

**HOTSPOT WIFI SYSTEM USING RADIUS SERVER AND DISTRIBUTED  
DATABASE**

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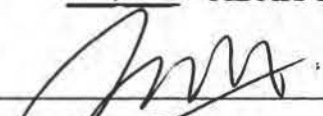
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**HOTSPOTS WIFI SYSTEM USING RADIUS SERVER AND DISTRIBUTED  
DATABASE**

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**This report is submitted in partial fulfillment of the requirements for the  
Bachelor of Computer Science (Database Management)**

**FACULTY OF INFORMATION AND COMMUNICATION TECHNOLOGY  
UNIVERSITI TEKNIKAL MALAYSIA MELAKA  
2012**

**DECLARATION**

I admitted that this project title name of

**HOTSPOT WIFI SYSTEM USING RADIUS SERVER AND DISTRIBUTED  
DATABASE**

is written by me and is my own effort.

STUDENT :  Date: 3/9/12  
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SUPERVISOR :  Date: 3/9/12  
(MADAM NOOR AZILAH MUDA)

## **DEDICATION**

Dear Allah, I devoted my life for Allah and May my life is under His guidance.

Dear my family thanks you for your sacrific

Dear Lecturer, thank you for your sacrifice and knowledge. May your knowledge are  
blessed.

To my supportive friends and my supervisor, thank you so much for assist and help.

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Last but not least, I would like to thank those who were directly and indirectly involved in helping me out.



## ABSTRACT

**'Hotspot Wifi System Using Radius Server and Distributed Database'**. The purpose of this system developed is to make easier to manage data and maintain it. This system also is a complete management of customer data with the possibility of directly scanning the documents. This system is use to capture and notify a user activity in the system. Such as update their profile, manage their package and so once. This system also, is use by staff to manage the user of the system and also insert and update the new staff for this system. User for this system can make a transaction for pay their transaction according by package that they a subscribed. For the staff for this system, they can use this system to manage by insert, update and delete user and also staff for system. Staff also a responsible to do some backup and restore if it needed. Recovery also need for this system if the system has a crash on the database. For archive the objective for this system, the encryption of important data a made. This encryption a made at the password for user for this system there a user and also staff. This encryption is made because to make the system is secure and also reliable for the user.

## ABSTRAK

### **“Hotspot Wifi System Using Radius Server and Distributed Database”**

Tujuan sistem ini dibangunkan adalah untuk memudahkan dalam menguruskan data dan mengekalkan ia supaya lebih efisien. Sistem ini juga adalah untuk pengurusan yang lengkap bagi data pelanggan dengan teratur dan terancang. Sistem ini digunakan untuk mengetahui aktiviti pengguna dalam sistem. Seperti mengemaskini profil mereka, menguruskan pakej mereka dan sebagainya. Sistem ini juga digunakan oleh kakitangan untuk menguruskan pengguna sistem dan juga memasukkan dan mengemaskini kakitangan baru untuk sistem ini. Pengguna sistem ini boleh membuat transaksi untuk membayar transaksi mereka mengikut dengan pakej bahawa mereka melanggan. Bagi kakitangan untuk sistem ini, mereka boleh menggunakan sistem ini untuk menguruskan dengan memasukkan, mengemaskini dan memadam pengguna dan juga kakitangan untuk sistem. Kakitangan juga bertanggungjawab untuk melakukan beberapa sandaran dan memulihkan jika ia diperlukan. Recovery juga perlu untuk sistem ini sekiranya sistem tersebut mempunyai permasalahan pada pangkalan data. Bagi mencapai objektif untuk sistem ini, encryption data penting yang dibuat. Encryption ini yang dibuat pada kata laluan untuk pengguna bagi sistem ini terdapat pengguna dan juga kakitangan. Encryption ini dibuat kerana untuk membuat sistem yang selamat dan juga dipercayai untuk pengguna.



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## **CHAPTER I**

### **INTRODUCTION**

#### **1.1 Project Background**

Billing hotspot wifi system includes a radius server that is particularly suited for the security and authentication requirements. The wireless based network and easy connectivity module for an existing billing system allows updating the billing system in real time on customer's activities.

This is suitable for the complete management of wireless hotspot such as hotel, libraries, cafe etc.

This system is software to managing a hotspot wifi. Using this system customer can access the internet with their laptop, PDA or mobile, if they have a wifi card, without having to install any software.

To connect to the hotspot, customer need to buy a ticket top up go to system browser and enter username and password. After login, users can connected to the internet and can use any application installed on their computer which requires an internet connection. For first time users, they need to register their details first before use this system.



The distributed database is used to managing database stored on multiple server in a network. The database is a set of databases stored on multiple servers that typically appears to application on a single database. The DDMS synchronizes all the data periodically and in cases where multiple users must access the same data it ensure that updates and deletes performed on the data at one location will be automatically reflected in the data stored elsewhere.

### **1.1.1 Main Features**

The main feature for this is system are, this system will use MYSQL and SQL Server as a database support. Using this database, it will make more easy to manage data and maintain it. This system also is a complete management of customer data with the possibility of directly scanning the documents.

This system also will make information of user with notification of notes present, documents missing or disabled user. For make this system more usable for customer. This system will be design for the user that user can choose the expiry date for user accounts. For the rate of plans, user can choose and apply a different rates based on the day and time.

For the management report, this system will be designs that have a financial statistics report. This system also will be record all the transactions of the customer.

### **1.2 Problem Statements**

In hotspots wifi network the encrypting data coming into and out of they should be unnamed. From this situation, hotspots wifi need to add new features, because we are sharing a network with total stranger as opposed to trusted group. So that we need to make an encryption process of collecting data by the use a key or password.

Other than that, hotspots wifi also have a problem with a SQL injection attack. It is a form of attack that come from user input that has not been checked to see that is valid. The objective is to make sure the database system into running malicious code that will reveal sensitive information or otherwise compromise the server. The principal behind SQL injection is simple. When an application takes user data as an input, there is an opportunity to malicious user to enter carefully crafted data that causes th input to be interrupted as part of a SQL query instead of data. (JOHN KENNY (2007) "GUIDE TO PHP SECURITY" INTERNET : DEV SQL.COM)



Hotspot wifi also have a problem with the unauthorized device on network. This problem we call as insertion attack. These occur when we place unauthorized devices on the wireless network without going through a security process and review. This type of attack can happen when a attacker tries to connect a wireless client to an access point without authorization. It is possible to configure the access point so that they require a password for client access. If there is no password, an intruder can connect to the internal network simply by enabling a wireless client to communicate with the access point

### 1.3 Objectives

- **To make the data more useful without the corresponding decryption key or password.**

Encryption does not solve access control problems. However, it enhances security by limiting, data loss even if access controls are bypasses. For example, if the database host computer is misconfigured and a hacker obtains sensitive data, that stolen information might be useless if it is encrypted.

- **To prevent from SQL injection attack.**

The objective of SQL injection attack is to useful the database system into running malicious code that will reveal sensitive information or otherwise compromise the server.

- **To enable an efficient reporting system**

Report can be generated whenever it is required with reliable data of the usage of wifi hotspot, sales of top up etc.

- **To make sure the data in database customer is secure**

This is one the important objective for this system. The data such as customer information, their payment and to secure customer from any malicious during online session.

## 1.4 Scope

As mention in the problem statement, this system has a problem in managing data and the security of data. So from that, the most important thing a to improve this system to make the data a more secure and systematic.

There are boundaries that face in this system. The first thing are, the security purpose. This problem face when the system faces with a lot of customer data that are not systematic. When this happen, the hackers will take advantages to hack and stole any useful data.

Rather than that have a problem with authorization, this happen when to identify and role a live with user account and that data is typically translate restrictions by the radius server and wireless LAN devices itself. As an example the radius server may specify that a filter should be applied to traffic from a particular device, but it is a almost certainly up to the wireless LAN hardware define the specific of that filters. ( Matthew Gast (2008). " 802.11 Wireless Network: The Define Guide". 509)

The summary for this scope are need to improve on the security purpose especially on the database security. This system always has a problem with the data loss. Data loss happens when the system does not have any extra prevention on the security. If system has a prevention, data loss will be increase and it will be totally zero form any intruder and hackers who are stolen information of customer. Besides that, the database wills be more structural, practical and more systematic. To make it, the database a should be not complex and easy to understand by other administrator.

This project is divided into several scopes. User scope is for the users that use the system. System scope is the system that includes hotspots wifi system

### 1. User scope

- i). Customer who are subscribe for this hotspots wifi.
- ii). Admin who are manage the system.
- iii). Accountant who are make a financial report for this system.
- iv). Clerk who are manage for customer report and other problem.

## 2. Function and Modules

### i) Module Customer Registration

- A form that required the customer to field it before they want to subscribe into this system. This is mandatory form, information from a customer are required. All the information will be stored into the database.

### ii) Module Customer Information

- Stored the information of user. Identifying the user identify and user occupation. The system provides security features thought password security where only authorized user can be access to the system with different authorization.

### iii) Module Payment Method

- Stored the information about old and new payment that make by the customer. All payment will be stored and it will appear at the customer profiled and also in the database of system. For this method this hotspot will easy to make an annual report about the customer who are subscribe this hotspot wifi system.

### iv) Module Customer Management

- This module is required if customer want to change their information such as their occupation, address and other. Customer also can management type of payment that they need before they subscribe into this system.

### v) Module Report

- Summarize the report on the customer want to change their information. and the current usage of the wifi system.

### vi) Module Notification

- By using the SMS notification it will be easier for customer to verify their password and for security purpose such as if customer forget their password.



- vii) **Module Search and Sort**
  - This module use by the customer to search and sort every payment that they make. All the history of payment will be appear if the customer search and sort of it.
- viii) **Module backup**
  - This module uses for backup all the data related to customer and also all information about the hotspots wifi transaction such as payment by customer and other. All the data will be backup by an administrator daily.

## **.5 Important of Project Database.**

The important of project database are, to make the database storage a facilitate with the process. It base on an online system, so that all of data a stored in database and easy to take back and the database will be more systematic and more capable with the system.

The second thing in the project database a, the system more organized. When use the online system, it is stored in the database that a created by category that are used. So that it is easy to handle and it a multitask and user will easy to use it.