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## A Call Center Trouble Ticketing System with Auto-Reply and Messaging Mechanism

LOVE JHOYE M. RABOY<sup>1</sup>  
ROWEEN ANTONETTE B. ALONTAGA  
KARL MARTIN LOUIE N. CASIÑO  
MARK ANTHONY C. CINCO  
JOHN PAUL S. RUIZ

Department of Information Technology  
College of Industrial and Information Technology  
Mindanao University of Science and Technology  
Cagayan de Oro City, Philippines

### Abstract:

*A professional quality of handling network problems require some kind of problem tracking system, herein referred to as a "Trouble Ticketing System". A trouble ticketing software is a piece of software that manages and maintains lists of issues and problems encountered by a customer. (Zendesk, ND).*

*This study aims to provide solution about the problem of a call center company like difficulties in communications, time consuming and no proper monitoring. Those problems were solved by trouble ticketing system in local area network and implementing a module that notifies the technician when problem arises; an auto-reply mechanism is also provided in order to provide faster solution to the common problem, and most of all the system provides a monitoring capability such as the history of all issues of the PC. Result shows a 100% functional trouble ticketing system. It implies that the system provide a means of communication from the agent to the technician, lessen the time consumed in trouble shooting the PC and provides proper monitoring.*

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<sup>1</sup> Corresponding author: [ljraboy@must.edu.ph](mailto:ljraboy@must.edu.ph)/[jhoye.m@gmail.com](mailto:jhoye.m@gmail.com)

**Key words:** trouble ticketing system, call center PC problem monitoring, auto-reply communication, technician notification mechanism, network communication

## **1.0 Introduction**

Many businesses nowadays are turning toward automated systems to perform their everyday tasks. One automated system that is becoming more popular is the Ticketing System in a Call Center Business. Trouble ticket is a mechanism used in an organization to track the detection, reporting and resolution of some type of problem.(Rouse, ND). This system is used to call the attention of administrative personnel in the company without going to the administration office to fix computer issues and problems. With the Trouble Ticketing System, sending a request and complaints of the computer problems, the company can easily get the attention of the administration personnel.

### **1.1 General Objective**

The general objective of this study is to develop a trouble ticketing system with auto-reply mechanism, a messaging system as a means of communication between agent and technician, and monitoring of problem PCs in a call center company.

### **1.2 Specific Objectives:**

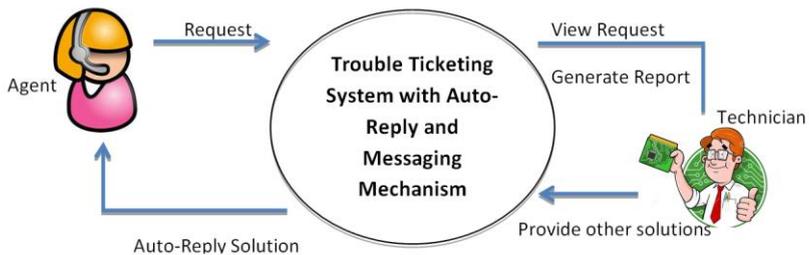
- 1.2.1 To design a trouble ticketing system with auto-reply capability and messaging system.
- 1.2.2 To implement the trouble ticketing system in a local area network using Php and mySql

### 1.2.3 To conduct functionality test of the trouble ticketing system

## 2.0 Methodology

The design of the system involves the identification of the system overview of the system. This tells us on the generic view on the functionalities of the system. Next approach in the designing of the system is in the use of Use-Case diagram in order to identify the different modules to be developed for the system to work. These modules were based on the different task that the Agent and the Technician will do once they use the system.

### 2.1 System Overview of Trouble Ticketing System



**Figure 3.1 System Overview of Trouble Ticketing System**

Figure 3.1 shows an overview about Trouble Ticketing System. The figure indicates two users for the system: the Agent and the Technician respectively. The Agent's the main purpose in using the system is to send a request to the system for some trouble or problem with her/his workstation. The system will first then provide some solutions for the problem. If in case, the solutions provided is not on the database of matching problems and solutions, the agent can then send a message to the technician. On the other hand, the Technician can view

messages sent from an agent and reply some answers to the agent. The system can also generates reports as summary and monitoring of trouble/issues in the company.

## 2.2 Analyzing System Needs

One of the challenges encountered by the researcher was on the identification on what are the basic functionalities that system will do. The approach to meet this challenge is in the use of Use-case Diagram as shown in the Figure 3.2 below. The Use-Case Diagram displays the basic functions / modules for the system to work.

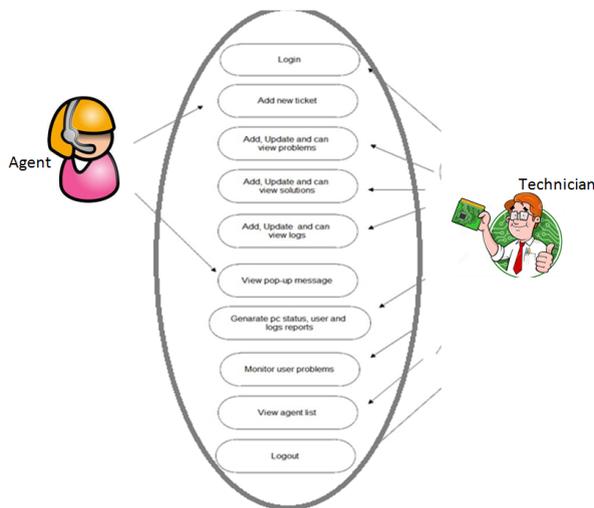


Figure 3.2 Use-Case Diagram for Trouble Ticketing System

## 2.3 Database Design

The design of the database involves the use of six tables or entity. They are the following:

Table **Ticket** is where the elements of tickets will be saved, it contains the important fields the status of the ticket, `problem_id` for identifying the problem and `sender` for identifying the sender of the ticket

Table **Problem** is where the problem elements will be saved, it contains on what type the problem is either software or hardware and the priority level.

Table **Pc** is where the specification of each PC is saved, it contains important fields such as station no. for tracing the problem from where it is send.

Table **Admin** is wherein the credentials of the admin user is saved such as username and password.

Table **User** is where all the list of agents are saved. It is very useful when it comes to user report where in user encountered problem most of the time.

Table **Answer** is where the knowledge base solutions are saved. And it also contains the elements from answer library

## **2.4 Implementation Details**

Implementation detail refers to the hardware and software needed for the development of the trouble ticketing system. Since there are two users of the system: Agent and Technician. It is assumed that the both of the users has their own workstation with basic hardware components. The Agent's low-end was acceptable for the system because the Agent's need only to access a web-browser in order to use the system. The Technician's workstation may have the capability of a server in order to established communication with the agent's workstation.

For software requirements, Agent's workstation requires the basic hardware needed, while the Technician's workstation needs a server with Php and MySql installed into it.

## **2.5 Test for Functionality**

In the conduct of functionality test, the researcher grouped common issues / problems encountered by the agent. These are Software, Hardware and Other Issues in the agent's workstations. The participants of the testing phase are all call

center agents from FBC Business Solutions. We identified 20 participants. And we subdivided the participants to send tickets according to Software, Hardware and Other Issues category. Seven agents were assigned for Software and Hardware Issues and 6 agents were assigned to send tickets for other issues.

Testing was administered according to the basic functions of the trouble ticketing system. The functions are the use of auto-reply functions, messaging and notifications of the system to the technician. A test was also conducted for the sending of other requests to/from the agent to/from technician. Three attempts was given in-order to ensure that the right response of the system was captured.

### 3.0 Results and Discussion

The Trouble Ticketing System is composed of two different



Figure 3.1 Trouble Ticketing System: Agent's Home Page

home pages: the Agent's Home page and the Technician's Home Page. Figure 3.1 shows the Agent's Home page. The Agent will specify its name and Station number for recording purposes. The Agent's home page contains

the problem on his/her PC according to the category of problem. May it be software, hardware or new issue.

The second home page, was designed for the technician. The Technician's home page as shown below contains tabs for messages, notification, reports, and answer library. Messages and notifications was highlighted in order to prompt the technician that there are messages and issues that needs to be resolved from the agents.



Figure 3.2 Technician's Home Page

### 3.1 Messaging Capability of the System

The system provides a messaging module for both the Agent and the Technician. Both of the users can send and received messages. An agent can send a request, and the technician can either reply a solution to the problem encountered by an agent. Figure 3.3 below shows a screenshot of a technician typing a message as a possible solution for the problem encountered by the agent.



Figure 3.3 Sending a Message

### 3.2 Notification Capability of the System

Notification according to businessdictionary.com refers to authoritative or urgent, formal or legal notice. There are two types of notifications. They are the push and pull notification. Push notification is the delivery of information of information

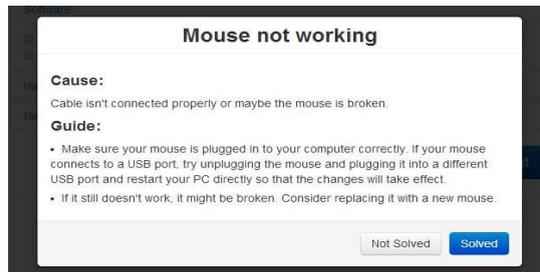
from computer application to a computing device without the specific request from the client. Pull notification on the other hand in which the client must information from the server. (Rose, ND). One of the benefits of using notification is that it inform users on new information related to an app, providing valuable and relevant updates to customers even when the app is close. (Healey, 2014). The researcher also finds it helpful to use notifications specially that trouble ticketing system deals with problems encountered by the agent. Figure 3.4 below shows a screenshots of the Technician's home that contains a notification icon.



**Figure 3.4 Notification Icon**

### **3.3 The Auto-Reply Capability of the System**

An auto-reply message is a short message that is automatically sent to whoever sends and email to your address (Streamline.net, ND). Auto-reply in this Trouble Ticketing System was also used in order to provide faster solution for the common problem. In auto-reply capability, the agent submit a problem which are common and easy to repair, the system will then automatically provide a guide and steps to solve the problem directly.



**Figure 3.5 Auto Reply Message**

Figure 3.5 shows the Auto-reply Message of the problem selected by the agent which they may use as a guide to solve the problem by itself. If the problem had been solved by following to the guide given, they will just click the solved button; if not just click the not solved button.

### 3.4 Testing Results

The researcher conducted a robust testing activity. The testing was given to 20 call center agents. And conducted 3 attempts in testing for each major functions/module. Table 1 below shows that the researcher was able to achieved a 100% functional and working system.

Major Modules	Attempt 1	Attempt2	Attempt 3	Average
I. Auto-Reply	100%	100%	100%	100%
II. Notifications	100%	100%	100%	100%
III. Messaging	100%	100%	100%	100%
Overall Result				100%

**Table 1 Functionality Test Results**

## 4.0 Conclusions and Recommendations

FBC Business Solutions needed a Trouble Ticketing System to their company because of their problem in communication between agent and technician, no proper monitoring of problems of PC and time consuming on responding issues.

The proponents therefore concluded that the system helps the technician and the agent to communicate easily in terms of requesting a ticket from the agent for their PC problem, monitoring and recording all of the activities on the resources such as usable computers and also minimized the time consume in solving the problem. The system is based on LAN where in the users can interact each other without depending on internet connection, it has auto-reply to give a repair steps to the common problem, and an answer library to have solutions to solve the problem,

We recommended a Trouble Ticketing System that can automatically detect the specifications of each PC, which can see/view all online PC. A Trouble ticketing System is able to show a video of demonstration on how to fix a computer problem.

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