

FINAL YEAR PROJECT REPORT

ANDROID INDOOR LOCATION APPLICATION USING BEACON FOR HOSPITAL

In fulfillment of the requirement For degree of BS (Information Technology)

By

SYEDA AYESHA NUSRAT MARIA BAIG RAVEEHA MUHAMMAD IRFANULLAH 57351 (BSIT) 57335(BSIT) 51479(BSIT)

SUPERVISED

BY

MR MUHAMMAD SHAHZAD

BAHRIA UNIVERSITY (KARACHI CAMPUS)

SPRING-2022

DECLARATION

We hereby declare that this project report is based on our original work except for citations and quotations which have been duly acknowledged. We also declare that it has not been previously and concurrently submitted for any other degree or award at Bahria University or other institutions.

Signature	:	Cs1.
Name	:	Syeda Ayesha Nusrat
Reg No.	:	57351
Signature	:	Muria
Name	:	Maria Baig
Reg No.	:	57335
Signature	:	Perty
Name -	:	Raveeha Muhammad Irfanullah
Reg No.	:	51479
Date	:	14 th June, 2022

APPROVAL FOR SUBMISSION

We certify that this project report entitled "ANDROID INDOOR LOCATION APPLICATION USING BEACON (FOR HOSPITAL)" was prepared by SYEDA AYESHA NUSRAT, MARIA BAIG and RAVEEHA MUHAMMAD IRFANULLAH has met the required standard for submission in partial fulfilment of the requirements for the award of Bachelor of Information Technology at Bahria University.

Approved by,	
Signature :	Jung -

Supervisor: Mr Muhammad Shahzad

Date : _____14th June, 2022____

The copyright of this report belongs to Bahria University according to the Intellectual Property Policy of Bahria University BUORIC-P15 amended on April 2019. Due acknowledgement shall always be made of the use of any material contained in, or derived from, this report.

ĩ

1

÷

© 2019 Bahria University. All right reserved.

Specially dedicated to My beloved grandparents, mother, father and siblings (Syeda Ayesha Nusrat) My beloved grandparents, mother, father and brother

(Maria Baig)

My beloved parents for their constant support and team mates who have worked tirelessly to make this project a success (Raveeha Muhammad Irfanullah)

:

ACKNOWLEDGEMENTS

We would like to thank everyone who had contributed to the successful completion of this project. We would like to express our gratitude to our research supervisor, Mr Muhammad Shahzad for his invaluable advice, guidance and his enormous patience throughout the development of the research.

In addition, we would also like to express our gratitude to our loving parents and friends who had helped and given us encouragement.

ANDROID INDOOR LOCATION APPLICATION USING BEACON (FOR HOSPITAL)

ABSTRACT

Management enterprise systems are rapidly making their way into businesses and organizations as the use of digital media increases. More and more functions are now being performed online rather than through physical interactions such as online payments, deliveries, bookings etc. As the world increasing moves towards digital solutions to automate manual, everyday tasks, the healthcare sector is still a laggard where scope to improve remains high. The objective of this project is to develop a holistic healthcare management solution that allows its users to leverage the digital space by allowing ease of online bookings, monitoring and tracking of medical records, convenience of medical database creation for each patient, downloading electronic reports and support in indoor hospital navigation. The report explores how the application will be developed, what modules it would consist of and how each module will interact. It describes how the hospital management, which is our super user, will be able to interact with profiles of doctors and patients. How patients can perform various functions using their own profiles and how doctors will be able to obtain results from patients. Lastly, this application will also have the feature of an indoor navigation system, which will operate through a hardware module called 'Beacon'. The report concludes with the results obtained after the implementation and what future functionalities can be inbuilt into the application as it moves to later phases or expands.

TABLE OF CONTENTS

DECLARATION		1
APPROVAL FOR SUBMISSION		2
ACKNOWLEDGEMENTS		5
ABSTRACT		6
TABLE OF CONTENTS		7
LIST OF FIGURES	-	10
LIST OF SYMBOLS / ABBREVIATIONS		13

CHAPTER

1

INTR	ODUCTION	14	
1.1	Background		
	1.1.1 Patient Management	14	
	1.1.2 Doctor Management	14	
	1.1.3 Visitor	15	
	1.1.4 Indoor Location Tracking	15	
1.2	Problem Statements	15	
1.3	Aims and Objectives	16	
	1.3.1 Eliminate Manual Workload	16	
	1.3.2 Online Appointment Booking	17	
	1.3.3 Appointment Tracking and Management	17	
	1.3.4 Electronic Reports	17 -	
	1.3.5 Indoor Navigation System	17	
1.4	Scope of Project	17	
1.5	Report Organization	18	

2	LITE	RATUR	E REVIEW	20
	2.1	BACK	GROUND	20
	2.2	RELA	TED WORK	21
		2.2.1	Adroit	21
		2.2.2	10to8	24
		2.2.3	Beacon Based Systems	28
	2.3	CHAP	TER SUMMARY	31
3	DESI	GN ANE	METHODOLOGY	32
	3.1	PROP	OSED METHODOLOGY	
	(FRA	MEWOR	K/ARCHITECTURE)	32
	3.2	PROC	ESS MODEL	33
	3.3	MOD	JLES DISCUSSION	33
		3.3.1	Admin Module	33
		3.3.2	Doctor Module	34
		3.3.3	Patient Module	35
		3.3.4	Visitor Module	36
		3.3.5	Hardware Components	37
		3.3.6	Software Components	38
	3.4	PROJ	ECT DIAGRAM	40
		3.4.1	DATABASE DESIGN (ER	D) 40
		3.4.2	FLOWCHART	41
		3.4.3	CONTEXT	42
		3.4.4	USE CASES	42
4	IMPL	43		
	4.1	Modul	e development	43
	4.2	GUI ar	nd Source Code	43
	4.3	Result	and Discussion	53
5	TEST	ING AN	D EVALUATION	55
	5.1	Test Pl		55
		5.1.1	System Testing	55

		5.1.2 Unit Testing	55
		5.1.3 Integration Testing	55
	5.2	Testing Modules	56
	5.3	Test Cases and Evaluation	57
6	CON	CLUSION AND FUTUER WORK	61
	6.1	Conclusion	61
	6.2	Future work	61
REFI	ERENCE	S	62

APPENDICES

.

11.5

-

•

.

....

65