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ONLINE E-SECRETARY SYSTEM FOR VARIOUS BUSINESSES

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ABSTRACT

In this article, we propose a new Online E-Secretary system which can be presented as a web application connected to a relational database. The online E-Secretary system is a solution that cans helps to manage all appointments day-by-day for any business, through an online web application. Through this system, the business man can set and update his availability time and clients can book appointments, consultations, sessions or any service online, using a web application, since the web development is a broad term for the work involved in developing a web site for the Internet (World Wide Web) or an intranet (a private network). Our new Online E-Secretary system is composed of several components. The start point of the system is the entrance of the user authentication information, was the user may be a client or a business man, and can login through their username and password. But if the user is a new visitor, and he wants to access the features of online E-secretary system then, he has to register by entering the specific information and determine a username and password, in order to be able to transform to the main page of E-Secretary. If the user is authenticated as business man, it can choose through the system enter the availability times (weekly, monthly or yearly), and manage all reserved appointments (also weekly, monthly or yearly), and sending notifying emails after any actions. If the user is a normal client view and reserve an appointment according to specific business man availability times.

KEYWORDS: Software engineering, Web development, Appointment system, Database, Asp.Net, SQL Server.

I. INTRODUCTION

Online E-Secretary system is a solution that cans helps to manage all appointments day-by-day for any business, through an online web application. Through this system, clients can book appointments, consultations, sessions or any service online, using a web application, since the web development is a broad term for the work involved in developing a web site for the Internet (World Wide Web) or an intranet (a private network). Web development can range from developing the simplest static single page of plain text to more complex web-based internet applications, electronic businesses, and social network services.[1]

In recent centuries, scientist has expanded their research for predicting many solutions for several diseases. Although, the business is considered as the main root in jobs, it will not survived and succeeded if it is not organized and well done upon the required time. On the other hand, the business time depends on the appointments that will be taken by third party (clients).[2] For that reason, the business man shall hire a secretary for him in order to organize his time, and communicate with clients for informing them in case of any changes. So, E-secretary system is a solution for this heavy duty, in which the user can register by creating an account, and accessing all system features, so he will be able to create an appointment's table.[3,4,5] This table can also be accessed by other users whom are logged in the system, that search for the account of the business man as well as the table of his appointment, Thus, they can be able to reserve an appointment in business man's schedule ,in which the latter being notified.[6,7,8,9]

In this paper, we propose a new Online E-Secretary system which allows the business man to set and update his availability time, and clients can view and book an appointment with a specific business man. The Online E-Secretary system is online web application that can be accessed via web from any location, and can be accessed via every one (normal user or business man). For web development there is many languages used in order to create a web page, Html is the base for all the web development languages were it is for the main source for the graphical interface of the web form, but the html was only a display web form, which the user will not be able to communicate with the form as an application, and exchange data with it. The JavaScript is one of the solutions that make the web form dynamic, and make it as a web application were the user will be able to interact with the web form , and change the

web to a dynamic way to express data as an input/output engine. In addition to that PHP and Asp.net are one of the most important languages in the web development domain, the creation of websites become wider with these two languages, and more graphical. E-Secretary system is developed using Asp.net which is an open source server-side Web application framework designed for Web development to produce dynamic Web pages. It was developed by Microsoft to allow programmers to build dynamic web sites, web applications and web services.[10,11]

In the next section of this paper, we present the architecture of the system with their components; Section3 describe the simulation and results; And the last Section presents the conclusion and the Perspective.

II. System Architecture

The Online E-Secretary system is online web application that can be accessed via web from any location, and can be accessed via every one (normal user or business man). It is created in two languages the Arabic, and English were different cultures will be able to use it, and communicate to clients according to theirs languages.

The system architecture is composed of set of components. The start point of the system is the entrance of the user authentication information, was the user may be a client or a business man, and can login through their username and password. But if the user is a new visitor, and he wants to access the features of online E-secretary system then, he has to register by entering the specific information and determine a username and password, in order to be able to transform to the main page of E-Secretary. If the user is authenticated as business man, it can choose through the system enter the availability times (weekly, monthly or yearly), and manage all reserved appointments (also weekly, monthly or yearly), and sending notifying emails after any actions. If the user is a normal client view and reserve an appointment according to a specific business man availability times (Figure1).
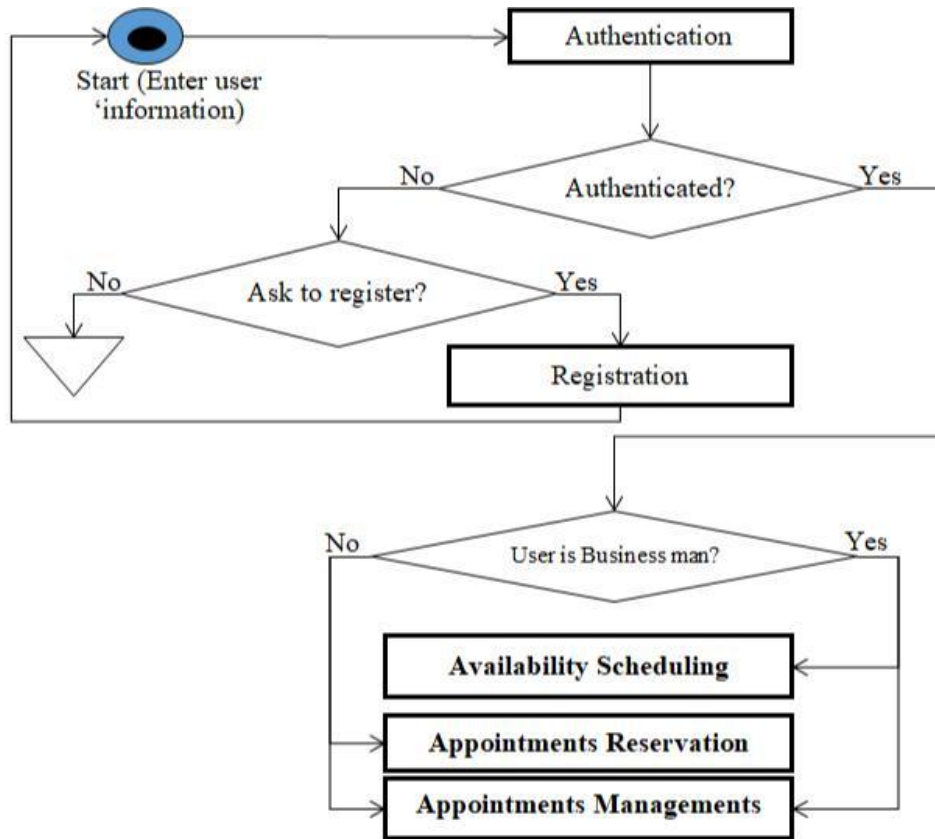
Fig. 1: General architecture of the Online E-Secretary system.

A. Authentication

This module present the entrance point of the E-Secretary system, it allow authenticating the user according to the username and the password. If the entered username matches the entered password in the database, then the user is authenticated and can accesses the E-Secretary features, otherwise, the user has the chance to register in our system by provide detail information about them (Figure 2).
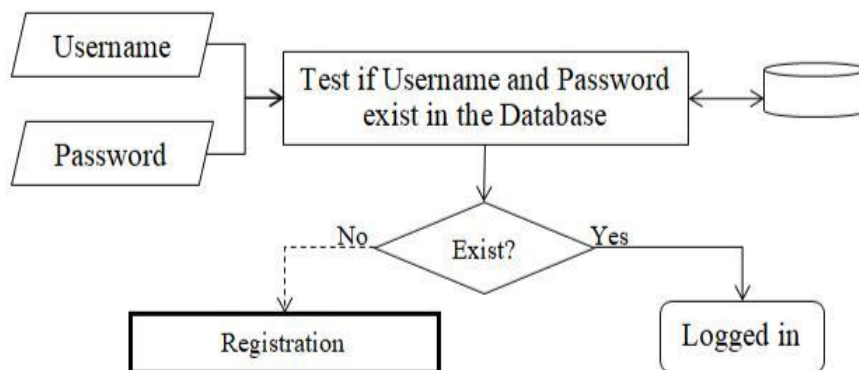

Fig. 2: Authentication module.

B. Registration

If the user is a new guest and unable to pass through the - Authentication module, then it can register as new user by entering his general information (such as: Name, Country, City, type (business man or client), picture, etc.). the entered data will be validated, and a new user name will be generate according to appropriate entered data such as Email, for security and privacy reasons, must the user provide a password, with specifics rules (such as contain at least 2 characters and length greater than 8), moreover, if this new user select a business man as type, he can set the location where a client meet him using the Google maps.[14] (Figure 3).
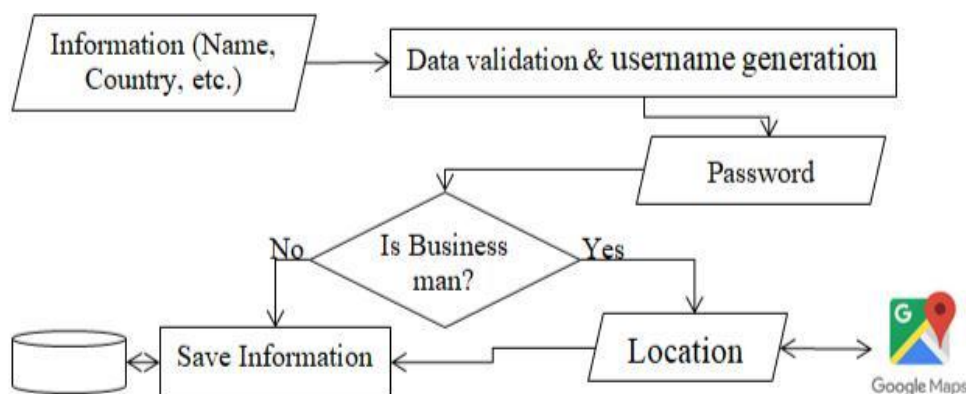

Fig. 3: Registration module.

C. Availability Scheduling

This module will be accessed by a user that is already authenticated in ― Authenticated module as ―business man‖. It allow the business man to define the availability scheduling table (daily, weekly, monthly or yearly) in specific period, by determine the staring time, the ending time, and the appointment duration, taking in consideration the working hours per day, and the time of each appointment, and all vacation days, holidays, etc. then, the Bussines Man timetable will be generated in the selected period. After that, this information will share to all interested users. Then, through this module, any client will be able to reach the availability schedule for the appropriate business man (such as doctor, lawyer, etc.), and select and reserve the suitable appointment. Notice that any reservation (from client) will reflect on the business availability scheduling table, because this business man available time is takes (Figure 4).
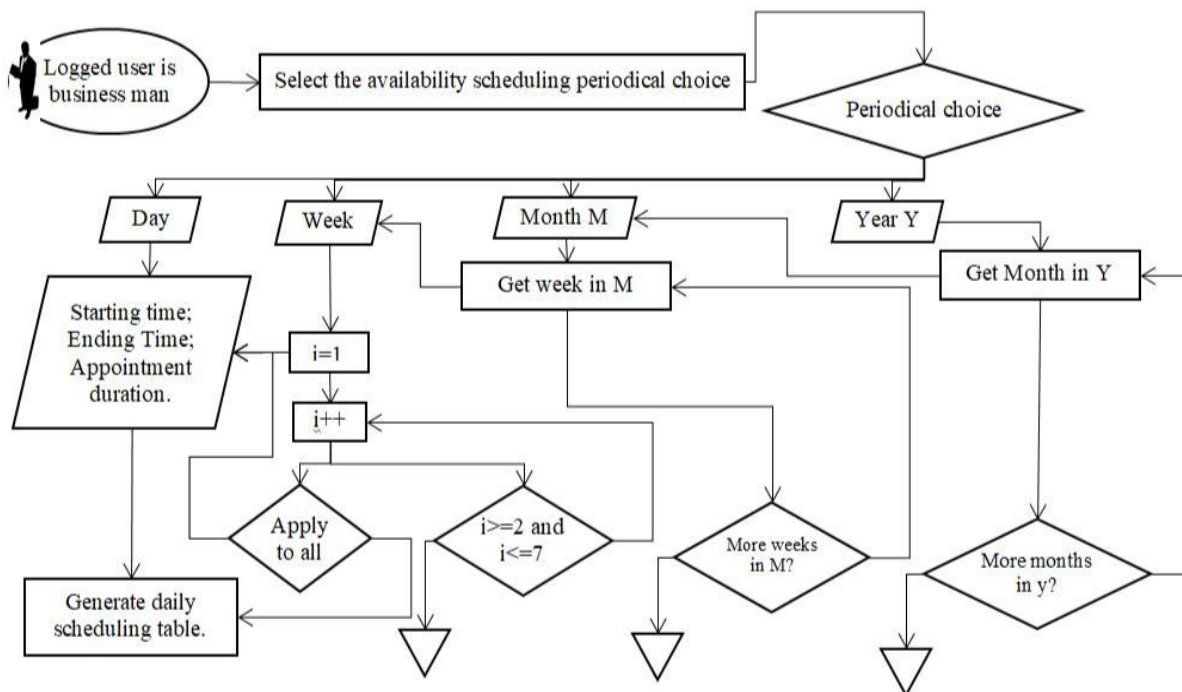
Fig. 4: Availability scheduling module.

D. Appointments Reservation

When the user is authenticated as normal client (not a business man), he can access the system by choosing a business man, and view his availability time in a specific period. Then, he can select and reserved an appointment. In the same time, a notification arrived to the selected business man inform him about the appointment reserved by the client. When the business man confirms this appointment, a reverse confirmation notification will arrive to the client. And this appointment time will appear disabled, for others clients, in the business man availability scheduling table (Figure5).
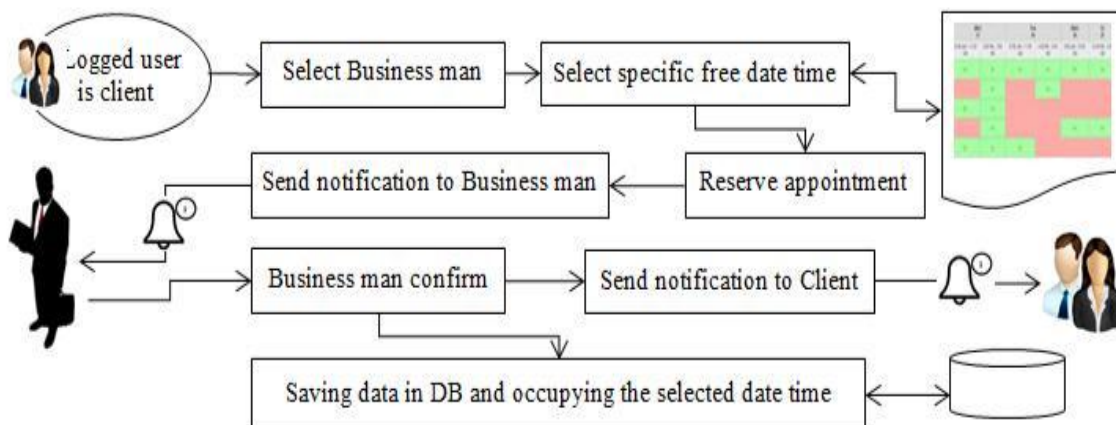

Fig. 5: Appointment reservation module.

E. Appointments Managements

Each user (business man or normal client) can manage all reserved his appointments through this module. Any time, the business man can access E-secretary system, and view all its appointments that has already reserved by any client in a specific date or period, he can confirm the pending appointment, and he can cancel or modify the date/ time of an appointment for a client, Also, the client can cancel or modify its appointments with any business man. In two cases, the system sent notification to the business man or to the client informs him about the appointment modification (Figure 6).
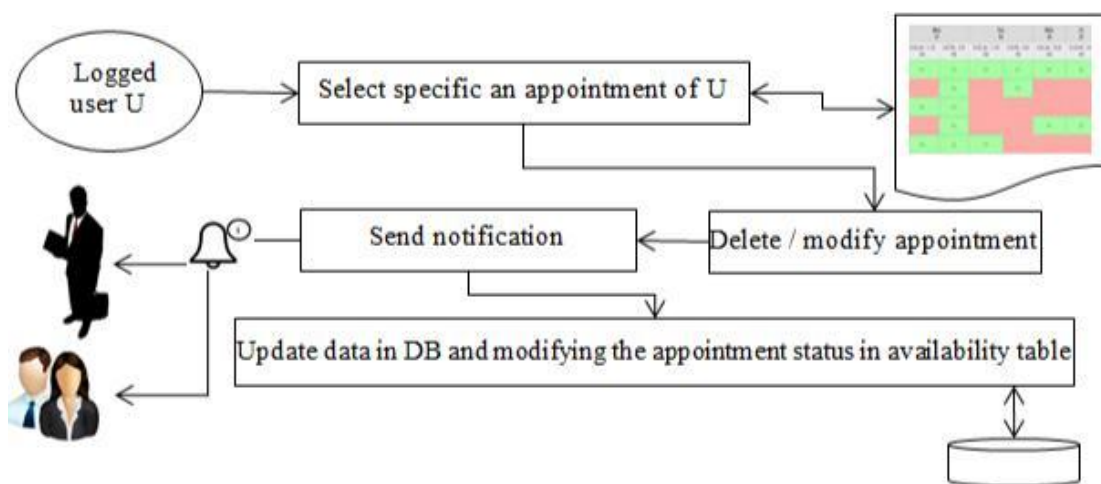

Fig. 6: Appointments Managements module.

III. SIMULATION AND RESULT

The online E-secretary system was developed as web application, can be used by any clients, with a standard browser, from any location. It is connected to as structured relational database, that allow saving and organizing the data, and can be accessed easily through SQL language.[13]

Through the software development technology used in this system, the user can accessed our system from anywhere, anytime, without any installation in the local computer. Then, the system provides several benefits in time and in cost, that allow the user to organize an appointment with some business, and the business manage its schedule, without any real communication (phone calls, SMS, etc.).[12]

This system was developed using ASP.NET technology, which it connected to Microsoft SQL server database[10,12] using stored procedures that are assisting in achieving a consistent implementation of logic across applications. This database contains multiple tables that are

used to save the data. For example: we must authenticate users that used our website; the Data of users are stored in the Users table.

Then, the main result of this work is a new online appointment system that is beneficial for several businesses. This system is composed of set of web forms that allow simulating the working process of the system modules. We suppose that we have 1 business man named - Dr. X and 3 clients (C1, C2, and C3). Firstly the 3 users must be registered in our system using the - Register form, in this form the user will enter general information about himself (Name, Country, City, etc.), moreover the user was a business man he can set the location where the client meet him using the Google maps,[14] and user can set a profile picture, when clicking the button signup all information will be saved in the database[11](Figure7).

Fig. 7: Registration interface.

All these users (- Dr. X‖, C1, C2, and C3), can be accessed our system by authenticated through the Login form, and become able to do all the action can be done, from reserving appointment, sending notifying emails, or create appointment table. Login form consist of two text boxes allows entry UserName and password, when the user click on the button - Sign In, the user identify by testing if the entered user name matches the entered password in the database. In addition we have some features in this form, which allow display the characters of password, also can save the password in current used computer (Figure8).
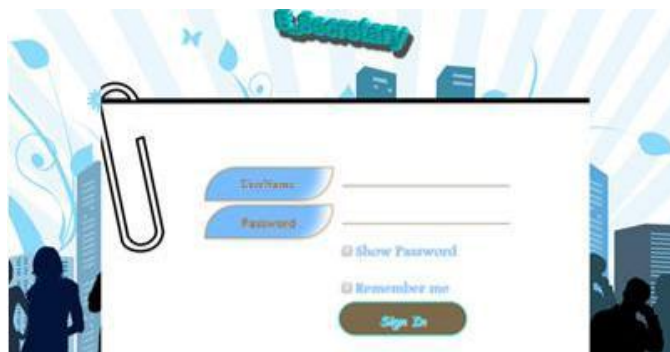
Fig. 8: Login interface.

Since the Dr. X is logged in, a home page appear, that contain a menu contain all Business man actions such as: - Availability Scheduling, Appointment Management, and - Profile, also it contain a notifications bar that display all the notifications such as: appointment confirmation, appointment cancelation, etc (Figure 9).

Fig. 9: E-Secretary Main page.

The business man can access the notification bar, he can pulling it down, and select an appropriate notification, the description of notification will appear in a specific windows with a button to confirm this notification and another to refuse it. In twice case, a reversed notification will send to the client in order to inform him about the business man decision (Figure10).

Fig. 10: Notification window.

The business man can fix it availability schedule (daily, weekly, monthly, or yearly), by applying the module named ―Availability Scheduling‖ that it simulated by a form (Figure11), this form contain a set of radio buttons that allow the business man to choice the unit (Daily, weekly, monthly, and Yearly) can be used to fix it schedule availability, after that must select the starting date, according to these 2 parameters a weekly table will be generated, that contain set of weeks that present started from the specific date and contain numbers of weeks according to the business man choice, for example if he choose daily unit starting from 15 January 2018then one day only appear in the weekly table, but if he choose monthly as unit starting from 15 January 2018, than the all the day of a month(from 15 January to 15 February) will be appeared in set of weekly table. The business man can navigate through selected week through 2 buttons - Next and - Previous, and if he has the schedule for all week he can apply on week schedule to all the remaining week (already choose) by clicking the button - Apply to all Weeks.

Fig. 11: Availability scheduling page.

Also the business man will be able to edit his profile, from changing his password, or changing general information about him, or edit the Location of the business destination for the meet (figure of signup form).

After that the business man set all the times in each day, then the generated weekly table present the business man vacancies, it will be reachable by the clients to reserve an appointment (will describe it later). Furthermore, the business man can view and check it schedule (daily, weekly, etc.), during specific period of time, which will show him the appointments number per day, and to view each day the appointments he has. He can modify in these vacancies tables by disabling an appropriate appointment period per day (for lunching, Break…), and update any client appointment (update appointment time, delete, etc.). Through the form below, the business can manage all times, by viewing in specific

period (form date to date) the appointment table, and he can cancel or change the time of any appointment by clicking right click and a small menu (contain cancel or change) will appear. If the selected period is greater than one week, can navigate between weeks through 2 button Next and previous week. Notice that any change pending to a client, surely a notification will send to client to inform him. In our Example as mentioned in picture below: Monday the first appointment is reserved by the client C1, in all day (from Monday to Thursday) the time from 13:00 until 14:00 is break, etc.(Figure12).

Fig. 12: Manipulation of business man availability times.

Since the Client C is logged in, a home page appear, that contain a menu contain all actions authorized to client such as: - Appointment Management, and profile, also it contain a notifications bar that display all the notifications received to him such as: appointment confirmation, appointment cancelation, etc. (Figure 13).

Fig. 13: Notifications presentation in the E-Secretary main page.

The client can access the notification bar, he can pulling it down, and select an appropriate notification, the notification description of will appear in a specific windows to inform all details to client such as Business man cancelation or confirmation of an appointment.

The client can view and check the schedule (daily, weekly, etc.) of an specific business man, during a specific period of time, Through the form below, the client can manage all

appointment with a business man, by selecting a business man and choose a specific period (form date to date), an appointment table will appear, that and he can reserve an appointment in a business available time, cancel or change the time of it owner appointment by clicking right click and a small menu (contain reserve, cancel or change) will appear. If the selected period is greater than one week, can navigate between weeks through 2 button Next and previous week. Notice that any change pending to a business, surely a notification will send to business man to inform him. In our Example as mentioned in picture below: the client can only reserve in the free cells times (Green color), and he can cancel or modify its owner appointment such as Monday the first appointment and Thursday the appointment started from 12:30, etc (Figure14). Also the client will be able to edit his profile, from changing his password, or changing general information about him (figure of signup form).

Fig. 14: View of business man availability times.

IV. CONCLUSION AND PERSPECTIVES

In this article we presented a new Online E-Secretary system for various businesses that can be used via internet through any browser form several business men (such as doctor, dentist, lawyer, etc.), already registered in the system, and their clients. The system is presented by dynamic web application, developed with later technology, enriched by many features, all users action in website will be saved directly to database (without clicking on specific saving buttons) , our website is mutli language, the user can easily change the website interface language (English, French, and Arabic) , that allow to be used from several peoples with different language, same we can add easily a new language to our website according to users request. Then this system allow to the business and client to manage the common appointments from anywhere any time.

Our perspective is to develop the system more and add more features (such as adding a chats channel, allow the business to add an advertising, etc.), and develop a mobile application (IO and Android) to this system, that allows all users (business man and clients) to do all application actions and interact through smart phone. payment online, remind the client and the bussiness about the appotiment before sepcfic time (set in seeting).

REFERENCES

1. N.C. Surendra, ―Designing a Web Application Using an Ethnographic Research Approach. In: Traunmüller R. (eds) Information Systems. IFIP — The International Federation for Information Processing, Springer, Boston, MA, 2002; 95.

2. H. Kim, A Study on the Effects of Online Appointment Systems on Patients and Hospitals, International Journal of Applied Engineering Research ISSN 0973-4562, 2016; 11(14): 8213-8216 © Research India Publications. http://www.ripublication.com, 2016.

3. C. Wenjun, W. Yi, T. Haibo, S. Fujun, L. Danhong, T. Zhijun, S., Caihong, Y. Qing, X. Yongyong, A web-based appointment system to reduce waiting for outpatients: A retrospective study, BMC Health Services Research201, Cao et al; licensee BioMed Central Ltd., 2011.

4. D. Xin, "Online Clinic Appointment Scheduling". Theses and Dissertations, 2013; 1467. https://preserve.lehigh.edu/etd/1467, 2013.

5. P. Zhao, I. Yoo, J. Lavoie, B. Lavoie, E. Simoes, Web-Based Medical Appointment Systems, A Systematic Review, (Journal Article) J Med Internet Res, 2017; 19(4): e134, 2017, ISSN: 1438-8871 (Electronic) 1438-8871 (Linking).

6. X. Zhang, P. Yu, J. Yan, Patients' adoption of the e-appointment scheduling service: a case study in primary healthcare. Stud Health Technol Inform, 2014; 204: 176–181.

7. R. Jones, A. Menon-Johansson, AM. Waters, AK. Sullivan, eTriage - a novel, web-based triage and booking service: enabling timely access to sexual health clinics. Int J STD AIDS, 2010; 21(1): 30–33. doi: 10.1258/ijsa.2008.008466. 2010.

8. D. Gupta, B. Denton, Appointment scheduling in health care: challenges and opportunities. IIE Transactions, 2008; 40(9): 800–819. doi: 10.1080/07408170802165880, 2008.

9. S. Chen S, S. Liu, S. Li, DC. Yen, Understanding the mediating effects of relationship quality on technology acceptance: an empirical study of e-appointment system. J Med Syst, 2013; 37(6): 9981. doi: 10.1007/s10916-013-9981-0, 2013.

10. A. Freeman, Book Title: Pro ASP.NET MVC 5, Copyright: 2013, Publisher: Apress, eBook ISBN: 978-1-4302-6530-6, DOI: 10.1007/978-1-4302-6530-6, Softcover ISBN: 978-1-4302-6529-0, Edition Number:5, Number of Pages: XXIV, 832,Topics: Microsoft and .NET, 2013.

11. M. Bellinaso, ASP.NET 2.0 Website Programming: Problem - Design - Solution (Programmer to Programmer), 600 pages, English, ISBN-10: 0764584642, ISBN-13: 978-0764584640, Wrox-1 edition-, 2006.

12. M. Ben Abderrahmen, B. Gargouri, M Jmaiel, LMF-QL: A graphical Tool to Query LMF databases, Third Language & Technology Conference: Human Language Technologies as a Challenge for Computer Science and Linguistics, Poznań, Poland, 2007.

13. B. Balis, M. Bubak, D. Harezlak, B. Wilk, ― Towards an operational database for real-time environmental monitoring and early warning systems, December 2017, Procedia Computer Science 108:2250-2259, DOI 10.1016/j.procs.2017.05.193, 2017.

14. Google Maps. (2017). Google Maps. [online] Available at: https://www.google.com.au/maps/@-23.3394728,150.5201386,12z?hl=en [Accessed 18 Oct. 2017.