

# 1UTeM VIRTUAL DATACENTER

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UNIVERSITI TEKNIKAL MALAYSIA MELAKA

## BORANG PENGESAHAN STATUS TESIS

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# 1UTeM VIRTUAL DATACENTER

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This report is submitted in partial fulfilment of the requirement for the Bachelor of Information and Communication Technology (Software Development)

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## DECLARATION

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## DEDICATION

To my beloved parents who brought me here.



## ACKNOWLEDGEMENT

A million thanks to all my mentors who guided me and gave support along the time to complete my PSM projects. Special thanks to my parent, Ahmad Bin Shahabuddin and Rosnah Binti Abu Bakar who always be with me, encourage me when I faced any hard time.

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## ABSTRACT

Nowadays, due to the rapid development in the sector of economic and technology, information acts as one of the important element which used to communicate with other member who interact in the same segment of market as well. It has become a routine for every member of the society to deal with the information every day. Instance, one's don't require get his PC ask for to get to the work or individual record in his PC as it can be exchange to the cloud server. In this way an efficient approach to oversee and arrange the archived data is exceptionally critical to manage the coherence of a data. A well-organized of information can ensure a person to obtain the needed pieces of information in a shortest time. Furthermore, with 1UTeM Virtual Datacenter one's will know which work has been done as at the folder will be an indicator show status of the works.



## ABSTRAK

Pada masa kini, disebabkan perkembangan pesat dalam sektor ekonomi dan teknologi, maklumat bertindak sebagai salah satu elemen penting yang digunakan untuk berkomunikasi dengan ahli-ahli lain yang berinteraksi dalam segmen yang sama pasaran juga. Ia telah menjadi satu rutin untuk setiap ahli masyarakat untuk menangani maklumat setiap hari. Contohnya, seseorang tidak memerlukan mendapatkan PC beliau meminta untuk ke tempat kerja atau rekod individu dalam PC beliau kerana ia boleh ditukar ke pelayan awan. Dengan cara ini pendekatan yang cekap untuk menyelia dan menguruskan data yang diarkibkan adalah sangat kritikal untuk menguruskan kepaduan data. A teratur maklumat boleh memastikan seseorang untuk mendapatkan keping diperlukan maklumat dalam masa yang singkat. Tambahan pula, dengan 1UteM Virtual Datacenter akan tahu yang kerja seseorang yang telah dilakukan pada folder tersebut akan menjadi petunjuk menunjukkan status kerja-kerja





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# CHAPTER I

## 1. INTRODUCTION

### 1.1. Introduction

Nowadays, due to the rapid development in the sector of economic and technology, information acts as one of the important element which used to communicate with other member who interact in the same segment of market as well. It has become a routine for every member of the society to deal with the information every day. Instance, one's don't require get his PC ask for to get to the work or individual record in his PC as it can be exchange to the cloud server. In this way an efficient approach to oversee and arrange the archived data is exceptionally critical to manage the coherence of a data. A well-organized of information can ensure a person to obtain the needed pieces of information in a shortest time. Furthermore, with 1UTeM Virtual Datacenter one's will know which work has been done as at the folder will be an indicator show status of the works.

### 1.2. Problem Statement(s)

There are few problems that directly influence the motives of the project.

1. Available system does not support for configuration each folder. For example, lecturer be able create a folder and make configuration to the folder which will be indicator if the student submitted their works.
2. Current system does not have cluster file sharing with different view for different user. For the situation, student only can view his/her file and lecturer file, while lecturer can view all the student file.

### 1.3. Objective

This project embarks on the following objectives:

- I. To identify system requirement and the processes to be included in the system and write formal Software Requirement Analysis (SRA) and Software Requirements Specification (SRS).
- II. To translate the software requirement into software design which include database, interface, and system component design.
- III. To develop the system using JAVA based language and MySQL reflecting the proposed design.
- IV. To develop and implement test cases for the purpose of the system testing.

### 1.4. Scope

The core functionality of 1UTeM Virtual Datacenter (1UTeM VD) are for student, staff and even management team that can submit their work to their workgroup admin. The project scope will explain about the boundaries of each module that have to be exists in 1UTeM VD system. The following that exists in 1UTeM VD.

- I. User Management**
  - There are two user in the system Admin and User.
- II. Cluster Management**
  - Cluster can only be created by Admin
- III. Authentication**
  - Username and password are required in order to login and to have access to the system also to define user type.
- IV. Enrolment Management**
  - In order to join cluster User must enrol the cluster and wait for the approval from Admin of that cluster, other than that Admin also can be user to another Admin which mean become a User of the cluster.
- V. Synchronization**

- File and folder are keep sync to the server which will automatically upload and download when there has the changes.

## **VI. Archive Management**

- Archive is function for the cluster Admin, for example if the admin delete file or folder it will send to archive where admin can restore the folder or file in archive menu.

### **1.5. Project significance**

Benefit of this project is that allow a cluster or workgroup to organize file in a neat manner. As the file as stored in server so they can view the file anywhere just log in to their account, thus increase the accessibility and availability of file. Moreover, admin does not need to online to view those files submitted as all the folder synchronized to admin computer.

### **1.6. Expected output**

The user of 1UTeM VD will be able to manage all their file in systematic way and access to any pieces of their works in short time when needed. Besides it enables the user's works to be uploaded to server which means there are backup for the works. Therefore, there is no need to worry if data lost as it can be retrieved from server. Lastly, admin will be able to view user's files inside the admin local drive.

### **1.7. Conclusion**

In conclusion, this chapter covers the background information of 1UTeM VD. This system is aimed to provide a platform for cluster/workgroup to submit their works and keep all the works available all the time at admin and users side. Also helps to keep a backup so that if admin or user computer are corrupted or format so that they can receive the file from the server, so this increase the availability of works.



## CHAPTER II

### 2. LITERATURE REVIEW AND PROJECT METHODOLOGY

#### 2.1. Introduction

This chapter focus on the literature review done in order to implement the project as well as the methodology used to develop 1UTeM Virtual Datacenter. In order to the clear and better understanding on the background of the project, there a lot of research and knowledge had been discovered, which could contribute to the current situation. The major function in 1UTeM VD are upload files, manage files, and get all the files synchronized. Moreover, this chapter also contains the related facts and findings, project requirement specification as well as the project schedule and milestone. Finally, the methodology used in the project will also be discussed in this chapter.

#### 2.2. Facts and findings (based on topic)

In this subchapter will be discussed for the facts and findings related to the 1UTeM which include the domain of the project, existing system that contribute to the emerge of current project idea and also their comparison as well techniques used to gather requirement. Other than that, in this section, the pros and cons of the existing system will be discovered and determined, and contribute to the ideas of 1UTeM VD which used as solution to overcome the drawback of the current system.

##### 2.2.1. Domain

The area of the venture is identified with cloud storage and exchange of record by using the web innovation. Cloud storage is service where data is maintained remotely, managed and backed up. Cloud storage makes the data

available to its user at anywhere and anytime. It refers to a virtual storage area that can span across many different physical storage device. Therefore, this had become of the characteristic to embed to the idea of 1UTeM VD. Due to its data availability, 1UTeM VD is going to be an application that can be access anytime and anywhere as long as there is an internet connection to enable the synchronization of files to the server and vice versa.

### 2.2.2. Existing System

There are few existing system that has been used widely which are Dropbox, Google Drive as well as UTeM's Ulearn which has been used to submit their assignment, report and lab assessment. Characteristic of each of them will be summarized in the following section and comments are made according to their functionality and drawback as well.

#### 2.2.2.1. DropBox

Dropbox is one of the most popular cloud storage services used by people in the world. It gives its user the capability to share folders and files among its account users. Any changes done onto the folders and file available to its user. Through the web interface or desktop application, its user are be able to upload and download all the files and folders being saved in the account. Due to its ease of use, it provides a good experience and convenient to the user use. User just simply drag and drop the file into the Dropbox folder which is automatically created in local drive, so folders and files inside the Dropbox folder are synchronized to the server.

However, there are few disadvantage to use Dropbox. For free user are limited to 2GB of storage, and they need to pay in order the increase the size. Among the cloud storage services provided by different company with the least amount of storage. Furthermore, for inactive user, the administrator

has right to delete all the information belongs to the account that's only happen when the user not online for long period time.

#### **2.2.2.2. Google Drive**

Google drive which owned by Google also a cloud storage system. The account use are bound to the email created with Google which is Gmail. Google Drive allows its user to store variety files and its user to share files by share the link of the file to another users and also can grant a privileges to shared user on read or edit the files. With Google Drive people can work together and make changes in real time as Google Drive has provide their own office such as word editor, presentation editor, and many more. Next, the way to upload to Google Drive just like Dropbox which just put in the Google Drive local folder or drag and drop at the Google Drive site.

However, there a few disadvantages while using Google Drive. Where there are a limit storage for Google Drive user, and it does not support file configuration where we can include what should be in the folder and can be indicator for the admin workgroup.

#### **2.2.2.3. Ulearn**

Ulearn is an e-learning system which used by UTeM's student to access to study materials that uploaded by the lecturer through enrolment of the subject specified to the student. In Ulearn, student can enrol to the subject which taken throughout the semester to download all the lecture notes, as well as homework submission.

However, there a few drawback exists in Ulearn system. The major problem is student couldn't have a directories in local drive which stored all their submitted works. This could reduce the accessibility as well as availability of the documents when student needs to refer to any pieces of

information as their references. For instance, if a student wants to refer to past subject and forgot on which semester, so he will need to enter one by one archives and check for the subject and find the link to download. For this case, centralized directories is very important to keep all the homework organized in neat way to enhance the accessibility of the document and ensure that the document is available whenever they need.

### **2.2.3. Technique**

This section discuss on the techniques used for the development of the 1UTeM VD which include the ways to gather the requirements as well as the way to implement 1UteM VD project.

#### **2.2.3.1. Requirement gathering**

Gathering of user requirement is a crucial part in software development process. Well understanding on user's problem and requirement can ensure that a right solution is delivered to the user to assists them to solve their own problem. In this project, the method used to gather the user requirement is interview. Interview session is conducted with the users of Ulearn to get a better understanding on the problem encountered by the user while using the system. Besides, through interview session, the business process of Ulearn are known and user dissatisfaction on Ulearn are gathered. These information is much helpful in the development process in 1UTeM VD to avoid those features which are not satisfied by the user appear in 1UTeM VD. To organize an interview session with interviewees, appointment are made in order to ensure that interviews are well-prepared for the interview. Students and lecturers in UTeM are the target interviews in interview to gather information on satisfaction and usability of Ulearn. Lastly, functional requirements as well as the non-functional requirement are collected. For instance, functional requirements defines what should system do, and non-functional requirement defines how it should behave while doing it.

### 2.3. Project Methodology

In the section of project methodology, the methodology used in developing the project will be discussed. The methodology used for the development of 1UTeM VD is by using Object-Oriented Analysis and Design (OOAD). OOAD is a type of procedure which used to identify software engineering requirement also developing system's model in object manner. Due to the reusability of analysis, design and programming result, OOAD has been chosen as the methodology, Reusability could be achieved through object-oriented approach as it enables inheritance, specialization and generalization of classes. Moreover, through OOAD, the correspondence among the partners upgraded as the method for correspondence is streamlined. Partners are pictured thought however outlines, for example, utilize case diagram, which makes the client necessity all the more clear and justifiable.

OOAD is made up of 3 phases, which are analysis, design as well as implementation phase. In the analysis phase, the model of 1UTeM VD is developed to show important details and functional behaviour of the system, which independent from the implementation details. The model of 1UTeM VD is made up of modules and the interaction of these modules are visualized using use case diagram. In order to capture out the main function that will take place in 1UTeM VD, requirement gathering process in conducted. These requirements will be used to build the model of 1UTeM itself. Next, the design phase the model produce will define and adapted to the environment. To delineate the association of modules with its outer condition, succession outline, class chart and the plan of UI are delivered. Lastly, the implementation phase. After the design, it's time for implementation. The system has been implemented using programming language. In 1UTeM VD, Java is the programming language used to develop the project. The following table shows the main activities along the phases and activities along OOAD.

**Table 2-1: Phase and activities of OOAD**

Phase	Activities
Requirement Analysis	Requirements are collected through interviews with clients, such as functional requirement and non-functional requirement.
Analysis Modelling	Requirements are visualized using use-case to show the business processes in 4S as well as interaction among the business processes. This could help user to have better understanding on the system
Design	In this phase, the architecture of the system is built. High-level design as well as low-design are deliverables of this phase.
Implementation	The implementation of the system will be carried out. The system is built under the environment where it should be using programming languages.
Testing	Testing of the system will be done in this phase, the testing conducted include white box and black box testing which aimed to find defects in the system and improve the system later

## 2.4. Project Requirements

In order to develop 1UTeM VD, there are few tools and facilities needed in order to assist the development team to complete the project. Therefore, requirements such as tools and facilities needed for the project will be discussed in this section, such as software development requirement, other requirements such as internet connection.

### 2.4.1. Software Requirement

In order to build 1UTeM VD, there are few software tools needed throughout the development process, which include:

- I. Eclipse Neon : The IDE to write the code of project
- II. Microsoft Visio: Used to visualize the system through diagram
- III. Apache Tomcat 8.5: Used for server deployment of java servlet
- IV. Microsoft Office: Used for documentation purpose.
- V. MySQL Workbench: Used to database purpose.

### 2.4.2. Hardware Requirement

The following are the list of hardware needed to support the development of 1UTeM VD.

- I. Workstation: Laptop used for documentation, development of software.
- II. Modem: Used for internet connection.
- III. Printer: For printing purpose for deliverables produced throughout the development process.

### 2.4.3. Other Requirement

Internet contributes a lot to the development of the project. With an effective internet facilities, any extra information that needed throughout the project can be assessed as well as to keep stakeholders always connected.

### 2.5. Project Schedule and Milestones

In this section, the project schedule and milestone of project will be discussed. To ensure that project is delivered on time, the project should be scheduled and outlined as a plan in order to act as guideline for the completion of the system. The following table shows the milestone of 1UTeM VD.

**Table 2-2: Project Milestone of 1UTeM VD and deliverables**

Week	Date	Activity	Note
1	13/2/2017-17/2/2017	Submission of PSM proposal	Deliverable: Proposal
2	20/2/2017-24/2/2017	Correction of proposal	
3	27/2/2017-3/3/2017	Presentation of proposal Production of chapter 1 (Introduction)	Deliverable: Proposal presentation
4	6/3/2017-10/3/2017	Production of chapter 1 and 2 (Introduction and literature review)	Deliverable: Chapter 1
5	13/3/2017-17/3/2017	Production of chapter 2 (Literature review)	