A Sales Management System using Cloud Computing Technology

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ABSTRACT

At present, cloud computing technology is used in many applications because of the rapid development in network technology and the cost of transmitting a terabyte of data over long distance has extremely reduced in the past decade. Cloud computing is a technique based on distributed computing resources in pay per usage strategy. A user can access cloud services as a utility service and able to use them almost instantly. These features make cloud computing so flexible with the fact that services are accessible anywhere at any time.

Our objective was based on developing a sales management system with the cloud computing technology for a middle range buying & selling company. Increasing demand for cloud applications has led to develop an important system of this nature. The key intent of this research is to investigate the existing cloud computing systems and to develop a new system for purchasing, inventory and sales over the Internet.

Keywords: Cloud Computing, Oracle Application Express, Web browser, Sales management System

INTRODUCTION

This project is based on developing a sales management system with the cloud computing technology for a middle range buying & selling company. Cloud computing is a technique to leverage on distributed computing resources one do not have own resources

and using internet facility in pay per usage strategy on demand[1][7]. A user can access cloud services as a utility service and begin to use them almost instantly. These features make cloud computing so flexible with the fact that services are accessible anywhere at any time[2][3].

In a cloud computing system, there is a significant workload shift. Local computers no longer have to perform all the heavy lifting when it comes to running applications. The network of computers that make up the cloud handles them instead. Hardware and software demands on the user's side decrease. The only thing the user's computer needs to be able to run is the cloud computing system **interface software**, which can be as simple as a Web browser, and the cloud's network takes care of the rest. Service providers are responsible for installing and maintaining core technology within the cloud. Some customers prefer this model because it limits their own manageability burden. Cloud computing systems are normally designed to closely track all system resources, which enables providers to charge customer requirements according to the resources each consumes. Using a cloud computing environment generally requires the consumers to send data over the Internet and store it on a third-party system.

METHODOLOGY

In order to develop this system, we hired an Amazon server on rental basis. Then we installed Oracle Database 11g Express Edition and APEX in that sever. User interfaces were developed using APEX and linked the front end and back end by using Oracle Listener. The system was implemented using a virtual desktop.

How you set up Oracle Application Express depends upon the user's role. If the user is a developer accessing a hosted development environment, an administrator must grant the useraccess to a workspace. If the user is an Oracle Application Express administrator, then he must perform the following steps[4]:

- Login to Oracle Application Express Administration Services. Oracle Application Express Administration Services is a separate application for managing an entire Oracle Application Express instance. The administrator log in using the ADMIN account and password created or reset during the installation process.
- Specify a provisioning mode. In Oracle Application Express Administration Services admin must determine how the process of creating (or provisioning) a workspace will work.
- Create a Workspace. A workspaceis a virtual private database allowing multiple users to work within the same Oracle Application Express installation while keeping their objects, data and applications private. Each workspace has a unique ID and a name. An Oracle Application Express administrator can create a workspace manually.
- Login to a Workspace.Once we create a workspace in Oracle Application Express Administration Services, return to the Oracle Application Express Login page and login to that workspace.

After an Oracle Application Express administrator approves a workspace request, an e-mail arrives in your mail box with your login credentials (the workspace name, user name, and password).

Note that, if your administrator selected Email Verification as the automated method for handling new workspace requests, you might first receive an email containing a verification link. This step ensures that your email is a valid one before the workspace request is approved.

We developed a database application for this project in APEX. Application of a database is a collection of pages linked together using tabs, buttons, or hypertext links. Application pages share a common session state and authentication.

To create a database application, an application developer runs wizards to declaratively assemble content into pages. Individual pages are organized using containers called regions. Database applications enable developers to have full control over all aspects of development process and final application functionality. With database applications, developers can directly leverage their SQL and PL/SQL programming skills. Database applications use declarative control over flow control and support full user interface controls through the use of templates and themes.

By using the Create Application Wizard, we created a complete application containing multiple pages including reports, interactive reports, forms, tabular forms, and master detail forms. The Create Application Wizard is designed to create easily and quickly basic Oracle Application Express applications. After we have created an application using this wizard, we can modify pages and add additional pages using the Create Page Wizard.

We used the Create Application Wizard to create pages based on SQL queries or existing database tables. Applications based on tables can consist of a simple report, a form and report, or a tabular form. We can create SQL queries by manually typing

SQL, or by using the graphical user interface of Query Builder[5][6].

This system is trying to develop new methods by using the oracle APEX features. The new method is that we have hired an Amazon server on rental basis and installed Oracle Database 11g Express Edition and Oracle Application Express. We developed the system by using APEX and it implemented by using a virtual desktop and a web browser (Microsoft Internet Explorer 7.0, Mozilla Firefox 3.6, Google Chrome 4.0, Apple Safari 4.0 or later versions).

Following figure 1 shows the Oracle Application Express home page of this project,figure 2 shows the home page attributes and figure 3 shows the page item attributes that we have created using APEX.
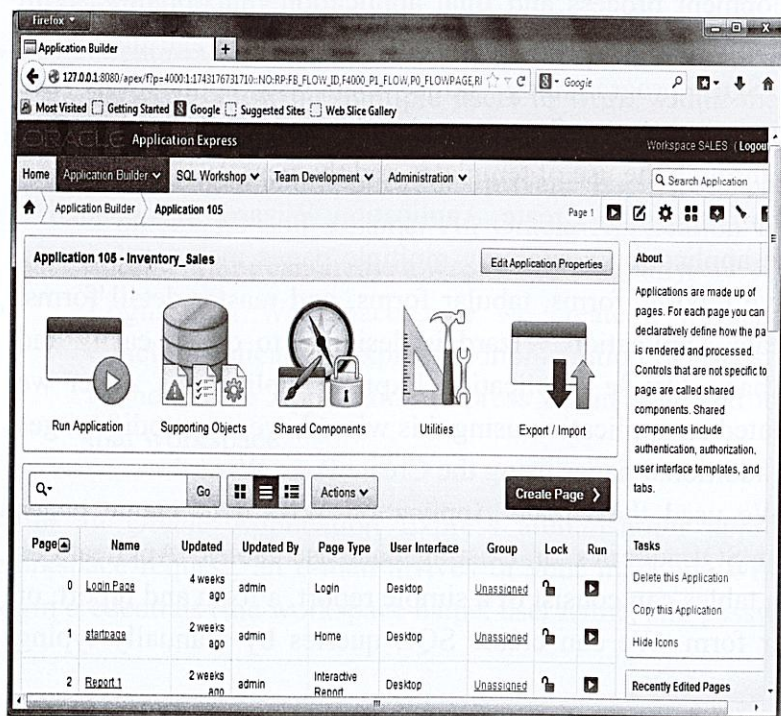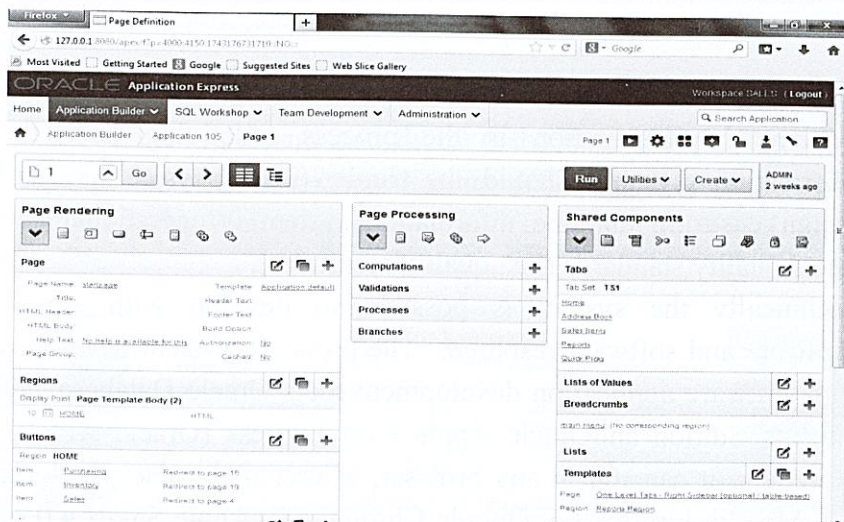
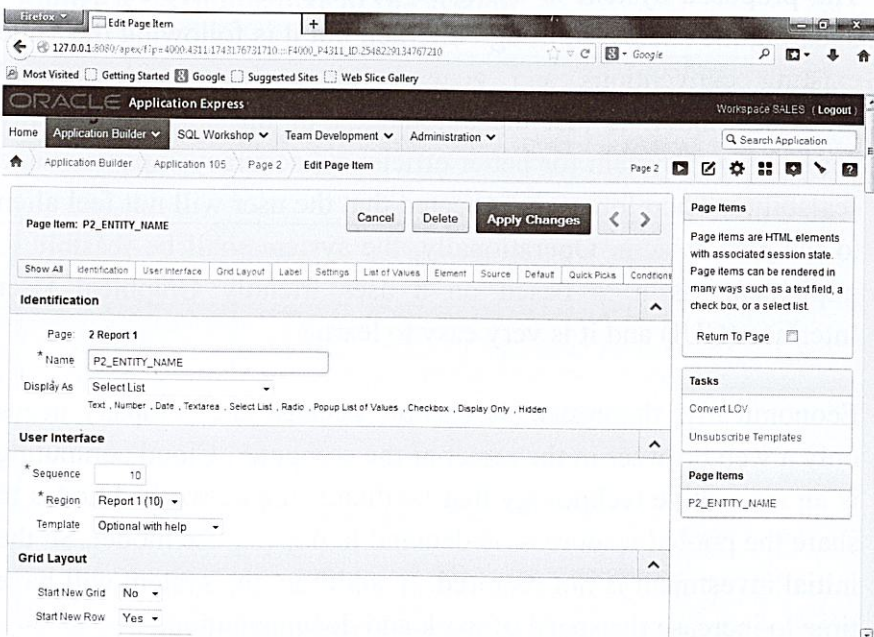**Figure 1 : Application home page of the project**

Figure 2 : Home page attributes

Figure 3 : Page item attributes

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SYSTEM IMPLEMENTATION

Systems implementation is the process ofdefining how the information system should be built (i.e., physical system design),ensuring that the information system is operational and meets quality standards (i.e., quality assurance).

Technically the system is possible to develop with simple hardware and software resources. The proposed system developed with software application development tools Oracle Database 11g Express Edition andOracle Application Express (Oracle APEX). Moreover, it can run in any browser, Microsoft Internet Explorer 7.0, Mozilla Firefox 3.6, Google Chrome 4.0, Apple Safari 4.0 or later versions without any additional software.

The proposed system is trying to develop new methods such as updating the database through internet, but it is following the same existing conventions and general rules which guide several processes and it is just the automation of the existing partially computerized system for better efficiency, accuracy,expansion and scalability. Therefore, it is expected that the user will not feel alien to the new system. Operationally, the system shall be feasible to implement, as it is based on a user friendly Graphical User Interface (GUI) and it is very easy to learn.

Economically, the system is feasible because the company needs only a web browser in the tablet or the computer. Cloud computing is an innovative technology that facilitates the networked nodes to share the pooled resources on demand in pay per use model. So the initial investment is not required. In addition, the system will have time to increase the speed of work and documentation.

The following figure 4 shows the architecture of the system, figure 5 shows the login page and figure 6 shows the home page of the system that we have created using APEX that is implemented using Firefox Web browser.
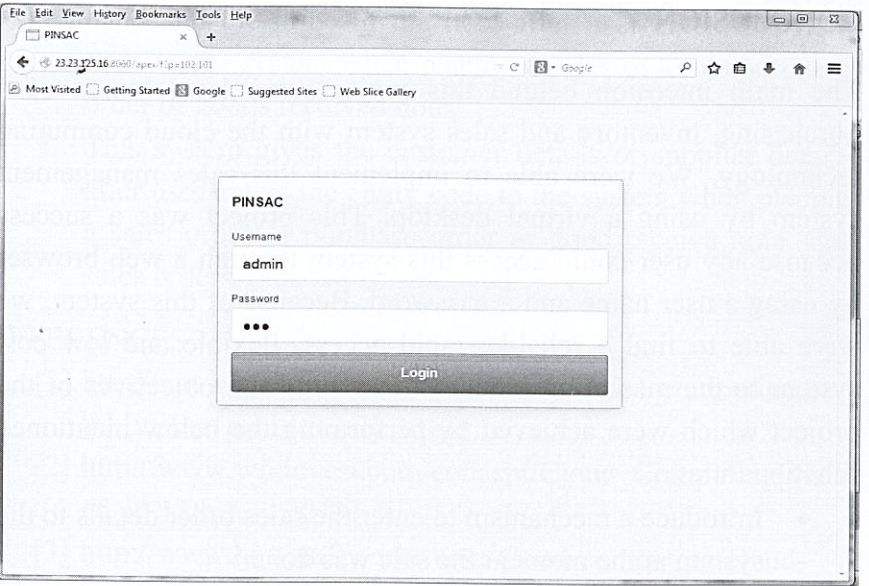

Figure 4 : Architecture of the system
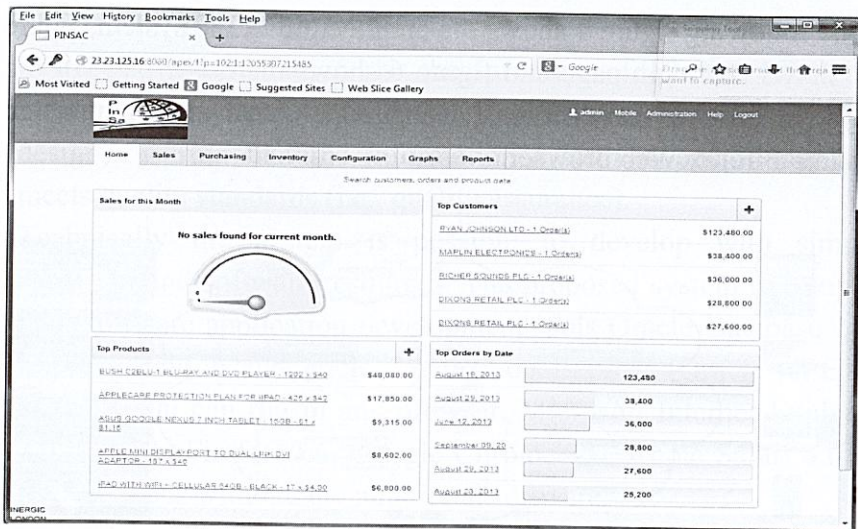

Figure 5 : Login page

Figure 6 : Home page

CONCLUSION

The main intension behind this project was development of a purchasing, inventory and sales system with the cloud computing technology. We were able to implement this sales management system by using a virtual desktop. This project was a success because any user could access this system through a web browser by using a user name and a password. Because of this system, we were able to find a reliable, rapid access, flexible and low cost system to the marketing industry. The aims and objectives of the project which were achieved by performing the below mentioned functionalities:

- Introduce a mechanism to enter the sales order details to the system at the moment the sale was done.
- Sales representatives can get the updated sales item details from the system when they are placing sales orders.

- The company is aware of what representatives are doing, which customers are buying their products, which products are selling and the selling amount of the products.
- This system reduces the time taken for manual record keeping by the sales representatives.
- Just need a web browser and the user name, password to login to the system. So we can use our system from anywhere in the world.
- Introducing a backup server system, if any problem occurs, we just have to reinstall it to the system.
- If there is a server crash, service provider on the cloud is responsible for that. It is their responsibility to provide a backup server.
- This system gives the item description, number of items in hand and the price of the item after user enters the item code to the system when placing a sales order or purchase order or goods received note.
- This system gives the customer details or supplier details after user enters the entity code to the system when placing a sales order or purchase order or good receive note. For sales orders, pick list is generated.

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