MEDICINE PRESCRIPTION : E-MANAGEMENT FOR PUSAT KESIHATAN PELAJAR UNIVERSITI MALAYSIA PAHANG PHARMACY

NURUL AIN BINTI ZAWAWI

Bachelor of Computer Science
(Software Engineering) with Honours

UNIVERSITI MALAYSIA PAHANG

SUPERVISOR'S DECLARATION

I hereby declare that I have checked this thesis and in my opinion, this thesis is adequate in terms of scope and quality for the award of the degree of Bachelor of Computer Science (Software Engineering) with Honours.

_____

(Supervisor's Signature)

Full Name : AZMA BINTI ABDULLAH

Position :

Date : 10 JANUARY 2019

STUDENT'S DECLARATION

I hereby declare that the work in this thesis is based on my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously or concurrently submitted for any other degree at Universiti Malaysia Pahang or any other institutions.

_____

(Student's Signature)

Full Name : NURUL AIN BINTI ZAWAWI

ID Number : CB15135

Date : 10 JANUARY 2019

MEDICINE PRESCRIPTION : E-MANAGEMENT FOR PUSAT KESIHATAN PELAJAR UNIVERSITI MALAYSIA PAHANG PHARMACY

NURUL AIN BINTI ZAWAWI

Thesis submitted in fulfillment of the requirements
for the award of the degree of
Bachelor of Computer Science (Software Engineering) with Honours

Faculty of Computer Systems and Software Engineering

UNIVERSITI MALAYSIA PAHANG

JANUARY, 2019

ACKNOWLEDGEMENTS

I would like to express my special thanks and deep gratitude to my supervisor, Madam Azma binti Abdullah for her guidance, encouragement and useful critiques in order to finished this project on time.

I would also like to extend my thanks to the staffs in Pusat Kesihatan Pelajar Universiti Malaysia Pahang(PKP UMP), Cik Wan Norul Atinaa binti Wan Aziz, Puan Junaida binti Zahari and Cik Noor Hasniza binti Hamzah and Puan Nafisah binti Ramlan for their cooperation for enabling me to get the requirement and gave me the information on how the system in their organizations works.

Nevertheless, I would like to thanks to my family that have been gave me continuous support and encouragement from the beginning of this project and throughout my study. Special thanks to my friends and everyone who involved directly or indirectly in finishing this project.

Lastly, I would like to express my gratitude to Universiti Malaysia Pahang for giving me such a great opportunity to handle my own project and gain a lot of knowledge that cannot be find at any place.

ABSTRAK

Preskripsi ubat adalah satu perkara asas yang tidak asing lagi dalam sesebuah farmasi. Berdasarkan masalah yang terjadi setelah ubat diserahkan kepada pesakit sebelum ini, PKP UMP telah mengendalikan preskripsi ubat secara manual dan menggunakan tulisan tangan. Preskripsi ubat yang ditulis akan kelihatan pudar setelah sekian lama tersimpan jika tidak dihabiskan. Ini menyebabkan pesakit tidak tahu nama ubat dan cara makan ubat tersebut. Sistem yang dibangunkan ini adalah untuk menambahbaik sistem yang sedia ada. Sistem Pengurusan Preskripsi Ubat (MPEM) untuk farmasi Pusat Kesihatan Pelajar Universiti Malaysia Pahang (PKP UMP) telah dibangunkan untuk membantu staf farmasi menguruskan preskripsi ubat dan stok ubat dengan lebih efektif supaya dapat menyelesaikan masalah kekeliruan pesakit dan mengurangkan bebanan kerja staf farmasi PKP UMP. Objektif sistem ini adalah untuk mengkaji bagaimana preskripsi ubat di farmasi PKP UMP ditukar daripada proses manual kepada sistem berkomputer, membangunkan sistem prototaip preskripsi ubat dalam bentuk sistem pengurusan elektronik berasaskan web dan mengesahkan sistem prototaip yang dicadangkan berasaskan web. Sistem ini mengandungi fungsi log masuk, mengurus barisan, mengurus preskripsi pesakit, mengurus informasi ubat dan menghasilkan laporan. *Rapid Application Development (RAD)* adalah kaedah yang digunakan untuk membangunkan sistem ini. *RAD* terdiri daripada empat peringkat iaitu dimulai dengan peringkat perancangan keperluan, peringkat reka bentuk aplikasi, peringkat pembangunan pesat dan diakhiri dengan peringkat peralihan. Selepas pembangunan sistem, pelanggan diberi ujian penerimaan pengguna atau dikenali sebagai *User Acceptance Test (UAT)* untuk memastikan semua fungsi menepati keperluan tanpa sebarang kesalahan. *UAT* memastikan sistem mencapai objektif dan mampu menyelesaikan masalah yang berlaku sebelum ini.

ABSTRACT

Medicine prescription is a basic thing that is familiar to pharmacy. Based on the problems that occurred after the medicine is handed to the previous patient, the prescription has been handling manually and using handwriting. The prescription written fades away after a long time being stored. This causes the patient do not know the name of the medicine and how to prescribe the medicine. This system is developed to improve the existing system. Medicine Prescription : E-Management (MPEM) for Pusat Kesihatan Pelajar Universiti Malaysia Pahang (PKP UMP) pharmacy has been developed to help pharmacy staff in managing medicine prescription and medicine stock in an effective way in order to solve the problem of patient confusion and reduce the burden on the pharmacy staff in PKP UMP. The objectives of this system is to study how medicine prescription in PKP UMP pharmacy is converted from manual process to a computerized system, to develop a prototype system of medicine prescription in electronic management system in web based and to validate the proposed prototype system in web based. This system consists of login, manage queue, manage patient prescription, manage medicine information and generate report. Rapid Application Development (RAD) is the methodology used to develop this system. RAD consists of four stages, starting with the requirement planning stage, application design stage, rapid construction stage and transition stage. After the development of the system, User Acceptance Test (UAT) is given to client to ensure that all functions meet the requirement without error. UAT ensures the system achieves the objectives and is able to solve problems that occurred before.

TABLE OF CONTENT

DECLARATION

TITLE PAGE

ACKNOWLEDGEMENTS **ii**

ABSTRAK **iii**

ABSTRACT **iv**

TABLE OF CONTENT **v**

LIST OF TABLES **viii**

LIST OF FIGURES **ix**

LIST OF ABBREVIATIONS **xi**

CHAPTER 1 INTRODUCTION **1**

1.1 Background 1

1.2 Problem Statement 2

1.3 Objective 2

1.4 Scope 2

1.5 Thesis Organization 4

CHAPTER 2 LITERATURE REVIEW **5**

2.1 Introduction 5

2.2 Existing System 6

2.2.1 GuardianRx 6

2.2.2 Medeil 8

2.2.3 AbacusRx 10

2.3 Comparison of Existing System 13

2.4 Conclusion 16

CHAPTER 3 METHODOLOGY 17

3.1 Introduction 17

3.2 Methodology 17

3.2.1 Advantages of Rapid Application Development (RAD) 18

3.2.2 Disadvantages of Rapid Application Development (RAD) 19

3.2.3 Rapid Application Development (RAD) Life Cycle 19

3.2.3.1 Planning Requirement 20

3.2.3.2 User Design 24

3.2.3.3 Rapid Construction 26

3.2.3.4 Transition 27

3.3 Hardware and Software 28

3.4 Gantt Chart 29

CHAPTER 4 IMPLEMENTATION, TESTING AND RESULT DISCUSSION 30

4.1 Introduction 30

4.2 Implementation 30

4.2.1 Development Environment 30

4.2.2 System Functionality 38

4.3 Testing and Result Discussion 44

4.3.1 Functionality Testing 44

CHAPTER 5 CONCLUSION AND FUTURE WORK 45

5.1 Introduction 45

5.2 Research Constraint 45

5.2.1 Development Constraint 46

5.2.2 System Constraint 46

5.3 Future Work 46

REFERENCES **47**

APPENDIX A GANTT CHART **48**

APPENDIX B SOFTWARE REQUIREMENT SPECIFICATION (SRS) **49**

APPENDIX C SOFTWARE DESIGN DOCUMENT (SDD) **50**

APPENDIX D USER ACCEPTANCE TESTING (UAT) **51**

LIST OF TABLES

Table 2.1	Comparison between GuardianRx, Medeil and Abacus Rx	13
Table 2.2	Advantages and Disadvantages of Existing System	15
Table 3.1	Hardware Requirement	28
Table 3.2	Software Requirement	29

LIST OF FIGURES

Figure 2.1	GuardianRx Home Login Interface	6
Figure 2.2	Patient Prescription Information Interface	7
Figure 2.3	Edit Product Prescription Interface	7
Figure 2.4	Medeil Login Interface	8
Figure 2.5	Medeil Interface	9
Figure 2.6	Report for Sales by Product Details Interface	10
Figure 2.7	Abacus Rx Interface	11
Figure 2.8	Prescription Image Interface	12
Figure 2.9	Patient History Interface	12
Figure 2.10	Example of Medicine Prescription Output	16
Figure 3.1	Phases in RAD Model	19
Figure 3.2	Specific Task Phases in each RAD Model	20
Figure 3.3	Use Case Diagram for MPEM for PKP UMP Pharmacy	22
Figure 3.4	Context Diagram for MPEM for PKP UMP Pharmacy	23
Figure 3.5	Dialogue Diagram for MPEM for PKP UMP Pharmacy	25
Figure 3.6	Module Diagram for MPEM for PKP UMP Pharmacy	25
Figure 4.1	XAMPP Control Panel	31
Figure 4.2	myPHPAdmin Working Environment	32
Figure 4.3	Database Query for MPEM for PKP UMP Pharmacy	33
Figure 4.4	Sublime Text Environment Interface	34
Figure 4.5	PHP Code	35
Figure 4.6	HTML Code	36
Figure 4.7	CSS Code	37
Figure 4.8	JavaScript Data Validation	38
Figure 4.9	Login Interface Interface	39
Figure 4.10	Add Medicine (Pharmacist) Interface	39
Figure 4.11	View Medicine List (Pharmacist) Interface	40
Figure 4.12	Search and Add Patient into Queue (Pharmacy Assistant) Interface	40
Figure 4.13	View Queue List (Pharmacy Assistant) Interface	41
Figure 4.14	Patient Treatment Record (Pharmacy Assistant) Interface	42
Figure 4.15	Choose Medicine (Pharmacy Assistant) Interface	42
Figure 4.16	Send Medicine Prescription (Pharmacy Assistant) Interface	43
Figure 4.17	Medicine Prescription (Pharmacy Assistant) Interface	43

LIST OF ABBREVIATIONS

MPEM	Medicine Prescription : E-Management
PKP UMP	Pusat Kesihatan Pelajar Universiti Malaysia Pahang
PHP	Personal Home Page
CSS	Cascading Style Sheets
HTML	Hypertext Markup Language
MySQL	My Structured Query Language
XAMPP	Cross Platform(X), Apache(A), MariaDB(M), PHP(P), Perl(P)

CHAPTER 1

INTRODUCTION

1.1 Background

Pharmacy industry is one of the industry that have been rapid growing. It is due to the establishment of new clinic, hospital and pharmacy shop. The growing of the number of patient with disease makes pharmacy is one of the important place that need to be manage well thus gives a big impact to the pharmacy team task. The upgraded of the software and hardware need to be emphasize to make management of pharmacy especially the generation of medicine prescription more effective and increase the productivity of work.

Medicine Prescription : E-Management (MPEM) for Pusat Kesihatan Pelajar Universiti Malaysia Pahang (PKP UMP) is a system designed to enhance the manual medicine prescription system that have been used for a long time. The manual medicine prescription have got disadvantage and led to some problems to both user and patient. The disadvantage is regarding on the man's work, work performance, services and efficiency in handling with medicine prescription.

So, in order to overcome the weakness of PKP UMP, the medicine prescription is computerized and will be send to the patient's email. All management of medicine from the medicine management to the generation of medicine stock report is computerized so that there will be no longer usage of medicine logbook and decrease man's work.

The system might save the time, increase the work performance of the clinic assistant and pharmacist and work become more efficient and productive. The patient will be more easily to deal with their medicine as medicine prescription with the

medicine's image will be generated and send as a softcopy to patient's email so that they can remember how to consume the medicine.

1.2 Problem Statement

Medicine prescription that has been used in PKP UMP pharmacy is totally a manual and using handwriting to write instructions regarding how medicine use on the medicine bottle or medicine plastic. The pharmacy assistant explained the instructions once through a communication with patient at the pharmacy counter. The patient have forgot the name of the medicine and instructions of drug used since the handwritten on the bottle or medicine plastic might be fades away after certain period and variety of medicine in home leads to confuse of the patient.

Increment of patient and variety of medicine and to manage without a computerized system will make work less efficient. The process to search the patient and medicine information, ways to take medicine, medicine price and patient record with their medicine they have been taken before took longer time since the user have to search manually.

Besides that, the report generation on total amount of medicine stock have been taken by patient and stock left have to be calculated manually. Some medicine that out of stock is difficult to trace to order stock earlier.

1.3 Objective

The objectives of this system are:

i. To study how medicine prescription in PKP UMP pharmacy is converted from manual process to a computerized system.
ii. To develop a prototype system of medicine prescription in electronic management system in web based.
iii. To validate the proposed prototype system in web based.

1.4 Scope

The scope of this project has been discussed and the scope is as follow:

i. User

The users of this system are pharmacist, pharmacy assistant and patient registration system in PKP UMP.

ii. Client

Pusat Kesihatan Pelajar UMP

iii. Target Patients

Student and staff of UMP

iv. Function Available

- **Login**

  Pharmacist and pharmacy assistant must login to enter the MPEM for PKP UMP Pharmacy.

- **Manage Queue**

  Pharmacy assistant add patient into the pharmacy queue by searching patient from Patient Registration System using staff ID or student ID and they can view list of patient in queue.

- **Manage Patient Prescription**

  Pharmacy assistant choose the medicine required by the patient according to doctor's prescription and send the prescription to the patient via email. Pharmacy assistant also can view patient history record such as personal details of patient, treatment record and medicine that had been prescribed by the patient.

- **Manage Medicine Information**

  All medicine information and stock can be add, delete, view and update by pharmacist. The information is saved into the database.

- **Generate Report**

  Pharmacist can generate report of the medicine stock.

v. Development

The software used to develop this system are Sublime Text, XAMPP server and Google Chrome. Interface is done using HTML and CSS

REFERENCES

12 Best Software Development Methodologies with Pros & Cons. (n.d.). Retrieved December 11, 2018, from https://acodez.in/12-best-software-development-methodologies-pros-cons/

Abacus Rx, Inc. A Global Leader in Pharmacy Management Software & Systems. (n.d.). Retrieved December 11, 2018, from http://www.abacusrx.net/abacusrx_websites.html

Beynon-Davies, P., Carne, C., Mackay, H., & Tudhope, D. (1999). Rapid application development (RAD): an empirical review. *European Journal of Information Systems, 8*(3), 211–223. https://doi.org/10.1057/palgrave.ejis.3000325

GuardianRx Reviews and Pricing - 2018. (n.d.). Retrieved December 11, 2018, from https://www.capterra.com/p/106391/GuardianRx/

Pharmacy Software | Medical Store Software | Pos. (n.d.). Retrieved December 11, 2018, from http://www.medeil.com/

RAD (Rapid Application Development): Definition, Meaning and Benefits. (n.d.). Retrieved December 11, 2018, from https://kissflow.com/rad/

Systems Development – JAD and RAD. (n.d.). Retrieved January 2, 2019, from http://www.umsl.edu/~sauterv/analysis/488_f02_papers/JADandRAD.html

What is Rapid Application Development? 5 Reasons for Using RAD. (n.d.). Retrieved December 11, 2018, from https://www.newgenapps.com/blog/what-is-rapid-application-development-advantages-and-usage