Final Year Project Report

Full Unit – Final Report

A Server Based Local Exchange Trade System for campus

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A report submitted in part fulfilment of the degree of

BSc (Hons) in Computer Science

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Declaration

This report has been prepared on the basis of my own work. Where other published and unpublished source materials have been used, these have been acknowledged.

Word Count: 9999

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Date of Submission: 27th September 2017

Signature:

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Abstract

From the days in 2010 where a single bitcoin would cost you a mere $0.08[*] and before fancy mining rigs or gpu's were used to mine bitcoins, I have witnessed an instance of a trading system take off to where a single bitcoin is now valued at £3048.61 [*]. The bitcoin and blockchain have proven to be a secure efficient virtual currency which has real life monetary value whilst also solving many problems normal everyday currency cannot solve such as sending money to any destination without worrying about conversion or allowing payments without any information about the sender or reciever apart from the wallet address. We can now carry out a number of different monetary transactions without ever leaving out house, infact thanks to the technological advancements such as the world wide web founded by tim berners lee ,we can make money without leaving out houses,we can survive without leaving our houses and its having huge ethical implications on todays society.

A Local Exchange Trade Systems (LETS) are systems that local communities can create to develop exchanges that happen outside of the monetary circuit. Members of the LETS identify skills they wish to offer and their current requirements for goods and services, which are listed via a LETS web site.

Socially monetary circuits are unhealthy as they discourage human interaction by incouraging a minimal amount of contact as an exchange relies usually on 1 party only recieving goods or services, the economic interests outshadow the social implications.

Monetary circuits can also be unfavorable for people of a lower socioeconomic background for example certain activities such as polo or language learning can be very costly for some individuals. This constraint means in such a system a person can be bound by their socioeconomic background. With a LETS system it encourages fairness and diversity by valuing skills and trades anyone can possess, all thats required is a willingness to learn and teach.

My motivation for carrying out this project is to counteract some of the hindering social and ethical factors the current trading systems have imposed on society by providing a system which can supplement the current monetary system by using technological advancements to there full potential. The system will introduce the concept of meeting in person to strenghten social links as opposed to economic intrest, this will promote integration and collaboration within a society.

By creating a website focusing on user experience with features such as easy accessibility,friendly interface design and fast response times the system will be portable and accessable from anywhere; users will not have to download anything or have to purchase any additional software or hardware thus making the system accessible to all students with no bias.

By prioritizing security and stability the system will be trustworthy and comply with legislation such as the data protection act. Users will feel safe providing there information and can assume the annonmity of virtual trading can exist if they require confidentiallity or likewise they can showcase there transactions to encourage others to do so.

By accounting for the scale of the system and complexity I will use optimized algorithms to search and retrieve and store information as well as software engineering techniques to maintain performance whilst the user base grows in size.

Components

The local exchange trade system will be categoriezed into several key components which make up the system. They have been divided into different colours and numbered in order of priority the task needs completed. This makes it easier to prioritise certain modules and easier to decide when to use slicing as I can see where the components fit together and which feature relies on lower features to be completed first.

From the different components i will decide which milestones i should focus on first and which proof of concept programs i need to accomplish to build my system.

Interface Design

1. Basic Page layout

2.Basic HTML

3.Basic CSS

4.Multimedia (videos, pictures, art)

5.Advanced Robust HTML and CSS scripts/optimisation

6.Adaptation to Smart phones

Key Features

1.PHP login system scripting

2.Optimal Search algorithms

3.Algorithms which assist in reccomendations

4.Randomization algorithms

Security

1.Security from basic attacks such as sql injection

2.Guaranteeing Security and privacy for users

Software engineering

1.Sequence and other UML diagrams presented

2.Design patterns such as MVC

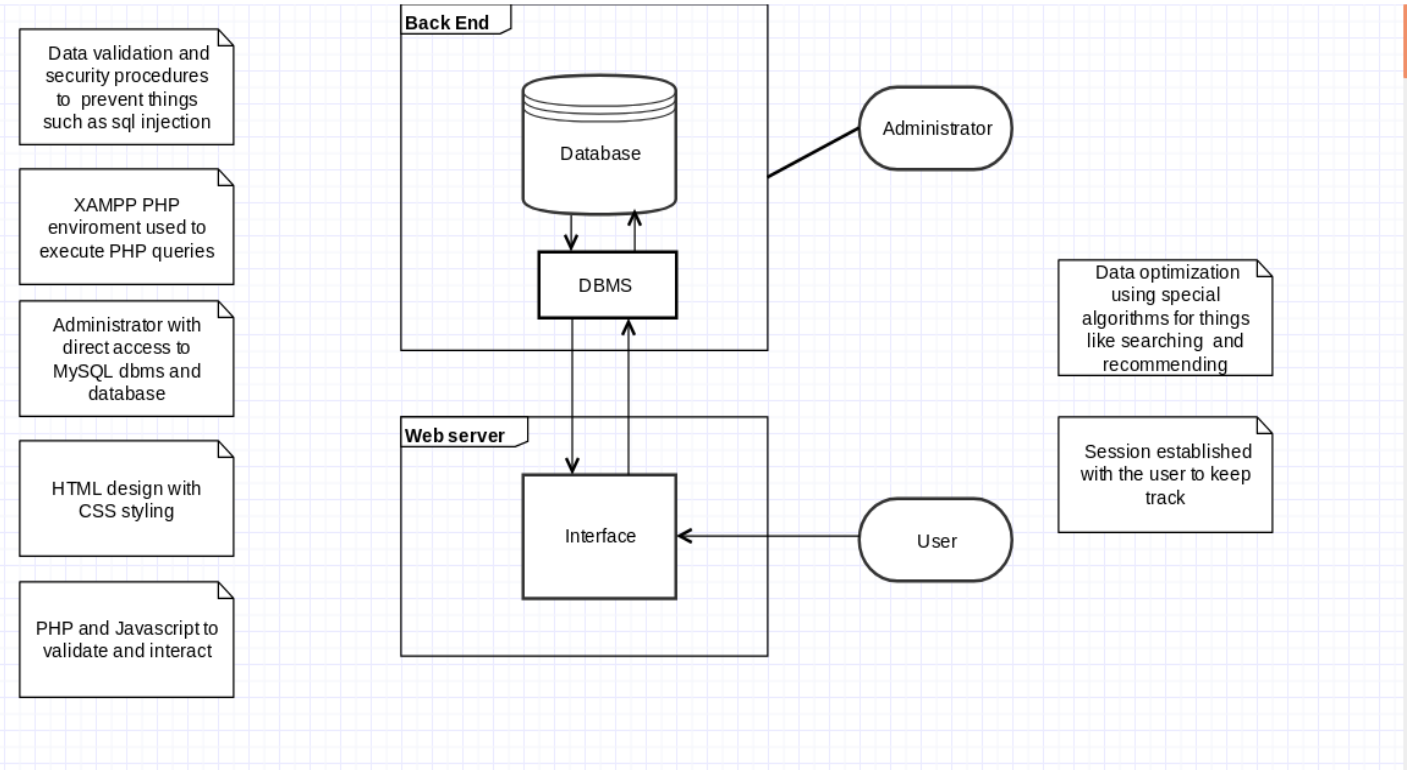
3.Database design

Scaling

1.Using algorithms which perform well with low number of users

2.Using algorithms which perform as well with much larger database entries and users

Overview



The fundamental structure of the system will consist of many webpages accesed via a php login system hosted on a webserver.

Any queries will be handled via the DBMS running mysql.

An administrator will have access to the web server to allow updating web pages and access to the database to allow modification.

All data sent must be verified and validated to prevent security flaws and ensure smooth operation.

Proof of concept

Interface Design

HTML and CSS

The interface requires a certain amount of html and css scripting, I have already begun to create a simplified webpage design to get accustomed to creating a more robust design minimizing code smells such as duplicate code.

Key Features

Php and javascript

Php will be used to communicate with the web server and used when validating users when logging in. I have already began to create a basic logging in system which validates a user.

Javascript will be used to provide interactive elements, I will also add javascript to my mock website as it will be used as a fundimental language.

Search Algorithm

When a user wants to find the local trades available its imperative a good search algorithm is used so it can proficiently match the users wants and not only improve user experience but also maintain performance as the user base grows.

I will need to investigate the best search algorithms for the scenario and implement a basic search feature in my mock website.

Reccomendation algorithms and randomization

I have decided to incorperate an algorithm which will display to users trades they are likely to accept based on previous usage, i will need to research and add this feature to my mock website.

Likewise i have decided to include a feature which allows a user to search the local trades and return one randomly. I will also need to research this concept.

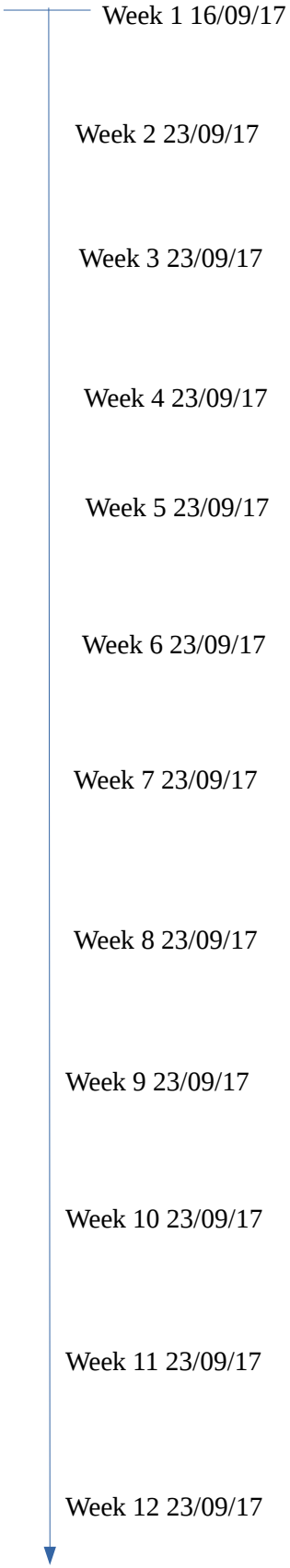
Reports

First term

A report on Design patterns and software engineering techniques which discusses the techniques i will use to assist in software development.

A report on security and its implications in an online system and some of the countermeasure used to prevent common attacks.

Timeline and milestones todo



Risk assesment todo

Bibliography todo

[1] Dave Cohen and Carlos Matos. *Third Year Projects – Rules and Guidelines*. Royal Holloway, University of London, 2013.