

✓ Input Design

Input design is the process of converting user-originated inputs to a computer based format. In the system design phase, the expanded data flow diagrams identifies logical data flows, data stores, sources and destinations.

A system flow chart specifies masterfiles, transaction files, and computer programs. Input data are collected and organized into groups of similar data

Input Data : The goal of designing input data is to make data entry as easy, logical and free from errors as possible. In entering data, operators need to know the following :

- (a) The allocated space for each field.
- (b) Field sequence, which must match that in the source document;
- (c) The format in which data fields are entered.

Source Documents

Source documents may initiate a processing cycle as soon as they entered into the system. Source documents may be entered into the system from punch cards, from diskettes, or even directly through keyboards. A source document may or may not be retained in the candidate system. Thus, each source document may be evaluated in terms of :

- (a) It is continued use in the candidate system.
- (b) The extent of modification for the candidate system.
- (c) Replacement by an alternative source document.

✓ Various Input Methods and Devices

Source data are input into the system in a variety of ways. The following media and devices are as follows :

(a) Keyboard : The important data entry device is the keyboard. In some cases keyboards are used to enter the data into punched cards or punched tape.

The small assemblies of keys are generally called keypads. When an operator depresses a key, electric signals must be generated which will enable the computer to determine which key was pressed. This is called encoding.

(b) Magnetic Ink Character Reader (MICR) : In this method, human readable characters are printed on documents (such as cheques) using a special magnetic ink. Special font has been set for these characters by American Banking Association. A MICR reads these characters by examining their shapes, using a 7×10 matrix, it determines. From the response of the segments of the matrix to the magnetic head. This information is transmitted to the system.

(c) Optical Character Reader (OCR) : An optical character reader is used to read characters of special type font (or fonts) printed on the conventional paper with the conventional ink. The printed characters are examined by passing them under a strong light and a lens system, which differentiates light from inked areas, and a logical system which attempts to determine which of the possible characters is being examined.

(d) Optical Mark Reader (OMR) : In this method, special preprinted forms are designed with boxes which can be marked with a dark pencil or pen. Each box is annotated distinctly so that the user clearly understands what response he is making. Such a document is read by a document reader known as optical mark reader (OMR) which translates the marks into electrical pulses which are transmitted to the computer.

The OCR's are best suited for—

- Objective type answer papers in examinations in which large number of candidates appear.
- Various types of surveys where responses can be restricted to one or more out of a few possibilities.
- Order forms containing a small choice of items.
- Time sheets of employees where start and stop times may be marked.

(e) Mouse : The mouse is a pointing device with a roller on its base. Its size is about the size of the normal cake of bath soap. When a mouse rolls on a flat surface, the cursor on the screen also moves in the direction of the mouse's movement. A movement of the mouse across a flat surface causes the roller to move and potentiometers coupled to the roller, sense the relative movements.

(f) Touch Screens : An emerging technology that will greatly impact input design in the near future is the touch screen display. Such displays are common in handheld and palm-top computers that are finding their way into countless information system applications.

(g) Light Pen : A light pen is also a pointing device. The light pen consists of a photocell mounted in a pen-shaped tube. When the pen is brought in front of a picture element of the screen, it senses light coming from a limited field of view.

The light coming from the screen causes the photocell to respond by generating a pulse. The electric response is transmitted to a process or that identifies the pixel. The light pen is pointing to the light pen is also used to draw images on the screen. With the movement of the light pen over the screen, the lines are drawn.

✓ Output Design

Computer output is the most important and direct source of information to the user. Efficient, intelligible output design should improve the systems relationships with the user and helps in decision making. A major form of output is a hard copy from the printer. Printouts should be designed around the output requirements of the user.

Output Media and Devices

The following media and devices that are used are as follows :

1. Printers : A most convenient and useful method by which the computer can deliver information is by means of printed characters. Printers can be divided into two distinct categories.

(a) Impact Printers : In these printers, there is mechanical contact between the print head and paper. E.g., Line Printers and character printers.

(b) Non-impact Printers : In these printers, there is no mechanical contact between the print head and paper. E.g., Dot Matrix printers and Letter quality printers.

2. Plotters : Many applications require a graphical output apart from printed output. For e.g., pie charts, bar charts and graphs with annotations are useful representation of information. Plotters are the output devices that produces good quality drawings and graphs. There are two types of plotters :

(a) Drum Plotters

(b) Flat bed Plotters

3. Cathode Ray Tube (CRT) : A cathode ray tube is a type of analog display device. Cathode ray tubes are special, electronic vacuum tubes that use focused electron beams to display images. Though tubes of this type are used for many purposes. Cathode ray tubes are most famous for their use in such things as televisions, oscilloscopes, computer and radar displays, and automated teller machines.

A cathode ray tube has a cathode or negatively charged terminal. In a cathode ray tube, this terminal is a heated filament, much like the filament seen in a light bulb. The filament is contained inside a vacuum with a glass tube. Inside the tube, a beam of electrons is allowed to flow from the filament into the vacuum. The flow of the electrons is natural, not forced.

Cathode ray tube are found in oscilloscopes, and similar devices are of used in T.V. picture tubes and computer displays. The name goes back to the early 1900's. Cathode ray tube use an electron beam, before the basic nature of the beam was understood, it was known as cathode ray because it is originated from the cathode (negative electrode) of a vacuum.