

CHAPTER 1

INTRODUCTION

1.1 Introduction

The rapid spread of microprocessor in society has both simplified and complicated our lives. Whether rely on a computer at work, school, or home, most of us have used a computer at one point or another. Microprocessors are also used in other advanced electronic systems, such as computer printers, automobiles, and jet airliners. The microprocessor is the combination of solid – state technology development and the advancing computer technologies which came together in the early 1970s. With the low cost of a device and the flexibility of a computer, microprocessor is a product which performs both control and processing functions.

Microprocessor is an incorporated circuit built on a tiny piece of silicon. It comprises thousands or even millions of transistor which are interlinked via superfine traces of aluminium. The transistors work together to store and control data so that the microprocessor can execute a comprehensive variety of effective function. The first microprocessor for Motorola is MC6800 with 4000 transistor was

introduced in 1974 and it was followed by various version of 6800 family such as 6802, 6808, 6803, 6809, and 6805. Later on, more advanced 68000 family processors were brought in such as 68008, 68010, 68020, 68030, 68040, and 68050 to compete with the emergency of Intel processor [1].

The MC68000 microprocessor is known as MC68k with 16 bits data and can be operated with 32 bits (16/32 bits) was introduced in 1979 by MACSS (Motorola Advanced Computer System on Silicon). It consists of almost 70,000 transistors and it is capable of bearing multitasking and relevant for high level language. MC68000 uses Von Neumann architecture to produce a simple and flat memory map. Originally, it is designed for the use in household products but afterward it is used for the design of computer like the Apple Macintosh, Commodore Amiga and Atari ST [1].

The microprocessor is the heart of computer and generally knows as CPU or central processing unit, the master controller of all operations that can be performed. It is an intelligent processing system which able to perform certain job in response to given input through the data that have been stored. In order to enable a microprocessor to function, it is basically need of assisting components such as memory unit like Random Access Memory and Read Only Memory, input devices like keypad, and output device like 7-segment [2].

The MC68000 stand-alone Educational board has been designed to assist the teaching of microprocessor course, where it interface with multi range of input and output device such as Dual-In-Line Package switch, keypad, Light Emitted Diode, 7-segment Display, bar graph, Liquid Crystal Display, Direct Current motor, dot matrix and so on. In addition, the MC68000 Educational board has built-in programming code for user to test the functionality and allows the user to key-in the code manually into the system to test its I/O devices.

1.2 Problem Statement

There are many universities in the world, including UMP which offers the knowledge of microprocessor. According to the latest survey, more than half of the total student in Faculty of Electrical & Electronics Engineering are having problem in understanding program structure and developing hardware. Likewise, the conventional technique to design the educational board is very expensive and time consuming. Therefore, it is essential to provide or allow the younger generation to discover the knowledge and skills by offering them a chance to build their own intelligent system by providing a simple education guidance platform.

1.3 Objectives

The aim of the project is to design a stand-alone MC68000 development board that can be used in education and short courses.