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NFC based Alarm Patching System for Regular Time Management

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Abstract

Most people do not think seriously about the concept of time management, just to spend the precious time sheets. Regular life can sustain mental and physical health. That's why time management is an important factor in living. In the thesis, smart alarm patch is designed using a wireless communication NFC technology that gradually develop and attract attention. Due to the alarm, regular hours is helped to improve the quality of life. For this, analysis was performed using the UML in this system, linked to the smart alarm system patches and NFC technology, Java Script language, Adobe Muse CC was used embody web document and mobile content.

Keywords: Alarm patch, time regular life, time management, NFC, UML
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1. Introduction

Term of time is between time and time or its unit. We are alive in time. But many people do not recognize importance of every hour. Since time passes by and could not be returned, every moment must be spent by ones' best. But, most people do not think that the concept of time management is important. All human are equally given time. Despite the same time given, people live differently due to the usage of time efficiently. Efficient time usage along with regular time management is always necessary and important element to keep mental and physical health. 'The best lot of busy people have the best time. - Good Swiss theologian ', 'Short life becomes shorter by a waste of time. - S. Johnson of the British literary ', 'The work expands so as the time that it can be used. - The history of Parkinson's UK ' etc, as like many scholars make quotes of the importance of time, it should be considered carefully while living. Therefore, in this paper, With one of electronic tags alarm patch system operated with mobile contents by NFC ,which is spotlighted technology with non-contacted short-range wireless communication module, change of daily routine or repetition of new routine which did not exist or regular day of ones' can be occurred although living in a busy time. Also, Java Script is used for efficient operation of mobile content and UML for system analysis.

2. Related research

2.1 NFC (Near Field Communication)

NFC refers to a non-contact short-range wireless communications technology capable of two-way communication of data to 13.56MHz band at a distance of about 10cm between two terminals where the NFC chip is mounted. If the exchange of information with wireless communication in a local area is possible, it means that sharing through contact, discovery, payment, and ticketing becomes possible. The main features of the NFC are as followed. First, as a concept of expanded existing RFID technology, it is a high-bandwidth communication that offers short-range data communication between NFC mounted devices which uses 13.56MHz frequency band, and is compatible with ISO/IEC 14443 access card standard and existing Felica and Mifare tag. Second, unlike existing RFID, both reading and writing is supported and more than card emulation, reader mode, P2P mode of diverse functions are supported. Thirdly, the recognition device has a time of about 0.1 seconds. Fourth, has a transfer rate of up to 424Kbps. The fifth has high security due to the short communication distance of within 10cm. Finally, customized services and conjunctions is possible due to recognition of the purpose of the users actions.

Even though NFC has sufficient market ability from distinctive features, NFC market was stagnant for a while due to many problems such as lack of NFC enabled device and disagreement of each intertwined interests group. However, NFC is getting reading to jump into Google Wallet, French CityZi project, NFC Myeong-Dong trial recently.

2.2 UML(Unified Modeling Language)

Because UML is closely linked with object-oriented language, it can be called as object-oriented modeling language. It is a software system, furthermore business modeling, unlike other software but output of system that is defined, visualization and implementing and documenting language. The reason for using the UML is that it is necessary to design a model before building a software system. Good models are essential in making the architecture soundness and having facilitate the communication of the team of the project. Due to this modeling, the cost of the new education reduces when the project or organization is changed. Also, different tools or processes, integration between areas can be leaded. Most importantly, UML helps the producers to concentrate on producing business value and offers the paradigm to achieve it. Through the provision of diverse diagram, output of development process of the software is offered, and the communication between producers and customers or producers smoothly. Since UML is to provide a variety of tools that can model the system, it is possible to model the domain much easier and to identify the results of the modeling easy. Also, UML applied system is evaluated reliable because it is adopted by industry standard.

2.3 JavaScript

JavaScript is an interpreted language and scripting language for the web. Program could be written in JavaScript called script and compiling is not necessary. A script in HTML web page is just simply inserted, works in modern web browser. Javascript is primarily called client-side javascript and it means that is runs not on a web server script but a browser installed in client computer. Javascript allows change of HTML page with add or removal of HTML element and content, style change of CSS and HTML element, interacting with users, validation of the from, script process of mouse and keyboard event, web browser control, settings and searching of cookies, and communication of web servers using AJAX technology.

3. System Design

UML was used for system analysis, in this paper, one of the UML tools, Gliffy, was used to analyze the system. First the user's requirements, and required components was analyzed. Smart alarm patch was purchased and NFC technology was used to perform tag, then variety of information was received by company to complete the setup. and was made for customers to purchase by conducting in stages. Figure 1 shows the Usecase Diagram of the system.
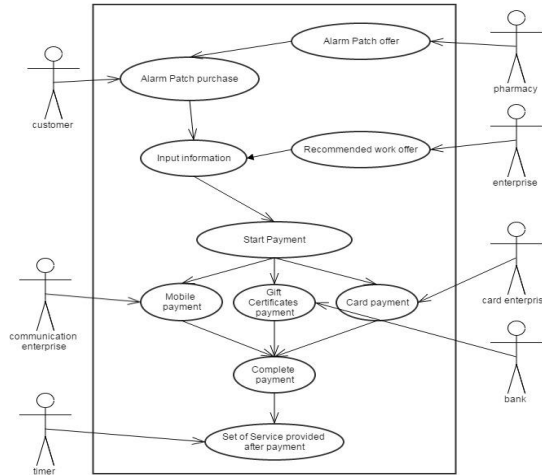

Figure 1. Usecase Diagram of the system

Figure 2 is the state diagram of workflow of customers being serviced after completion of smart alarm patch purchase.
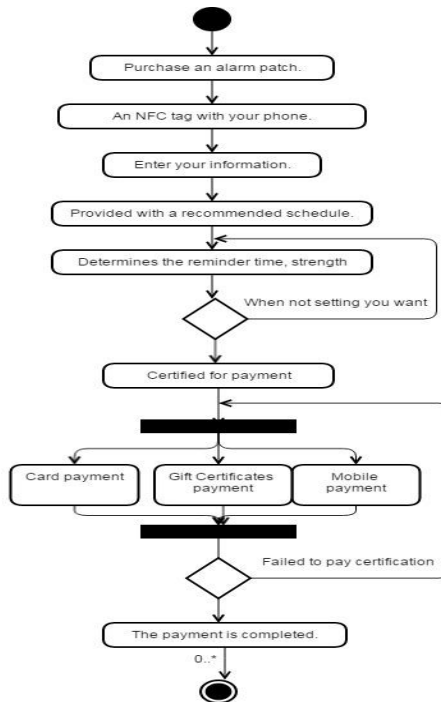

Figure 2. State Diagram of the system

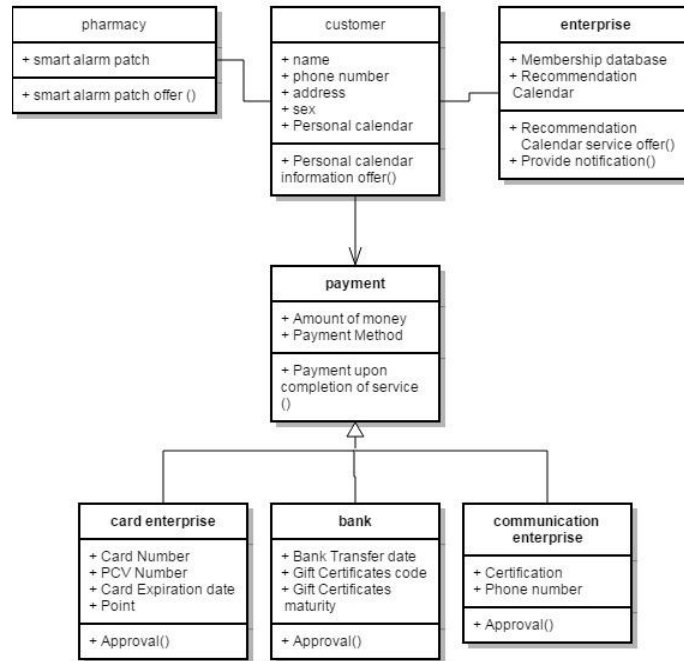Next, class diagram is expressed which is the static structure using object-oriented design in Figure 3.

Figure 3. Class Diagram of the system

4. Implementation

The implementation of this system was implemented using Java Script, Adobe Muse CC was used for screen figuring and Photoshop CC for graphic processing. As a result, Figure 4 is the initial screen that appears when the smart alarm patch is tagged using NFC function. The serial number found on the patch allows to log in, and can register the product if it is used for the first time by clicking the Register button.

Figure 4. UI of the system

It appears when the Registration button is pressed to register the product on the initial screen. Here, entering product number and schedule, changing settings is possible and more specific settings can be made by pressing In Detail button. Also the intensity of the alarm smart patch can be adjusted, and configured to set the alarm at a desired the hour, minute, and seconds.

5. Conclusion

Currently, this system is at modification complement at the state of design and technic and simply tested. It is made so that the customers can view conveniently using the using the setting and information of the alarm patch to the mobile content due to one of the spotlighted wireless communication technology, NFC technology, when purchased at the pharmacy. In addition, each increased use of the alarm patch must be purchased in order to use the system. Therefore, simple purchase is able so that the customers don't get complicated by using the mobile content. However, the weakness point is that the design and technology still lacks and the attachment to the body can give reluctance to the customers. Also, the marketing strategy elements for customers to recognize is falling behind. Therefore, if these points are supplemented, the quality of life is expected to be increased by a little help on regular life which is certainly needed for daily life.

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