*BE Project CE Department Project ID: BUKC-CE-2018-07 May 2019* 



Bahria University Discovering Knowledge

# **Final Year Project Report**

## **SMART WATER MONITORING SYSTEM**

Ali Ijaz	41579
Muhammad Asif	41599
Rizwan Ali	41828

Department of Computer Engineering

Bahria University, Karachi Campus

V

### Acknowledgments

In the name of ALLAH, the Most Gracious the Most Merciful, at each beginning, we express our appreciation to Almighty ALLAH for showering his blessings and Endowments upon us to finish this project. Despite the fact that our name shows up on the front of this Report. In any case it would not have been conceivable without the kind backing and help of numerous people. We owe a considerable number because of a large number individuals who helped and bolstered us amid the making of the project.

We are exceptionally obligated to Engr. Usra Sami supervisor of our project, for her steady motivation, Bolsters, comprehension and significant help. They have taken the agony to experience the project and make vital adjustment as and when required Express our appreciation to Cdr. Muzammil Hussain Director of Bahria University (Karachi Campus) for his profitable proposals and advices all through the course.

I likewise extend my gratitude to our HOD Dr. Rizwan Iqbal and PMO manager Engr. Huma Tabbassum and different faculty members for their participation. We might want to extend our genuine because of our group members Ali Ijaz, Muhammad Asif, Rizwan Ali for their endeavors and at long last I might want to thank my companions for their collaboration to complete this project More importantly, we might want to express gratitude toward Almighty Allah who made all things conceivable

#### Abstract

Water use as a fuel in our daily life and without water no living concept occur on this planet. Unsafe of different classification are crumpled with the drinking water which touches base through automation, globalization, urbanization, agricultural and so on. It is a need to check the water routinely utilizing deft advances. From our task we guarantee that water quality estimating is done consequently.

This venture is tied in with developing a proficient water checking framework. Three distinct approaches to screen the water, for example, water level checking, water defilement observing and water pipeline leakage checking.

The observing of the water standard is an intricate procedure as it has a few research lab testing techniques that are tedious. To shocked this battle, a real continuous checking of water goodness. Instrument water meters for the helpfulness, manage the class of water. Here we are actualizing, framework for checking the water goodness through various sensors pH, level sensor, calcium sensor, leakage sensor and turn on and off motor more than once. The controller dishes the data which is seen by the utilization of sensors. They got to information are constrained by the use of Microcontroller. The data is gathered and the water contamination can be asked, by a severe instrument. To the expansion, this framework expresses an alarm to the general population and concerned subdivision or unit about the water. The environment can have versatile great water. Sensors are available to screen water superiority constraints. These instruments are put in the water to be tried which can be also put away water or successively water. Principle capacity of the microcontroller is to scrutinize the data from the sensor, then process it, and send the equivalent to the application by utilizing suitable correspondence innovation.

A CONTRACT OF A CONTRACT.

Summer and the second s

Smart Water Monitoring System

+

## Table of Contents

1.	INI	IRODUCTION	1
	1.1	PURPOSE OF THIS PROJECT	
	1.2	COMPLEX ENGINEERING PROBLEM STATEMENT	2
	1.3	OBJECTIVES OF THE PROJECT	2
	1.4	SCOPE OF THE PROJECT	2
2.	RA.		
2.		CKGROUND AND LITERATURE REVIEW	
	2.1	EXISTING SYSTEMS	3
	2.2	EXISTING SYSTEMS DESCRIPTION	
	2.3	PROBLEMS IN THE EXISTING SYSTEMS	5
3.	SY	STEM ANALYSIS	6
	3.1	WORK ANALYSIS	6
	3.2	Work Analysis	6
	3.3	Work Breakdown Structure	
	3.4	DATA ANALYSIS	
	3.5	DATA FLOW DIAGRAMS	
	3.6	SYSTEM REQUIREMENTS	
	.3.6.		8
	3.6.		8
+	.3.6.		8
	3.6.		9
	3.6.	5 Arduino UNO	9
	3.6.		11
	3.6.		12
	3.6.	8 nH Sensor:	13
	3.6.	9 Software Resources:	14
	36	10 Human Resources:	14
	3.7	DATA REQUIREMENTS 1	15
	3.7.	1 Non-Functional Requirements	13
	3.7.	2 Usability Requirements	13
	3.7.	3 Reliability Requirements	15
	3.7.	4 Security Requirements	15
	3.7.	5 Performance Requirement	15
	3.7.	.6 Maintainability Requirements	16
	3.7.	.7 Proposed Solution	10
4.	SV	STEM DESIGN	17
ч.		THE THE AND SOFTWARE ENVIRONMENT	17
	4.1	THE HORD OTTAD ACTEDISTICS	17
	4.2	- CONTRACTECIES	11
	4.3		10
	4.3.	THE ATTACHTS ATTACHTS	10
	4.4	- 01 4	18
	4.4.	.1 Gunn Chart.	

Bahria University Karachi Campus

vii of 56

4.4.2	Development Method	19		
5. IMPLEMENTATION				
	DULES OF THE PROJECT			
5.2 COL	LECTING DATA FROM VARIOUS SENSOR	20		
5.2.1	Water Level Sensor			
5.2.2	Water Flow Sensor			
5.2.3	pH Sensor	22		
5.2.4	Calcium Sensor	23		
5.2.5	Water pump with water level sensor.	24		
5.2.6	Designing Android Application	26		
5.2.7	Sending Data to android by Using Bluetooth	27		
5.3 INTI	ERFACING	29		
6. TESTIN	NG	31		
6.1 FUN	CTIONAL TESTING	31		
6.1.1	Test Risks / Issues			
6.1.2	Test Approach(s)			
6.1.3	Test Regulatory / Mandate Criteria			
6.1.4	Test Pass / Fail Criteria			
6.1.5	Test Entry / Exit Criteria	33		
6.1.6	Test Deliverables	33		
•••	T SUSPENSION / RESUMPTION CRITERIA			
6.3 TES	T ENVIRONMENTAL / STAFFING / TRAINING NEEDS			
6.3.1	Stress Testing			
	T RISKS / ISSUES			
6.5 TES	T APPROACH(S)	34		
6.5.1	Test Regulatory / Mandate Criteria	34		
6.5.2	Test Pass / Fail Criteria			
6.5.3	Test Entry / Exit Criteria	35		
6.5.4	Test Deliverables	35		
6.5.5	Test Suspension / Resumption Criteria	35		
6.5.6	Test Environmental / Staffing / Training Needs	33		
6.5.7	System Testing	30		
6.6 TES	T RISKS / ISSUES	30		
6.6.1	Test Approach(s)	3/		
6.6.2	Test Regulatory / Mandate Criteria	3/		
6.6.3	Test Pass / Fail Criteria	37		
6.7 TES	TENTRY / EXIT CRITERIA	37		
6.8 TES	T DELIVERABLES	38		
6.8.1	Test Suspension / Resumption Criteria	38		
6.8.2	Test Environmental / Staffing / Training Needs	50		
7. RESUL	TS AND DISCUSSION	39		
7.1 PH S	SENSOR	39		
	the transport of using nH sensor over other methods	37		
7.1.2	Principle of pH Sensor	39		
/				

Bahria University Karachi Campus

viii of 56

## Smart Water Monitoring System

.

#### CE Department

7.2 CALCIUM SENSOR	40
7.3 ANDROID APP FOR SMART WATER MONITORING SYSTEM:	
7.4 WATER LEVEL:	
7.4.1 Working of water Pump with respect to water Level	
8. CONCLUSIONS AND FUTURE WORK	
8.1 CONCLUSION	43
8.2 FUTURE WORK	43
9. REFERENCES	
APPENDICES	
APPENDIX A –	

.