

**LOW COST FLOOD ALERT via SMS**

**MOHD AZLAN BIN AHMAD ZARRON**

**This report is submitted in partial fulfillment of the requirements for the  
award of Bachelor of Electronic Engineering (Industrial Electronics) With  
Honours**

**Faculty of Electronic and Computer Engineering**

**Universiti Teknikal Malaysia Melaka**

**APRIL 2010**



UNIVERSITI TEKNIKAL MALAYSIA MELAKA  
FAKULTI KEJURUTERAAN ELEKTRONIK DAN KEJURUTERAAN KOMPUTER

BORANG PENGESAHAN STATUS LAPORAN  
PROJEK SARJANA MUDA II

Tajuk Projek : **LOW COST FLOOD ALERT via SMS**

Sesi Pengajian : 

|   |   |   |   |   |
|---|---|---|---|---|
| 0 | 9 | / | 1 | 0 |
|---|---|---|---|---|

Saya **MOHD AZLAN BIN AHMAD ZARRON**

mengaku membenarkan Laporan Projek Sarjana Muda ini disimpan di Perpustakaan dengan syarat-syarat kegunaan seperti berikut:

1. Laporan adalah hakmilik Universiti Teknikal Malaysia Melaka.
2. Perpustakaan dibenarkan membuat salinan untuk tujuan pengajian sahaja.
3. Perpustakaan dibenarkan membuat salinan laporan ini sebagai bahan pertukaran antara institusi pengajian tinggi.
4. Sila tandakan ( ✓ ) :

SULIT\*

\*(Mengandungi maklumat yang berdarjah keselamatan atau kepentingan Malaysia seperti yang termaktub di dalam AKTA RAHSIA RASMI 1972)

TERHAD\*\*

\*\* (Mengandungi maklumat terhad yang telah ditentukan oleh organisasi/badan di mana penyelidikan dijalankan)

TIDAK TERHAD

Disahkan oleh:

(TANDATANGAN PENULIS)

(COP DAN TANDATANGAN PENYELIA)

**RIDZA AZRI BIN RAMLEE**

Pensyarah

Fakulti Kejuruteraan Elektronik  
Dan Kejuruteraan Komputer  
(UTeM)

Tarikh: 26 APRIL 2010

Tarikh: 26/4/2010

“I hereby declare that this report is result of my own effort except for quotes as cited in the references.”

Signature :  .....

Name : MOHD AZLAN BIN AHMAD ZARRON

Date : ...26. APRIL. 2010.....

“I hereby declare that I have read this report and in my opinion this report is sufficient in terms of the scope and quality for the award of Bachelor of Electronic Engineering (Industrial Electronics) With Honors.”

Signature : .....  .....

Supervisor's Name : ENCIK RIDZA AZRI BIN RAMLEE

Date : 26/4/2010 ..... **RIDZA AZRI BIN RAMLEE** .....

Pensyarah  
Fakulti Kejuruteraan Elektronik  
Dan Kejuruteraan Komputer  
(UTeM)

For my lovely mum and dad, thanks for your sacrifice towards my success.

For my supervisor, Mr. Ridza Azri Bin Ramlee, thanks for all your  
supports.

To my friends who's helped me lots, I'll appreciate very much

## ACKNOWLEDGEMENT

First and foremost, I would like to give Thanks to ALLAH SWT, for helping me. I would like to express my appreciation to my supervisor, Mr. Ridza Azri Bin Ramlee for his support and guidance throughout this whole project.

To my beloved parents who always give me support and never tired of convincing me in order to achieve my determination and finishing my study without any delay. They always support me and understand me while giving me opportunity in completing all my projects.

Besides that, I am also thankful to all the lecturers that also giving me some ideas and knowledge that can be used to accomplish the PSM project. Not forgotten to my friends who had also helped me in giving their thought, pro and contra of each of the research and result that I had obtained.

Once again for the last time, I would like to express my gratitude to those people that already mentioned above as well as the BENE's student of Electronic and Computer Engineering Faculty who provide many suggestions, information, and criticism and sustain in this report.

## ABSTRAK

Pengesan Banjir Kos Rendah melalui SMS ini direka untuk member amaran awal kepada pengguna yang tinggal berhampiran kawasan banjir. Sistem ini direkabentuk berpandukan sistem yang sedia ada tetapi sesetengah bahagian daripada system tersebut diubahsuai untuk mengurangkan kos pada system ini. Sistem ini mengandungi litar PIC, litar pengesan peringkat air, litar bekalan kuasa dan litar penggera. Litar pengesan peringkat air ini digunakan untuk mengesan ketinggian air atau sungai apabila berlakunya banjir. PIC yang digunakan pula bertindak sebagai litar kawalan dimana ianya berfungsi memberikan isyarat kepada litar- litar di dalam system ini seperti litar penggera dalm GPRS modul. Sekiranya sistem yang digunakan ini mengesan kewujudan ketinggian air atau sungai, secara automatik ia akan menyalakan lampu kecemasan dan penggera amaran. Di samping itu juga, GPRS modul akan aktif setelah mendapat isyarat dari litar kawalan dan seterusnya menghantar mesej kepada pengguna tentang info banjir di kawasan mereka. Dengan erti kata lain, ianya member amaran awal kepada pengguna dan memberitahu akan bahayanya situasi pada ketika itu.

## ABSTRACT

The Low Cost Flood Alert via SMS is designed to give an early warning to user who lives near the flood area. The system is designed based on the current system but there have a certain part was modified to reduced the cost of the system. The system consists of PIC, sensors circuit, power supply and alarm system. The sensors used for detecting the level of water or river during the flood season. Then, the PIC will act as controller which is received the analog signal from the sensor and convert it into digital signal to input GPRS module and alarm system. When the system senses the existences of water, it automatically turns the alarm and emergency light on. Besides that, the GPRS module also triggered to send the text message to inform the user about the flood parameter. In other word, it gives an early warning to the users about the dangerous situation during the flood disaster.



## TABLE OF CONTENTS

| CHAPTER  | TITLE                        | PAGE         |
|----------|------------------------------|--------------|
|          | <b>PROJECT TITLE</b>         | <b>i</b>     |
|          | <b>DECLARATION</b>           | <b>ii</b>    |
|          | <b>DEDICATION</b>            | <b>v</b>     |
|          | <b>ACKNOWLEDGEMENT</b>       | <b>vi</b>    |
|          | <b>ABSTRACT</b>              | <b>vii</b>   |
|          | <b>ABSTRAK</b>               | <b>viii</b>  |
|          | <b>TABLE OF CONTENTS</b>     | <b>ix</b>    |
|          | <b>LIST OF TABLES</b>        | <b>xiii</b>  |
|          | <b>LIST OF FIGURES</b>       | <b>xiv</b>   |
|          | <b>LIST OF ABBREVIATIONS</b> | <b>xvii</b>  |
|          | <b>LIST OF APPENDICES</b>    | <b>xviii</b> |
| <br>     |                              |              |
| <b>I</b> | <b>INTRODUCTION</b>          | <b>1</b>     |
|          | 1.1 Introduction             | 1            |
|          | 1.2 Objectives               | 2            |
|          | 1.3 Problem Statement        | 3            |
|          | 1.4 Scopes of Work           | 3            |
|          | 1.5 Project Methodology      | 5            |
|          | 1.6 Project Planning         | 7            |

|            |                                   |           |
|------------|-----------------------------------|-----------|
| <b>II</b>  | <b>LITERATURE REVIEW</b>          | <b>6</b>  |
|            | 2.1 Background Study              | 8         |
|            | 2.2 Block Diagram                 | 9         |
|            | 2.3 Power Supply System           | 9         |
|            | 2.3.1 Regulator                   | 9         |
|            | 2.3.1.1 Type of Regulator         | 10        |
|            | 2.4 Capacitor                     | 13        |
|            | 2.4.1 Electrolytic Capacitor      | 13        |
|            | 2.4.2 Ceramic Capacitor           | 14        |
|            | 2.5 Resistor                      | 15        |
|            | 2.5.1 Variable Resistor           | 16        |
|            | 2.5.2 Preset                      | 17        |
|            | 2.5.3 Resistor Color Code         | 17        |
|            | 2.6 Transistor                    | 19        |
|            | 2.7 Relay                         | 20        |
|            | 2.7.1 Type of Relay               | 20        |
|            | 2.7.2 PIC Micro Controller        | 22        |
|            | 2.9 Sensor                        | 26        |
|            | 2.9.1 Beam Breakers               | 26        |
|            | 2.9.2 Capacitance                 | 27        |
|            | 2.9.3 Resistance type             | 28        |
| <b>III</b> | <b>DEVELOPMENT OF PROJECT</b>     | <b>29</b> |
|            | 3.1 Introduction                  | 29        |
|            | 3.2 Hardware Design               | 32        |
|            | 3.2.1 Power Supply Circuit        | 32        |
|            | 3.2.2 PIC Microcontroller circuit | 33        |
|            | 3.2.3 Water level sensor          | 34        |
|            | 3.3 Software Design               | 35        |

|           |   |           |
|-----------|---|-----------|
|           | 3.3.1 Programming code                          | 35        |
| <b>IV</b> | <b>RESULTS AND ANALYSIS</b>                     | <b>37</b> |
|           | 4.1 Introduction                                | 37        |
|           | 4.2 Project Result                              | 37        |
|           | 4.3 Hardware Part                               | 38        |
|           | 4.3.1 PIC Microcontroller<br>Circuit            | 38        |
|           | 4.3.2 Water Level Sensor<br>Circuit             | 40        |
|           | 4.3.3 Emergency lamp circuit                    | 42        |
|           | 4.3.4 Alarm circuit                             | 43        |
|           | 4.4 Software part                               | 45        |
|           | 4.5 Simulation part                             | 45        |
|           | 4.5.1 PIC Microcontroller Circuit<br>Simulation | 45        |
|           | 4.5.2 Water Level Sensor Circuit<br>Simulation  | 46        |
|           | 4.5.3 Relay Circuit Simulation                  | 48        |
|           | 4.6 Analysis of the result                      | 52        |
|           | 4.7 Project Model                               | 53        |

|          |                                   |           |
|----------|-----------------------------------|-----------|
| <b>V</b> | <b>CONCLUSION AND FUTURE WORK</b> | <b>55</b> |
|          | 5.1 Introduction                  | 55        |
|          | 5.2 Discussion                    | 55        |
|          | 5.3 Conclusion                    | 57        |
|          | 5.4 Suggestion and Future Work    | 58        |
|          | <b>REFERENCES</b>                 | <b>59</b> |
|          | <b>APPENDIXS</b>                  | <b>61</b> |

**LIST OF TABLES**

| <b>NO</b> | <b>DESCRIPTION</b>                                  | <b>PAGES</b> |
|-----------|---|--------------|
| Table 1.2 | Project planing for Low Cost Flood<br>Alert via SMS | 18           |
| Table 2.1 | Resistor Color Code                                 | 14           |

## LIST OF FIGURES

| <b>FIGURE</b> | <b>DESCRIPTION</b>                              | <b>PAGES</b> |
|---------------|---|--------------|
| Figure 1.1    | Low Cost Flood Alert via SMS project flowchart  | 5            |
| Figure 2.1    | Block Diagram of Low Cost Flood Alert via SMS   | 9            |
| Figure 2.2    | Series Regulator                                | 11           |
| Figure 2.3    | Basic Component series regulator                | 11           |
| Figure 2.4    | Shunt Regulators.                               | 12           |
| Figure 2.5    | Basic Component Shunt Regulator                 | 12           |
| Figure 2.6    | Electrolytic capacitor symbol                   | 14           |
| Figure 2.7    | Ceramic capacitor symbol                        | 15           |
| Figure 2.8    | Resistor symbol                                 | 15           |
| Figure 2.9    | Variable Resistor Symbol                        | 17           |
| Figure 2.10   | Transistor Symbol                               | 20           |
| Figure 2.11   | Relay symbol                                    | 22           |
| Figure 2.12   | PIC16F84A                                       | 23           |
| Figure 2.13   | PIC16F84A diagram                               | 24           |
| Figure 2.14   | Analog output signal from sensor                | 25           |
| Figure 2.15   | Digital output signal from PIC Microcontroller  | 25           |
| Figure 3.10   | Project Methodology in a Flowchart              | 30           |
| Figure 3.20   | Power supply circuit                            | 32           |
| Figure 3.3    | PIC Microcontroller circuit                     | 33           |
| Figure 3.4    | Water level sensor circuit                      | 34           |
| Figure 3.5    | Flowchart of C Language for PIC Microcontroller | 36           |

|             |  |    |
|-------------|--|----|
| Figure 4.1  | PIC Microcontroller Circuit  | 38 |
| Figure 4.2  | Complete PIC Microcontroller circuit                               | 39 |
| Figure 4.3  | PIC Microcontroller PCB design                                     | 39 |
| Figure 4.4  | PIC Microcontroller PCB design                                     | 40 |
| Figure 4.5  | Water Level Sensor Circuit   | 40 |
| Figure 4.6  | Water Level Sensor PCB design                                      | 41 |
| Figure 4.7  | Emergency Lamp Circuit   | 42 |
| Figure 4.8  | Emergency Lamp Circuit PCB design                                  | 42 |
| Figure 4.9  | Emergency Lamp Circuit PCB design                                  | 43 |
| Figure 4.10 | Alarm circuit  | 43 |
| Figure 4.11 | Alarm circuit PCB design   | 44 |
| Figure 4.12 | PIC Microcontroller circuit simulation                             | 45 |
| Figure 4.13 | Water level sensor circuit simulation                              | 46 |
| Figure 4.14 | Water level parameter and Water level sensor input                 | 47 |
| Figure 4.15 | Relay circuit to emergency light                                   | 48 |
| Figure 4.16 | Relay circuit to the alarm system                                  | 49 |
| Figure 4.17 | The whole simulation of Low Cost Flood Alert<br>via SMS project    | 51 |
| Figure 4.18 | Output signal from the PIC Microcontroller to<br>GPRS Module input | 52 |
| Figure 4.19 | Low Cost Flood Alert via SMS                                       | 53 |
| Figure 4.20 | Complete model   | 53 |
| Figure 4.21 | Low Cost Flood Alert via SMS (INOTEK 2010)                         | 54 |

## LIST OF ABBREVIATIONS

|     |   |                                |
|-----|---|--------------------------------|
| PCB | - | Printed Circuit Board          |
| SMS | - | Short Messenger System         |
| PIC | - | Programmable Interface Circuit |
| IC  | - | Integrated Circuit             |
| DC  | - | Direct Current                 |
| VD  | - | Voltage Drop                   |
| AC  | - | Alternative Current            |
| LCD | - | L C Display                    |
| DIP | - | Dual In-line Pin               |
| PWM | - | Pulse Width Modulation         |
| SMT | - | Surface Mount Technology       |
| PSM | - | 'Projek Sarjana Muda'          |
| LED | - | Light Emitting Diode           |



**LIST OF APPENDIX**

| <b>NO</b>  | <b>DESCRIPTION</b>             | <b>PAGES</b> |
|------------|--------------------------------|--------------|
| APPENDIX A | PIC 16F84A source code         | 56           |
| APPENDIX B | PIC16F84A Data Sheet           | 59           |
| APPENDIX C | Microchip PIC16F84A Data Sheet | 64           |

## CHAPTER 1

### INTRODUCTION

#### 1.1 Introduction

Flood dilemma is one of major issue during raining season. Lack of flood situation will cause lost of property such as car, furniture and electrical appliances, and worst case lost of human life. Therefore the objective of this project is to develop Low Cost Flood Alert mechanism which can alert to the user if the levels of flood rise to dangerous level. This system is small, cheap and affordable to all consumers especially to those who live in the bank of river. This project will build a modular flood early warning application, which will push SMS messages to people downstream of a flood event in real time.

A Low Cost Flood Alert via SMS could reach most people in the path of a flood with access to a mobile phone, and give them time to get their possessions, their livestock, and their families out of the way of catastrophic flood. This application could be applied globally, and with simple inputs, it could be used anywhere where SMS messages can be received. This project will be operates when the water level sensor detect the level of water and then the signal will be sent to the controller to activate the GPRS module and warning will be given by alarm system.

## 1.2 Objectives

The objectives of this project are:-

- To design a Low Cost Flood Alert via SMS this is suitable for all user.
- To provide “early warning” or information about flood risks to selected zones.
- To reduce cost for flood alert system.

The main objective for this project is to design a Low Cost Flood alert via SMS as a early warning to most people which in the flood area. This project is capable to function as a security and use the processing circuit which collects data from the sensor through the programmable integrated circuit microcontroller (PIC micro-controller). This project also will apply the function of PIC micro-controller and type of sensor; water level sensors. The PIC micro-controller is programmed to collect the data when it received request form the control panel. It also converts an analog output signal from the sensors into digital signal.

## 1.3 Problem Statement

Nowadays, flood is one of serious problems in our country. There are many places that risky faces this flood disaster. This intelligent system was created to solve the problem about the flood disaster. The system provides early warning which is using the SMS to give information or attention to person that involved in floods area. The people who are near in the bank of river will be alert with this flood disaster.

Actually this system was created before but there are some parts of this system was modified and also to achieve the main objective of the project where is to build the low cost flood alert mechanism. This project is a simple and affordable to all user and it is also save cost to build or install at the several place where is risky to flood disaster.

Moreover, this new intelligence can save our money by reducing the unnecessary items or applications. Due to this factor, this system will bring more benefit. This project likely will be done for a low cost and simple installation system as most of the products in the market are expensive and complicated. With a low cost of making this project, users will have more option to buy this kind of product.

#### 1.4 Scopes of Works

A several scope of work has been determined are:-

- This system is using water level sensors which are capable to detect the water level during flood disaster.
- This system is used for a send the text message alert to the users which is in the flood zones.
- To design and simulation the system by using Proteus7.2 software.
- To fabricate the system on the circuit board.
- To use the etching technique.

The scope for this project is divided into two part; hardware and software part. For the hardware part, it will consists the designing a Low Cost Flood Alert via SMS prototype which consists of sensors; water level sensors, PIC microcontroller.

The PIC micro-controller (PIC16F84) will be programmed to integrate with software part as to make sure that the connection between both parts is available. Then, the hardware is fabricated by using printed circuit board (PCB).

As a software part, it will include the development of a programming for PIC micro-controller. The programming will control the hardware part .The assembly language is needed to creating the source code for PIC microcontroller.

1.5 Project Methodology

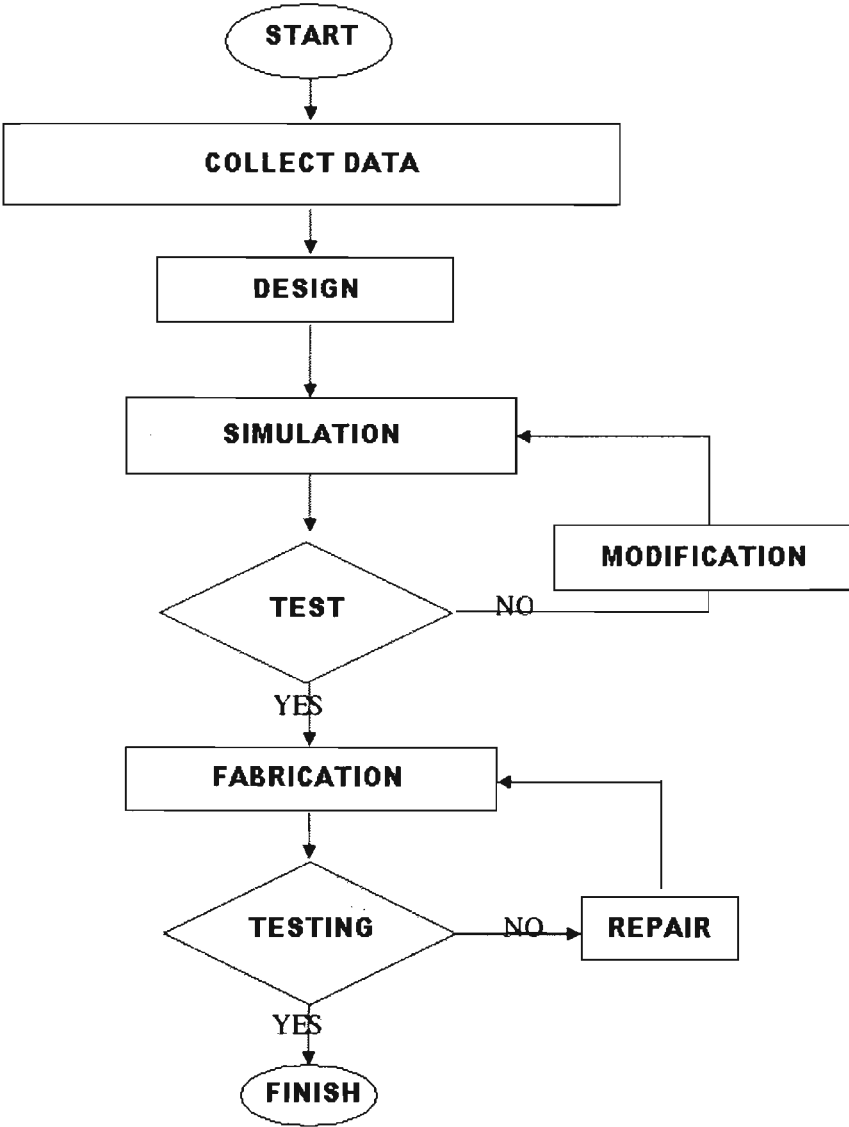


Figure 1.1: Low Cost Flood Alert via SMS project flowchart

The project methodology is divided into two parts which are hardware and software part:-

1. All the information which relevance to the system, PIC micro-controller, and sensors are collected. Then receiving and transmitting about this system need to be understood. With all the information have been gathered, a suitable PIC micro-controller and sensors need to be decide in this stage before designing the project.
2. The hardware and software part need to be design and develop due to the objectives of this project. A simple hardware part is design and assembly language programming for PIC micro-controller needed to be governing before creating the source code.
3. After the hardware and software part have been created, it will tested so that any mistakes or errors that occur during this stage can solved.
4. If both hardware and software part are success, the hardware is design into PCB and software programming is burn into PIC micro-controller.
5. Then, the connection between them is tested.
6. If the connection is fail between both parts, it will troubleshoot to find the problem so that any mistakes or errors that occur during this stage can be solved.
7. Final report preparation and draft will send to supervisor for observation and comment.
8. Final report sends to faculty.

### 1.6 Project Planing

| PERANCANGAN PROJEK   |      |   |       |   |   |      |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
|--|------|---|-------|---|---|------|---|-----------|---|----|----|---------|----|----|----------|----|----|----------|----|---------|---|----------|---|-------|---|---|---|---|---|----|----|----|----|----|----|----|----|
| Senaraikan aktiviti-aktiviti utama bagi projek yang dicadangkan Nyatakan jangka masa yang diperlukan bagi setiap aktiviti. |      |   |       |   |   |      |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Aktiviti Projek  | 2009 |   |       |   |   |      |   |           |   |    |    |         |    |    |          |    |    | 2010     |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
|  | Jun  |   | Julai |   |   | Ogos |   | September |   |    |    | Oktober |    |    | November |    |    | Disember |    | Januari |   | Februari |   | March |   |   |   |   |   |    |    |    |    |    |    |    |    |
|  | 1    | 2 | 3     | 4 | 5 | 6    | 7 | 8         | 9 | 10 | 11 | 12      | 13 | 14 | 15       | 16 | 17 | 18       | 19 | 20      | 1 | 2        | 3 | 4     | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |
| Project title confirmation   | ■    |   | ■     |   | ■ |      |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Data information collection  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Project proposal preparation   | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Project proposal submission  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Collect the project data   | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Project analysis   | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Project progression 1  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Seminar 1 preparation  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Seminar 1  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Report for PSM 1   | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Project progression 1  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Report PSM 1 submission  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Continue on project progression  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Project progression 2  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Report submitted to supervisor   | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Seminar 2  | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |
| Final Report PSM 2 submission (hard cover)   | ■    |   | ■     |   |   | ■    |   |           |   |    |    |         |    |    |          |    |    |          |    |         |   |          |   |       |   |   |   |   |   |    |    |    |    |    |    |    |    |

Table 1.2: Project planing for Low Cost Flood Alert via SMS

## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Background Study

This chapter provides some examples, case studies and other relevant works were done by other people in the past. Besides, it focuses on the various theory and basic knowledge used in the project. Many researchers have presented the block diagram and the synthesis of system. Therefore, a low cost, user friendly, open source system software package is needed to design.