# DEVELOPING WEB BASED VISUAL POWER SYSTEM SYMMETRICAL SHORT CIRCUIT TOOLS USING WEB BASED APPLICATION

Thesis is presented in partial fulfillment for the award of the
Bachelor of Electrical Engineering (Honors)
UNIVERSITI TEKNOLOGI MARA

f

NOR ADNI BT MAT LEH
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 SHAH ALAM
SELANGOR, MALAYSIA

# ACKNOWLEDGEMENTS

All praises be to Allah, Lord of the Universe, the Merciful. It is with the deepest sense of gratitude of the Almighty Allah who gives strength and the ability to complete this project and thesis it as today.

I would like to take this opportunity to express the heartiest thanks to Mr. Mohd Fuad bin Abdul Latip, my project supervisor and all friends for willing to spend their time to give precious advices and supports to the project.

Also I would like to express my thanks to my Academic Advisor, Mr Mustaffa Samad for his encouragement and moral supports to me.

To all my friends, thank you for being such a wonderful people around me. For their love and supports, I appreciate all the opinions, suggestions, and comments.

Last but not least, I also would like to express the sincerest thanks to my family for their support throughout the years and without them, I would never have completion of this project as today.

# ABSTRACT

Fault studies form an important part of power system analysis. In power system, the problem of fault analysis consists of determining the current and bus voltages. It is also used in designing the power system protection.

Thus, due to its important in power system, this project has been brought to develop an accessible fault analysis tools. Web based application and PHP language was used in order to build the fault analysis tools.

Component web based is a reusable program and it is easy to maintain. The user can easily access the web wherever they want as long as the internet services is available. This service is more alike to be friendly with the users since the users can access the services without the limiting time.

In this project, the program will developed by using PHP language. PHP language is open source and its code is simple and straight forward.

# CONTENTS

# CHAPTER 1

# INTRODUCTION

## 1.1 FAULT ANALYSIS

The new designs of power equipment bring about increased the reliability of operation. However, equipment failures and interference by outside sources occasionally result in fault on electric power systems.

The phenomenon of fault is a situation called a malfunction in the power system network. Most faults are result of short circuit [1]. Among the important factors affecting the fault in the system network are the bus voltage, line current, fault current and fault impedance [2].

The causes of faults are numerous such as lightning, heavy winds, trees falling across lines, vehicles colliding with towers or poles, birds and line breaks [3]. On the occurrence of a fault, current and voltage conditions become abnormal, the delivery of power from the generating stations to the loads may be unsatisfactory over a considerable area.

Fault on power system are unpredictable both as to location and time of occurrence. The behavior during a fault is necessary to assume the location of the fault, the configuration of lines, transformers and generators that exists previous to the fault and the loading of the system [4].

### 1.1.1 Definition of Fault

*A fault is the unintentional or intentional connecting together of two or more conductors which ordinarily operate with a difference of potential between them.*