CHAPTER EIGHT

Central Processing Unit

IN THIS CHAPTER

8-1 Introduction

CPU

The part of the computer that performs the bulk of data-processing operations is called the central processing unit and is referred to as the CPU. The CPU is made up of three major parts, as shown in Fig. 8-1. The register set stores intermediate data used during the execution of the instructions. The arithmetic logic unit (ALU) performs the required microoperations for executing the instructions. The control unit supervises the transfer of information among the registers and instructs the ALU as to which operation to perform.

The CPU performs a variety of functions dictated by the type of instructions that art Incorporated in the computer. Computer architecture is sometimes defined as the computer structure and behavior as seen by the programmer that uses machine language instructions. This includes the instruction formats, addressing modes, the instruction set, and the general organization of the CPU registers leading to two computer architectures as reduced instruction set computer (RISC) and complex instruction set computer (CISC). Based on memory usage for programs and data, two architectures, namely nonembedded and embedded are evolved. Nonembedded computer architectures are basically stored program computer (SPC) architectures in which programs and data reside in the same memory system. Embedded architectures are basically Harvard computer architectures in which programs and data