

**R.V. COLLEGE OF ENGINEERING
BENGALURU-560059
(Autonomous Institution Affiliated to VTU, Belagavi)**



“6LoWPAN BASED LEAK DETECTION AND CONSERVATION”

PROJECT REPORT

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R.V. COLLEGE OF ENGINEERING, BENGALURU – 560059
(Autonomous Institution Affiliated to VTU, Belagavi)

DEPARTMENT OF INFORMATION SCIENCE AND ENGINEERING



CERTIFICATE

Certified that the project work titled '**6LoWPAN Based Leak Detection and Conservation**' is carried out by **Amith Raj S N (1RV13IS005)**, **Anirudh Nagraj (1RV13IS008)**, **Utkarsh Jain (1RV13IS059)** who are bonafide students of R.V College of Engineering, Bengaluru, in partial fulfilment for the award of degree of **Bachelor of Engineering in Information Science and Engineering** of the Visvesvaraya Technological University, Belagavi during the year **2016-2017**. It is certified that all corrections/suggestions indicated for the internal assessment have been incorporated in the report deposited in the departmental library. The project report has been approved as it satisfies the academic requirements in respect of project work prescribed by the institution for the said degree.

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DECLARATION

We **Amith Raj S N, Anirudh Nagraj, Utkarsh Jain** students of Eighth Semester B.E, Department of Information Science and Engineering, **R.V.College of Engineering, Bengaluru-560059**, bearing USN: **1RV13IS005, 1RV13IS008, 1RV13IS059** respectively, hereby declare that the project titled “**6LoWPAN Based Leak Detection and Conservation**” has been carried out by us and submitted in partial fulfilment of the program requirements for the award of degree in Bachelor of Engineering in **Information Science and Engineering** of the **Visvesvaraya Technological University, Belagavi** during the year **2016-2017**.

Further we declare that the content of the dissertation has not been submitted previously by anybody for the award of any degree or diploma to any other University.

We also declare that any Intellectual property rights generated out of this project carried out at R.V.C.E. will be the property of R.V.College of Engineering, Bengaluru and we will be only one of the authors of the same.

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ABSTRACT

Water is an abundant resource yet a scarce one. There are major causes for this scarcity. Experts say that, on an average, about 15% of rain water is tapped through systems while wastage accounts for 30% of the total water supplied. Water leakage creates a risk of a multitude of health problems affected by dampness including asthma. Internal water leaks from pipes cause an untold amount of damage to the home including damage to walls and floors. The main focus of this project is on one of the key factors that lead to water scarcity and that is the water leakage.

In today's internet enabled world, connected devices lead to better solutions; this is the motivation for the project where using a flow sensor water leakage is detected and is communicated wirelessly using 6LoWPAN protocol. 6LoWPAN stands for IPV6 over Low power Personal Area Network. The main aim of the project is to use the underlying technologies surrounding 6LoWPAN and prevent wastage of water by detecting the leak by using a cost effective and an efficient system.

The design of the project involves the information sensed by the flow sensors, communicated wirelessly between the motes. The devices used here are C-Motes (designed by Center for Development of Advanced Computing), a flow sensor, a 5V supply and a Logic Level Converter (LLC). The leakage detected by the sensor is sent to the transmitter mote which communicates it to the coordinator mote where the data is uploaded to server and an email and a text message alert is sent to the user. A website is provided for the users to view the statistics and charts of the leakages.

TABLE OF CONTENTS

ABSTRACT	i
TABLE OF CONTENTS	ii
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ACRONYMS	viii
CHAPTER 1	1
Introduction to 6LoWPAN Based Leak Detection	1
1.1 Terminology	2
1.2 Purpose	2
1.3 Scope	2
1.4 Motivation	2
1.5 Literature Survey	3
1.6 Problem Statement	4
1.7 Objectives	4
1.8 Methodology	4
1.9 Organization of the report	5
CHAPTER 2	7
Theory and Concepts of 6LoWPAN Based Leak Detection	7
2.1 MSP430-gcc	7
2.1.1 Makefile	7
2.2 Interrupt Service Routine	8
2.3 Minicom	8
2.4 Serial Communication	9
2.4.1 Port	9
2.4.2 Baud Rate	9

CHAPTER 3	10
Requirement Specification of 6LoWPAN Based Leak Detection	10
3.1 Overall Description	10
3.1.1 System Perspective	10
3.1.2 System Functions	10
3.1.3 Constraints	10
3.1.4 Assumptions and Dependencies	11
3.2 Specific Requirements	11
3.2.1 Functionality Requirements	11
3.2.2 Performance Requirements	11
3.2.3 Supportability	12
3.2.4 Hardware Requirements	12
3.2.5 Software Requirements	12
3.3 External Interface Requirements	12
3.3.1 User Interfaces	12
3.3.2 Hardware Interfaces	12
3.3.3 Software Interfaces	12
CHAPTER 4	13
Design of 6LoWPAN Based Leak Detection	13
4.1 High Level Design	13
4.1.1 Design Considerations	13
4.1.1.1 Assumptions and Dependencies	13
4.1.1.2 General Constraints	14
4.1.1.3 Development Methods	14
4.1.2 Architectural Strategies	14
4.1.2.1 Programming Language	14
4.1.2.2 Future Plans	15
4.1.3 System Architecture	15
4.1.4 Data Flow Diagrams	16
4.1.4.1 Data Flow Diagram – Level 0	16
4.1.4.2 Data Flow Diagram – Level 1	17
4.1.4.3 Data Flow Diagram – Level 2	18

4.1.5	Context Flow Diagram	18
4.2	Detailed Design	19
4.2.1	Detailed System Design	19
4.2.2	Functional Description of Modules	20
4.2.2.1	Input Module	20
4.2.2.2	Transmission Module	21
4.2.2.3	Coordinator Module	21
4.2.2.4	User Module	22
CHAPTER 5		23
Implementation of 6LoWPAN Based Leak Detection		23
5.1	Details of language used	23
5.2	Details of Platform: C-Mote	24
5.2.1	Components of C-Mote	24
5.2.2	Logic Level Converter	25
5.2.3	UbiSense	26
5.2.4	Water Flow Sensor	26
5.3	Task Implementation	27
CHAPTER 6		30
Testing of 6LoWPAN Based Leak Detection		30
6.1	Unit Testing	30
6.1.1	Testing Strategy	30
6.1.2	Test Cases	31
6.1.2.1	Unit Test Case 1	31
6.1.2.2	Unit Test Case 2	31
6.1.2.3	Unit Test Case 3	32
6.1.2.4	Unit Test Case 4	32
6.1.2.5	Unit Test Case 5	33
6.1.2.6	Unit Test Case 6	33
6.1.2.7	Unit Test Case 7	34
6.1.2.8	Unit Test Case 8	34
6.2	Integration Testing	35
6.2.1	Testing Strategy	35

6.2.2	Test Cases	35
6.2.2.1	Integration Test Case 1	35
6.2.2.2	Integration Test Case 2	36
6.2.2.3	Integration Test Case 3	37
6.2.2.4	Integration Test Case 4	37
6.2.2.5	Integration Test Case 5	38
6.3	System Testing	39
6.3.1	Testing Strategy	39
6.3.2	Test Cases	40
6.3.2.1	System Test Case 1	41
CHAPTER 7		41
Results and Discussions of 6LoWPAN Based Leak Detection		41
7.1	Results	41
7.1.1	The User Interface	41
7.1.2	The Transmission and Receiver Modules	41
7.2	Discussion	41
7.3	Inference	42
7.4	Snapshots	42
7.4.1	Sensor and Transmitter Setup	42
7.4.2	Receiver or Coordinator Setup	43
7.4.3	Email Notification	43
7.4.4	SMS Notification	44
7.4.5	Website Homepage	44
7.4.6	Leakage Charts	45
CHAPTER 8		46
Conclusion		46
8.1	Summary	46
8.2	Limitations	46
8.3	Future Enhancements	46
REFERENCES		47
APPENDIX		50

LIST OF TABLES

Table No.	Name of Table	Page No.
Table 6.1	Unit Test Case 1	31
Table 6.2	Unit Test Case 2	31
Table 6.3	Unit Test Case 3	32
Table 6.4	Unit Test Case 4	32
Table 6.5	Unit Test Case 4 - corrected	33
Table 6.6	Unit Test Case 5	33
Table 6.7	Unit Test Case 6.1	33
Table 6.8	Unit Test Case 6.2	34
Table 6.9	Unit Test Case 7	34
Table 6.10	Unit Test Case 8	34
Table 6.11	Integration Test Case 1	36
Table 6.12	Integration Test Case 2	36
Table 6.13	Integration Test Case 3	37
Table 6.14	Integration Test Case 4	38
Table 6.15	Integration Test Case 5	39
Table 6.16	System Test Case 1	40

LIST OF FIGURES

Figure No.	Name of Figure	Page No.
Figure 4.1	System Architecture	16
Figure 4.2	Data Flow Diagram Level - 0	17
Figure 4.3	Data Flow Diagram Level - 1	17
Figure 4.4	Data Flow Diagram Level - 2	18
Figure 4.5	Context Flow Diagram	19
Figure 4.6	Structure Chart	20
Figure 5.1	Components of C-Mote	24
Figure 5.2	Bi-Directional Logic Level Converter	25
Figure 5.3	UbiSense	26
Figure 5.4	YF-S201 Water Flow Sensor	26
Figure 7.1	Sensor and Transmitter Setup	41
Figure 7.2	Receiver Setup	42
Figure 7.3	Email Notification received by the user	42
Figure 7.4	SMS Notification received by the user	43
Figure 7.5	Homepage of the Website	43
Figure 7.6	Leakage Statistics	44

LIST OF ACRONYMS

6LoWPAN	IPv6 over Low power Wireless Personal Area Network
MSP	Mixed-Signal Processor
IP	Internet Protocol
CCS	Code Composer Studio
IDE	Integrated Development Environment
GNU	GNU's Not Unix
GCC	GNU Compiler Collection
LLC	Logic Level Converter
GUI	Graphical User Interface
LED	Light Emitting Diode
DFD	Data Flow Diagram
CFD	Context Flow Diagram
HTML	Hypertext Markup Language
CSS	Cascaded Style Sheets
PHP	Hypertext Preprocessor
RAM	Random Access Memory
IEEE	Institute of Electrical and Electronics Engineers