Building learning environment on Amazon workspace running on Docker

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Introduction

This document is to outline the provisional structure of the project that is forthcoming. Building a learning environment will be key to students at Middlesex university providing an virtual environment with less hassle to do web development.

Problem description

There is a web development issue in a computer science module at university. There exist a difficulty of combining different technologies to run web pages on a host. Technologies such as MYSQL and PHP. The conventional way to run these technologies is using Xampp or Mamp which are free software that is recommended by several educational institutions. These software has problems in particular the MYSQL section.

There is a problem recently when using SQL to create database tables and it ask for a password. Once that password is declared, MYSQL is locked to that password. In a likely situation that a user forgets the password, the database software will be locked. The aim is to standardise an environment that will run all these technologies and will allow students to do web development task at will.

Project Description (solution)

"Docker is containers software that can be used for virtualisation. Similar to a Virtual machine but different. Docker on Amazon Web Services is for you if you want to build, deploy, and operate applications using the power of containers, Docker and Amazon Web Services". (Menga. J. 2018)

This project is about utilising the Amazon workspaces which is a development environment on the prestigious Amazon Web Services (AWS). This platform will be used to create an educational online learning environment running on Docker in the cloud with a remote desktop that enables students to write and run code within that learning environment.

"Amazon WorkSpaces offers you an easy way to provide a secure, managed, cloud-based virtual desktop experience to your end-users". (Amazon WorkSpaces. 2018)

Why AWS(Cloud Computing)
Whether you are running applications that share photos to millions of mobile users or you're supporting the critical operations of your business, a cloud services platform provides rapid access to flexible and low cost IT resources. (Amazon web services. 2018)

With the success of this process, a Docker Image will be created and then will essentially run on Docker. The software will be user friendly. The students will register using their Middlesex University student numbers to gain access to the system. This environment will make web development easier for students.

Why Docker?
"Docker unlocks the potential of your organisation by giving developers and IT the freedom to build, manage and secure business-critical applications without the fear of technology or infrastructure lock-in". (Docker. 2018)

Evaluation

The aim to my findings by talking to fellow student whom are enthusiastic about web development. The most successful way to do this is to perhaps create a questionnaire and issue it to ten or more students. The results of the questionnaire will be combined and presented in a radar to create a visual representation of my findings.

"It is expected that the software will be subjected to unit testing for verification. This is a software approach to evaluating software programs to ensure it runs the way it is expected. The purpose is to validate that each unit of the software performs as designed. A unit is the smallest testable part of any software. It usually has one or a few inputs and usually a single output". (Unit Testing. 2018)

List of resources

Amazon webs services student account will be the appropriate account to work from. It is free for students to use for educational purposes, which can be accessed signing up to an account using a student email address. The verification process takes up three days for AWS to verify that the account information provided is indeed form a student. If successful, a congratulations email will be sent informing the user that the account has been authorised.

The Docker software will be free to acquire. There are different versions of Docker however the desktop version offers the complete development environment. The download and installation process is straight forward. In addition, Docker gives clear instructions for a successful installation on any PC or Mac should there be any issues.

Project plan

- M1: The **Project proposal** is to give an overview of the project included the tools that will be used. This allows the readers to gain an understanding of the project.

- M2: A **Literature review** to reveal to users that there sufficient knowledge on the project subject.

- M3: The **Research methodology** to show how information was collected.

- M4: Present the **Findings** or outcomes of a successful research.

- M5: Write **system requirements & specification**(SRS) for the system that is to be designed to document necessities prior to the developmental process.

- M6: Complete and **Analysis And Design** plan the design the software using graphical approaches such as sequence and use case diagrams.

- M7: The actual **Implementation** of the system using the research and planning which was done prior to this stage. However, changes to planning during the implementation process is expected to occur.

- M8: **Software Testing** is to be professionally validate the software by carryout unit, system and integration testing.

- M9: The **Evaluation** procedure during the project will be imperative to assess if the aims and objectives where met after completion and identify area that potentially needs improving.

- M10: The **Conclusion** of the project is to sum up the project as a whole and establish an effective approach to delivering the entire project.
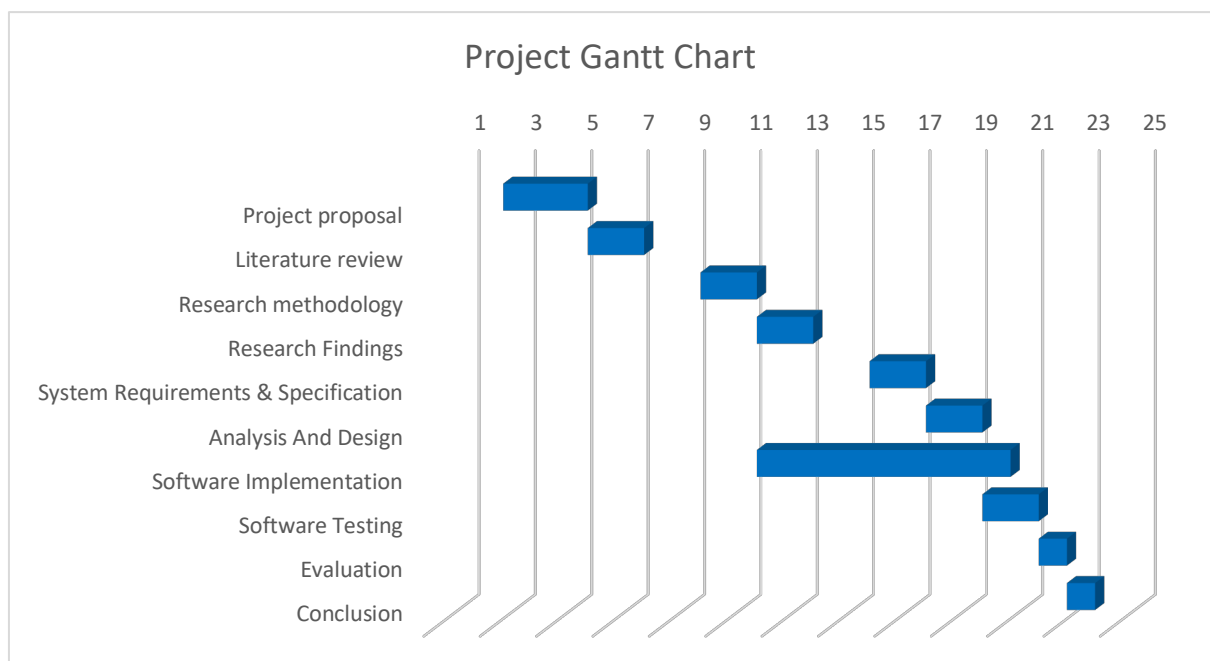
Gannt chart using milestones

Figure 1: Gannt Chart

The above Gannt chart shows the milestones in the project, start date, duration and end date. It provisionally shows the week certain aspects will be started and the week in which they are intended to finish. Notice some of the milestones are overlapping. This is due to some aspect of the project needs more attention than some. For example, the software implementation is expected to take the longest

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