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Developing Mobile-Based Restaurant Point of Sales Information System Application Alexander Setiawan Informatics Engineering Petra Christian University Surabaya, Indonesia Silvia Rostianingsih Informatics Engineering Petra Christian Universit Surabaya, Indonesia Hendy Thomas Herman Informatics Engineering Petra Christian Universit Surabaya, Indonesia Abstract: Point of sales system information is a growing system information and a lot of people is interested in using it especially in the business areas. Nowadays, the mostly used process in restaurant are order process, reservation process, delivering customer;s order to kitchen, and calculating payment bill that are still noted using paper, which makes the process less efficient than it should have been. In this research, a mobile-based point of sales information system application will be developed. The development of this application is using Laravel PHP framework and Javascript. Result from the research is that the application can show customer's order, record reservation, order's status in kitchen and display daily sales report. Keywords: Restaurant, Information System, Point of

Sales, Mobile. 1. INTRODUCTION The growth of the technology nowadays enforce the needs of accurate and fast information in restaurant's business process. The already existing process in most restaurant is in need of such information system to help their business process. There are various matters that needs to be addressed inside the taking order, and reservation process, such as to quickly find out how many items are available to order without the need of walking back and forth to kitchen department, mistakenly write the customer's order by the waiters or mistakenly read the waiter's handwriting by the kitchen department. With the use of mobile-based point of sales information system application, the waiter can quickly find out how many items are available to order, the customer's order will be directed quickly to kitchen department to prevent the human error done by both of the waiter and kitchen department. Thus can save the time required to process the customer's order and prevent the possible human error. 2. BASIC THEORY 2.1

> **Point of** Sales **Point of** sales **(POS)** is **the physical location at which goods are sold to customers. The point of sale is often more specific than the general building or store where something is sold, typically indicating the piece of technology which is used to finalize the transaction. In many cases, this is a standard cash register at the front of the store**
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[3].

> **Restaurant POS refers to point of sale (POS) software that runs on computers, usually touchscreen terminals or wireless handheld devices. Restaurant POS systems assist businesses to track transactions in real time. Typical restaurant POS software is able to print guest checks, print orders to kitchens and bars for preparation, process credit cards and other payment cards, and run reports.** POS **systems**
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are often designed for a variety of clients [4]. 2.2 Laravel Framework Framework is used to ease the maintenance to website by other developer because the structure of the website is already defined by the framework thus making it easier to understand.

> **Laravel is an MVC web-development framework written in PHP. It has been designed to improve the quality of your software by reducing both the cost of initial development and ongoing maintenance costs, and to improve the experience of working with your applications by providing clear expressive syntax and a core set of functionality that will save hours of implementation time**
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> 1

[6]. 2.3 PhoneGap PhoneGap is a growing technology used to develop cross- mobile platform applications.

> **PhoneGap is a HTML5 application framework that is used to develop native applications through web technologies. This means that developers can develop Smartphone and Tablet applications with their existing knowledge of HTML, CSS, and JavaScript.**
>
> `7`

[2]. 2.4

> **Web Services** In **an SOA, applications are made up of loosely coupled software services, which interact to provide all the functionality needed by the application. Each service is generally designed to be self-contained and stateless to simplify the communication that takes place between them.**
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Web services provides a technology foundation for implementing an SOA. Web services are self-contained software services that can be accessed using simple protocols over a network. Web services can perform a wide variety of tasks, ranging from simple request-reply tasks to full business process interactions [5].

> **REpresentational State Transfer (REST) is an architecture principle in which the web services are viewed as resources and can be uniquely identified by their URLs. The key characteristic of a RESTful Web service is the explicit use of HTTP methods to denote the invocation of different operations**
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> `4`

[1]. 3. SYSTEM DESIGN 3.1 Analysis of Existing Ordering System Order process in restaurant is done manually, which means that the waiter write the customer's order in a paper and then goes to the kitchen to deliver it so it can be processed immediately and then to cashier so that how much the customer is obligated to paid later can be calculated. Should the item(s) ordered by the customer are out of stock, the waiter then must go back to customer to inform them about the availability of the item. 3.2 Problem Analysis of Existing Ordering System Order process in the restaurant is not efficient and inconvenience, because the waiter must goes back and forth to kitchen and cashier every time there is a new order from the customer. If the restaurant is crowded then this process can waste valuable time which can lead to the delay of serving the customer's order. 3.3 Requirement Analysis of Ordering System Based from the problem analysis of the existing ordering system, it can be identified that the waiter needs more efficient order process system. System that is directly connected to kitchen and cashier is needed in ordering process to increase the waiter's efficiency, to reduce the time needed to process the order, and also to quickly find out the availability of each item. With the help of the system, it is expected to reduce the time needed to process customer's order until the order is served. 3.4 Information System Application Design The new information system is created to ease the order process and table selection to help the waiter and to satisfy the customer. The system is a mobile-based application and will be automatically directed to kitchen and to cashier. 3.5 Research Flowchart Figure 1 Application Overview Figure 1 explain the overview of the

application that will be created. This application can be used by the user with the privilege of admin and user. Users with the admin privilege will be able to use all the feature provided in the application, while the user with user privilege will have a limitation that is set by the admin. Before using the application, users are required to login with username and password. The system will then check the login information provided by the user if the login information is existed in database, the system will check for its privilege level and display the home page based on the privilege. If the login information is not existed or false the system will display an error message and the user must login again. In home page of the application, there are various menus that can be chosen. The hierarchy from each menus can be viewed in Figure 2. Figure 2 Hierarchy Menu New order can be added from POS menu by the user by selecting the table beforehand. The flowchart of adding order process can be viewed in Figure 3. Figure 3 Add Order 4. APPLICATION IMPLEMENTATION This chapter will explain the implementations of the application. 4.1 Login Before the application can be used, the user must login first. The login page can be viewd in Figure 4. Figure 4 Login Page 4.2 Layout Table Creating table layout can be done by opening Table Layout menu and then creating the table layout using Add Table button. This process can be seen in Figure 5. Figure 5 Create Table Layout The created table layout will be used as the table layout in this application that can be seen in Figure 6. Figure 6 Layout Table 4.3 Ordering Ordering process is done by selecting POS menu in home page. After the user selects the table, user will be redirected to order form that can be viewed in Figure 7. Figure 7 Order Form To be able to choose item, user must select the category from the item that will be selected, and then choose the item. This process can be viewed in Figure 8. Figure 8 Filled Order Form 4.4 Reporting Report page display the sales report and item's stock in certain period. Sales report consists of total sales report, total promo discount, total payment type. While the stock report contains stock item report in certain period. Item sales report can be viewed in Figure 9. Figure 9 Item Sales Report Stock item report can be viewed by selecting Stock Report in Report page, can be seen in Figure 10. Figure 10 Stock Report 4.5 Mobile Devices Mobile application can be used in Android mobile devices that runs on Android Jelly Bean operating system. The login page from the mobile device can be viewed in Figure 11. Sony Xperia TX Sony Xperia U LG Nexus 5 (i) (ii) (iii) Figure 11 Mobile Login After a successful login, user will be directed to table selection page. This can be seen in Figure 12. Sony Xperia TX Sony Xperia U LG Nexus 5 (i) (ii) (iii) Figure 12 Mobile Table Selection In table selection page, user is required to choose the table before adding a new order. New order form can be viewed in Figure 13 after the user choose the table. After the successful order, user will be directed to table selection page and the table's colour will change to red, indicating that there is an order in that table. This can be viewed in Figure 14. Sony Xperia TX Sony Xperia U LG Nexus 5 (i) (ii) (iii) Figure 13 Mobile Order Form Sony Xperia TX Sony Xperia U LG Nexus 5 (i) (ii) (iii) Figure 14 Color Alteration in Mobile Table Selection 5. CONCLUSIONS Based from the result of the testing, conclusions made are : ? Application can display order, display available item to order, reservation data, sales and stock report, change order status in kitchen, and updating item data and category. ? Application can create table layout in creating table layout page. ? All features from the application works using the local area network connection. ? All feature in mobile device works well. ? Based on the questionnaire's results, 45% of the respondents answered good, 50% of the respondents answered mediocre, and 5% of the respondents answered not good enough for the question does the application's user interface is user friendly. This indicates that the application's user interface is still acceptable. 6. REFERENCES [1] Dambal, V. 2010. REST, Web services, REST-ful services.http://www.ibm.com/developerworks/library/ws - RESTservices. [2] Ghatol, R. dan Patel, Y. 2012. Beginning PhoneGap: Mobile Web Framework for JavaScript and HTML5. California: Apress Media LLC. [3] Investorwords. Point of Sale. URI= http://www.investorwords.com/3725/point_of_sale.html. [4] Kashima, T., Matsumoto, S., dan Ishii, H. 2010. Recommendation Method with Rough Sets in Restaurant Point of Sales System. Proceedings of the International MultiConference of Engineers and Computer Scientists 2010 Vol III, IMECS 2010.Internet

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