the corresponding screens. These screens will be discussed in more detail later in the document.

The user is also presented with 6 different types of Scratch Cards, each with 3 buttons "Info". "Play Now" and "Send as Gift". The Info Button displays the winning amount and the cost price of that card. The "Play Now" and "Send as Gift" require the user to be logged into the application, so it redirects the user to the Login Screen. If the user hasn't got an account, there is an option for the user to register, allowing them to create a new account.
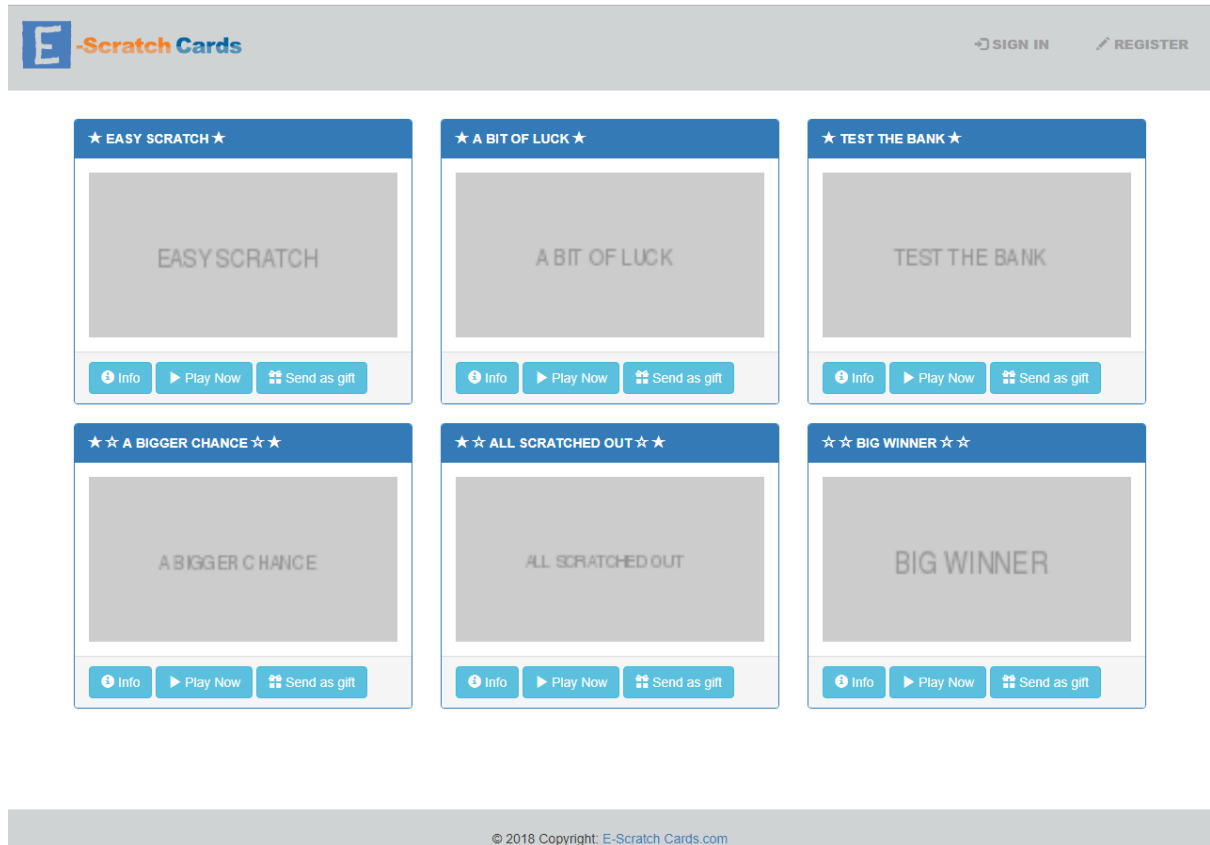
Figure (1)

3.2   Login Screen

The login screen interface is a one of the most common screens you would find on many applications on the market. The Login Screen (figure 2) on the E-Scratch Cards application includes a navigation bar located at the top of the screen. This provides the three links, which include going back the Main page figure (1), allowing a user to register and one for the current page.

As we can see from the from the below figure (figure 2), the user will have to enter their email address and password. If the user's details are registered in the database, then the user will gain access to the E-Scratch Cards application. If the user enters incorrect credentials an error message will be display informing the user that their credentials are incorrect or not found within the database.

Figure (2)

3.3 Register Screen

The register screen interface is somewhat like the Login Screen (figure 2) being a common interface used on many applications around the internet. The Register Screen (figure 3) on the E-Scratch Cards application includes a navigation bar located at the top the screen. This provides the three links, which include going back the Main page figure (1), allowing a user to sign in if they have already registered an account and one for the current page.

As we can see from the from the below figure (figure 3), the user will have to enter in different types of data, some including their first name and last name. These details will then be validated by the application and saved to the database. If the user already exists, the user will be presented with an error message indicating that the email address already exists within the database. One important factor to this screen is that the user will have to be over the 18 to register.

Figure (3)

3.4 Temp Lock Screen

The Temp Lock interface is used for when the user enters incorrect credentials to many times in a certain amount time. The user will get locked out for a total of 5 minutes, where if they try to access the application they will be redirected to this screen (figure 4). The application will save a timestamp of when the user gets locked out and then display the remaining time the user will have to wait until the user can regain access to the login screen. This is also a good security technique to stop brute force attacking.

-Scratch Cards

To Many Wrong Attemps

Error: Too many incorrect attempts
Try again in: 9 seconds
🏠
Home

© 2018 Copyright: E-Scratch Cards.com
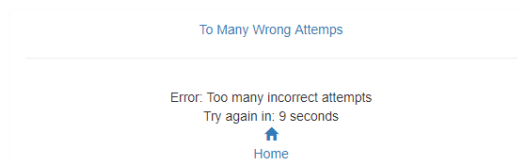
(Figure 4)

3.5   Forgot Password

This involves a relationship between two different interfaces. The first screen (Figure 5) is presented to user when they click "Forgot Password" on the Login Screen. As seen in (Figure 5) below the user must enter their email address that they used when registering an account on E-Scratch Cards. When the user enters their email and clicks the "reset password" button the application will check if the supplied email address exists within the database.

If the email address exists within the database, the application will direct the user to the change password screen (Figure 6). At the screen the user must enter their email address and date of birth, along with a token. The token is a one-time variable that is only valid for 5 minutes. The user must enter the supplied token to change their purpose. This token would usually be sent to an email, but for testing purposes with this application I have supplied it to the user under the form. When the user has all the information correct in the input fields, the user's new password will be saved to the database and they will be redirected to the Login Screen.
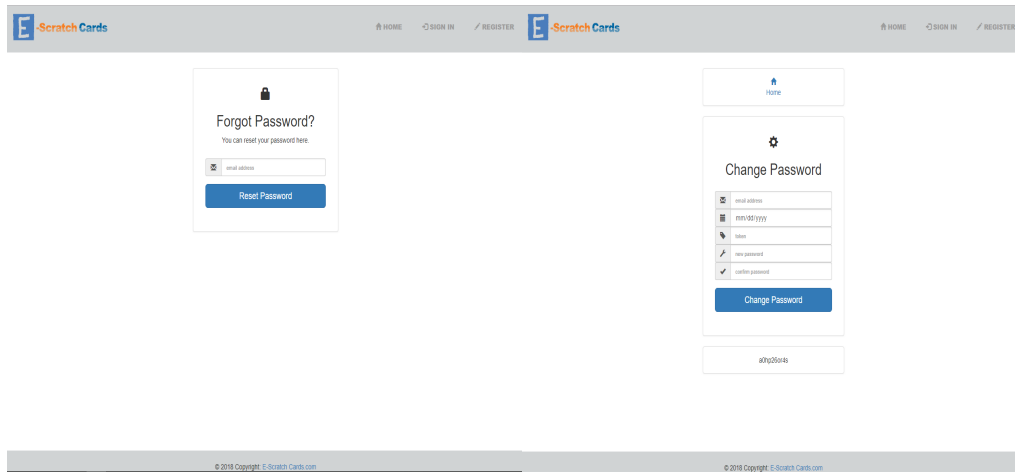
| (Figure 5) | (Figure 6) |

3.6 Profile Screen

The profile page (Figure 7) is the most important page of my application. At this page the user can purchase 6 different types of Scratch Cards. For more information about this please see my functional specification document. The navigation panel has a greater amount links on it than previous screens, some new links include "Account Settings", "Update Balance" and "Redeem Code". I will give a brief overview of this pages later in this document.

Another important content on the profile page is how the application is displaying the user's balance and free scratch amount. When the user purchases a scratch card, the cost of the that card will be deducted from the users balance and displayed on the screen. If the user wins a free scratch this will also be displayed in the table on the right hand of the page. With each scratch card on this screen, there is 4 buttons under the scratch that allow the user to carry out different functions. The play button allows the user to scratch the card, reveal if they win or loss and check if the user has the correct balance to purchase the card. The send as gift button allows the user to send a scratch card to a friend. Information for the specific scratch is also displayed by the info button and finally the user has an option of using a free go, where the user balance is not affected.
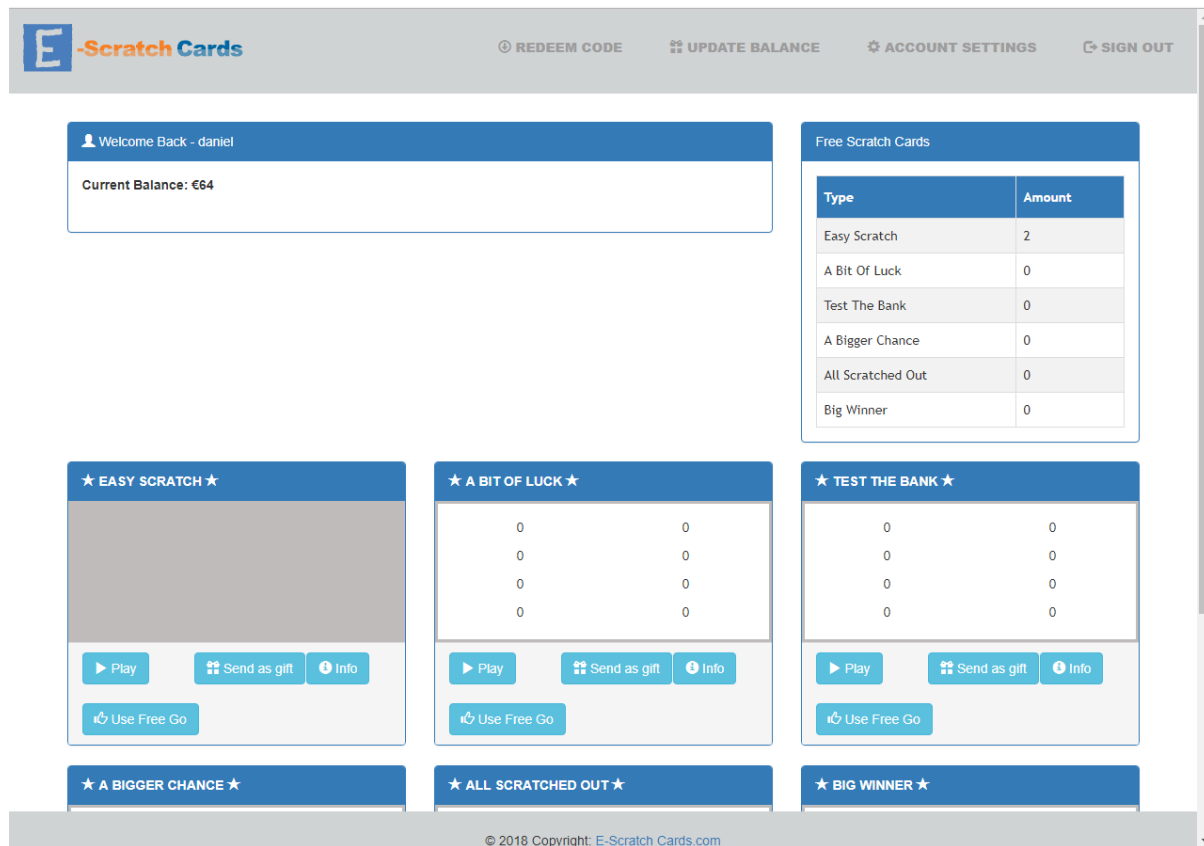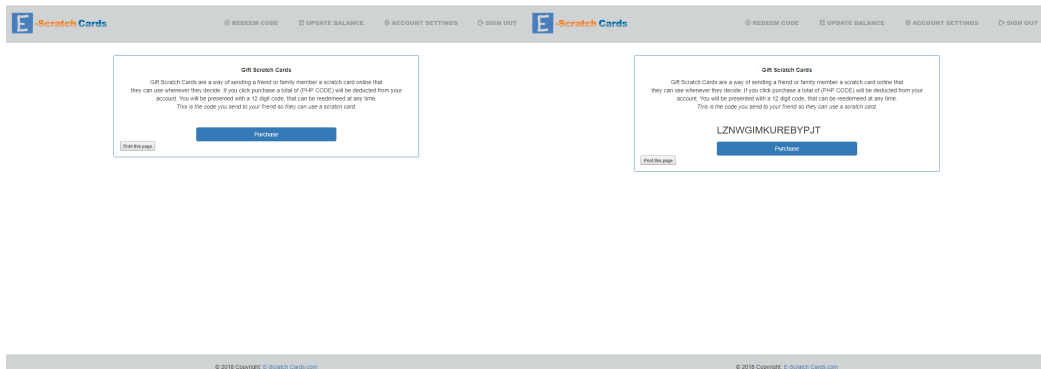
(Figure 7)

3.7 Gift Cards Screen

This was one of the parts of the project that I was most excited to implementing into my application. As seen in the below diagram (Figure 8) I added a textbox to inform the user what exactly the Gift Scratch Card consists of. When the user clicks the purchase button the application will generate a random 12-digit code (see figure 10) that they can use to send to family or friend in this application. A problem I thought about at this stage was how the user would be able to remember the code, so I added a print button that gives the user an option of printing the code to hard copy or the user can simple write the code down in need be.

With this profile screen (figure 7) having 6 different types of scratch cards and allowing the user to send each scratch card as a gift, I have each button directing the user to this page, but the application keeps track of which scratch card the user selected, so that the 12-digit code generated will unlock that specific scratch card type.

(figure 9)   (figure 10)

3.8 Update Balance Screen

Another important aspect of this project was allowing the user to update their balance. This screen can be accessed from the navigation from any screen once the user has logged in. The application presents the user with a form seen in figure 11. The user must enter in the amount that they wish to update their balance by followed by a credit or debit card they wish to pay from. The select box displays the user credit cards that they added in the "Account Settings" page.

I had planned on adding a PayPal button on this screen to allow the user to update their balance via PayPal sandbox rather than a credit card, but unfortunately, I had issues with getting it to work and realised I was spending to much time to trying to get this to work rather than focussing on more important functionalities for the application.
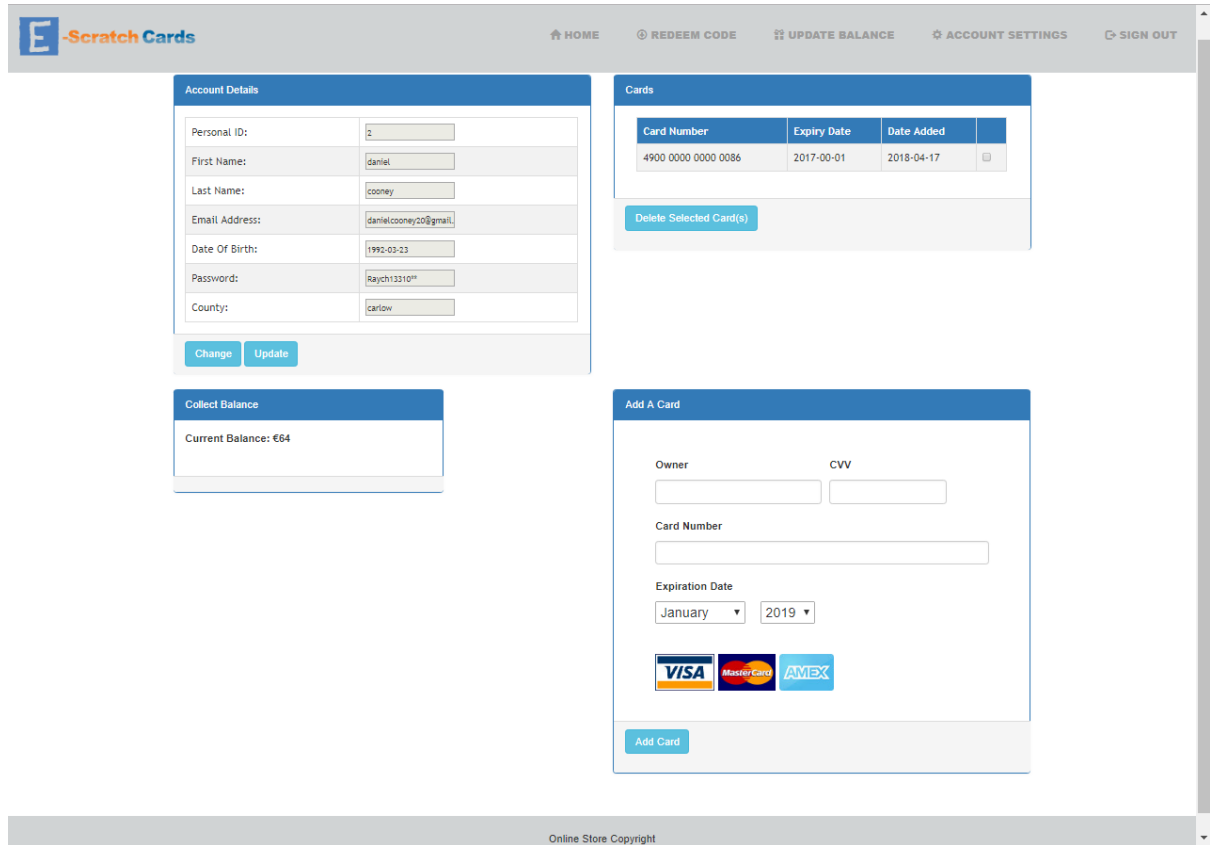
(figure 11)

3.9 Account Settings Screen

This page allows the user to complete their functionalities for their own personal account. The first part of the screen shows the user the information that they entered when registering to the application. The application gives the user an option to change and update their information if they desire to do so. Second, the screen gives the user an option of adding a card to their account that I discussed earlier in this document. When the user enters their information, the application can differentiate the type of card the user is adding by the card number.

When the user clicks the "Add Card" button, the card will be added to the database for the associated user and then displayed in the column above, where the user can view and delete the card later if they decide to do so. The added card will then be displayed within the select box that was shown in figure 11.

(Figure 12)

3.10 Redeem Code Screen

This screen has a relationship with the "Send as Gift" page (figure 9) and (figure 10). After a user has received a 12-digit code and wish to redeem it, they will be required to enter the code at this page. The application will present the user with 4 input boxes, where the user must enter the 4 digits of their code in order in each of the 4 boxes. When the user has completed this, the application will check if the entered code exists within the database, and if so the users scratch cards free go will get updated. This will now allow the user to purchase the scratch card associated with the code for free. If the code does not exist within the database the application will present an error message to the user, indicating that the entered code is not valid.
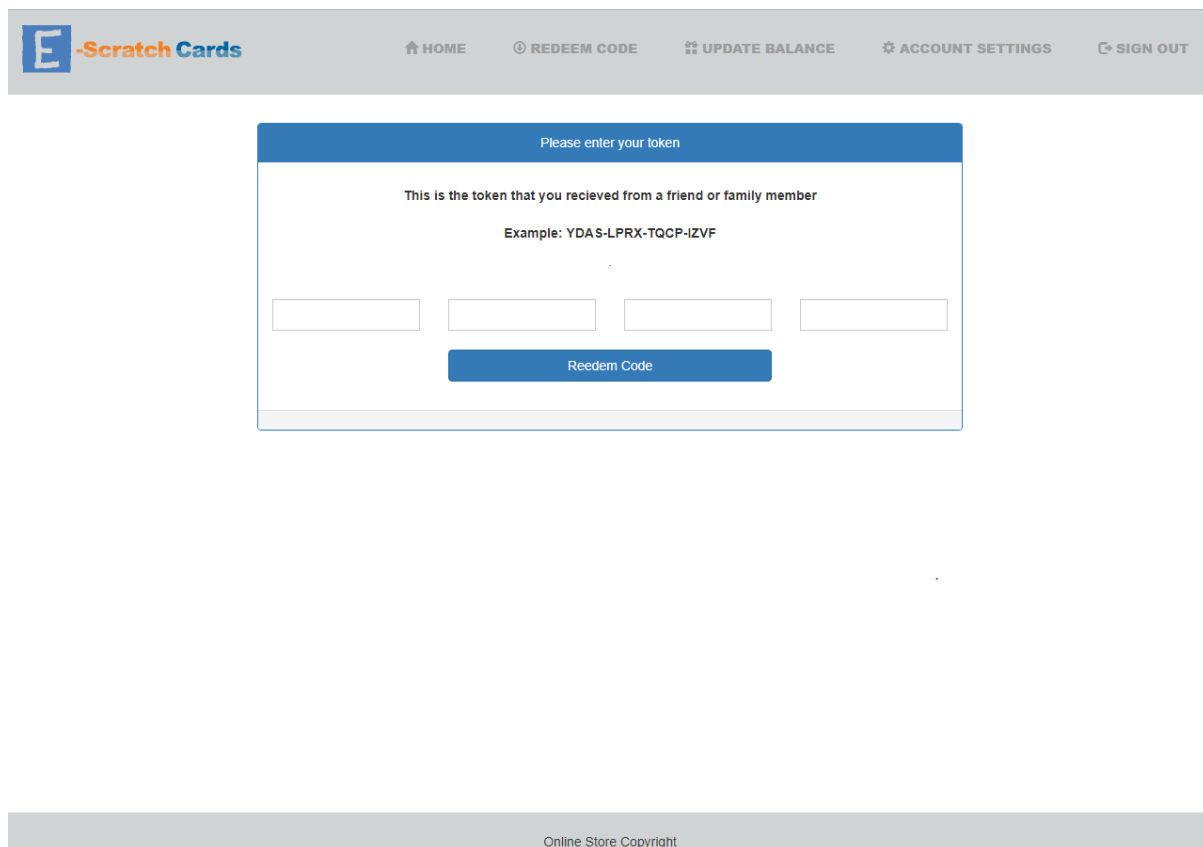
(Figure 13)

4. Learning Outcomes

4.1 Technical Achievements

4.1.1 Bootstrap

After doing 4 years of college I have gain a big interest in web development. In my second year of college, I got to experience Web Development for the first time and from there I have not stopped enjoying and learning new things about the web development environment. Due to the lack of never dealing with Bootstrap before I first found it a bit intimidating, but I was able to overcome this, and I have come somewhat familiar to the basic principles of how it works. This was one of the more enjoyable parts of doing this project because I feel that it will benefit me after I leave college and hope to pressure a career in Web Development.

4.1.2 PHP

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I used this technology a good amount throughout my application. I have studied PHP before as a language in my 2nd year of college but unfortunately the web development module was dropped in 3rd year so I didn't get much time to keep working on improving my skills with it. Once I started working with PHP for this project it didn't long for me to familiarize myself with how it works and soon I became confident with working with it again.

4.1.3 Documentation

With having completed the third-year project module, I found writing the documentations a bit challenging, however this project was more personal and enjoyable, so I found the experience of writing the documentation more educational because I now know the importance of writing clear and understanding documents and how it can affect other people's prospective on your project.

4.2 Personal Achievements

4.2.1 Time Management

From completing the 3rd year project module I had already experienced the importance of time management. This project was different, I not only had to focus my time on this, I needed to complete and work my other college modules. By doing this project it gave me a very clear understanding on the importance on not leaving things to the last minute and try to plan or rota to complete different tasks. I feel that now I can take this experience and know that if another project occurs in my life, I know exactly what to do from the start.

4.2.2 Self Confidence

One of the biggest weaknesses that I have is presentations. In this project module there are 2 presentations, the first one being a practice and the second presentation is more informal. Coming to the end of 3rd year, I looked in the UNUM lab and seen the 4th years at the time doing their presentations and really turned me off doing 4th year as I felt that I wouldn't be able to do it. When it came to the stage of doing my practice presentation, I was nervous but once I started into it I felt a lot more comfort and after I got some positive feedback. With doing this is gave me a great confidence boost and made me a lot of more confident with completed the second presentation. Now that I have both completed I feel that I am no longer as nervous to stand up and talk in front of a crowd.

5. Review of Project

I feel that this project was one of the biggest challenges that I have faced entire college duration. It really showed the small amount of information and skills learned throughout each year can come together and allowed me to create my own personal application. Not every stage of doing this project was enjoyable, a lot of late nights and stressful days however I do feel that this is one of the most best experiences in college that I have had, and it goes to show that hard work plays of in the end.

5.1   What went right?

First, I would like to say that I am overall pleased with the outcome of the project. Most of the features that I mentioned at the start of the project were implemented to a functional standard. Along with this I got time to add some additional features that I hadn't thought of when I first picture how the application would work. The most rewarding part of the project was getting to learn Bootstrap because I feel that this will benefit me in my future career paths. Lastly, I would like to mention that I had issues with working with the PHP programming language before but in this project I had very little errors.

5.2   What went wrong?

<u>Encryption User's Data.</u>

I had thought about this from the start of the project. Having the user's data encrypted is a key element to this project as it provides a higher security level to the application. At the start of the project, I decided not to encrypt any data yet for testing reasons. Having the data encrypted at an earlier stage would leave it difficult to read if values were getting saved to the database. When I was happy that all sections involving saving data to the database was completed, I used PASSWORD_BCRYPT as the form on encrypted the data.

I was successful with getting the information encrypted and saved to the database and was also able to compare a normal text to the encrypted information in the database using the password_verify () function. However, this started to lead to problems, I was decrypt any of the user's data so that I could display it on the application in normal text. This also lead to other issues, and started to take up a lot of time, so I had to remove all the encryption functions to get other functions working correctly around my application.

<u>PayPal Sandbox</u>

Earlier in the project I decided that I would try to implement PayPal so that user would be able to cash out their winnings into their PayPal account. I got the buyer and seller account working on the developer environment on PayPal, but I started getting issues with what button would be best suitable for what I was trying to achieve and with some not that much guidance on the internet I tried tackling it. With no experience on PayPal sandbox, it started to take up more of my time that it should, so I decided to leave it for a later stage. When I finally went back to get the code for the button, there was issues

with my account so in the end I didn't get to add the button to my application.

5.3   What could have been better?

Final Documents

With loosing track of time on the last few weeks of college, I found myself rushing through all the code to get the project complete and left the final documents till the last minute. I was very disappointed with the standard of my technical document as I feel that I could have achieved a higher standard if I had started it earlier.

The GUI

In the end I was pleased with the look of the application giving that it was my first time dealing with bootstrap however, I feel the current look of the website would not meet the professional standard that would be required to make the application a good success on the market.

5.4   What work is outstanding?

Unfortunately, the time passed by quicker than I thought and I didn't get to complete every function of the application. One of the biggest parts I didn't get completed was on the admin side of things. I did get the application tracking the profit and loss however I intended on suppling the admin with various graphs to display information of their account.

I also wanted the admin to be admin to update user's information if the user needed access into their account. I also would have liked to work more on my GUI to make it look and feel better to use. Other than these, there was only a few small things left to complete like small bugs within the code.

6. Acknowledgements

I would also like to take this opportunity to express gratitude to all the Department faculty members for their help and support.

Lastly, I would like to thank my family and friends for their continued support.