Text 1.

COMPUTER SYSTEM ARCHITECTURE

As we know, all computer systems perform the functions of inputting, storing, processing, controlling, and outputting. Now we’ll get acquainted with the computer system units that perform these functions. But to begin with let’s examine computer systems from the perspective of the systems designer, or architect.

It should be noted that computers and their accessory equipment are designed by a computer system architect, who usually has a strong engineering background. As contrasted with the analyst, who uses a computer to solve specific problems, the computer system architect usually designs computer that can be used for many different applications in many different businesses.

For example, the product lines of major computer manufacturers such as IBM, Digital Equipment Corporation, and many others are the result of the efforts of teams of computer system architects. Unless you are studying engineering, you don’t need to become a computer systems architect. However, it is important that as a potential user, applications programmer, or systems analyst you understand the functions of the major units of a computer system and how they work together. Types of computers The two basic types of computers are analog and digital. Analog computers simulate physical systems.

They operate on the basis of an analogy to the process that is being studied.

For example, a voltage may be used to represent other physical quantities such as speed, temperature, or pressure.

The response of an analog computer is based upon the measurement of signals that vary continuously with time.

Hence, analog computers are used in applications that require continuous measurement and control. Digital computers, as contrasted with analog computers, deal with discrete rather than continuous quantities. They count rather than measure. They use numbers instead of analogous physical quantities to simulate ongoing, or real-time processes. Because they are discrete events, commercial transactions are in a natural form for digital computation. This is one reason that digital computers are so widely used in business data processing. Machines that combine both analog and digital capabilities are called hybrid computers.

Many business, scientific, and industrial computer applications rely on the combination of analog and digital devices. The use of combination analog devices will continue to increase with the growth in applications of microprocessors and microcomputers. An example of this growth is the trend toward installing control systems in household appliances such as microwave ovens and sewing machines. In the future we will have complete indoor climate control systems and robots to do our housecleaning. Analog sensors will provide inputs to the control centers of these systems, which will be small digital computers.