# CHAPTER 1

# INTRODUCTION

## 1.1    Overview

Microprocessor is an integrated circuit built on a tiny piece of silicon which contains thousand or even millions of transistor which interconnected via superfine traces of aluminum. The microprocessor MC68000 has been introduced in 1979 by MACSS (Motorola Advanced Computer System on Silicon). It is a 16 bit microprocessor with 16 bit data bus and can operate with 32 bit. It is capable of supporting multi-tasking and applicable for high level language. Originally it is used for household products but later on been used for the design of computers like Apple Macintosh, Commodore Amiga, and Atari ST.

The microprocessor is the heart of a computer (general known as CPU or central processing unit) which contains all circuitry for fetching and interpreting instructions and for controlling and performing various operations. It is an intelligent processing system which able to perform certain task in response to given input through the data that have been stored. In order to enable a microprocessor to operate, it is essentially a need of supporting component such as memory unit like RAM and ROM, input devices like switch, and output devices like Dot matrix.

The MC68000 microprocessor development board has been designed to aid the teaching of microprocessor interfacing from simple switch and lamp input/output through to more complex closed-loop and open-loop control systems. The learning experience for the student will build a level of competency required in understanding microprocessors and microprocessor based systems and how to program them in the various high and low level dialects. The student can use the various elements and I/O to design and implement hardware and software applications to a specification, an important area of knowledge for engineers. Simple or complex experiments are possible by linking the range of devices and sensors to the MC68000. The layout enables students or beginner to easily understand how a processor works upon. The wide array of features incorporated into the board include digital switches such as DIP switch, 4x4 keypad, traffic light colored LED, Dot matrix, DC motor, LCD display.

## 1.2    Problem Statement

Nowadays, the technology is getting more advance from day to day and basically the most important element in it is the more advance intelligent system. The root of all the intelligent systems is come from the basic microprocessor itself. It is important for us to keep on passing this knowledge to the next generation. There are many universities in the world which offer the knowledge of the microprocessor but most of them is only through theory or the mostly will only cover till the programming. Therefore, it is essential for us to provide or give the younger generation the knowledge and skills along by offer them a chance to build their own intelligent systems or at least giving them an opportunity to see the result of their own programming skills on a real board. And to achieve that, they need education guidance as example which is the MC68000 microprocessor development board.

### 1.3 Objective

The objective of this project is to design an educational microprocessor development board will

i. Become a main educational guidance for the future engineer, student, and beginners to understand more how a processor works before proceed into more complex devices such as microcontroller.

ii. Enable the students to understand how and why the hardware connected to the main processor in an arranged order and the function & characteristic of other supporting component like RAM, ROM, BUFFER, many more.

iii. Give a clear idea and understanding about the effect and function of programming and the assembly language.

### 1.4 Scope

There are some scopes that are needed in order to achieve the objective of this project:

a) The design for this development board must be using MC68000 microprocessor.

b) The programming of the data and instruction must be in assembly language instead of high level language.

c) This development board is design only for educational purpose.