

Symbols related to SYSTEMS

**Input/output function in card medium (all varieties):**

- PUNCHED CARD**: A collection of punched cards.
- ★ Card File**: A collection of related punched-card records.

**Other specific media:**

- DOCUMENT**: Proof- or adding machine tape, or other batch-control info.
- ★ Magnetic Tape**: TRANSMITTAL TAPE
- ONLINE STORAGE**: An operation using a key-driven device—such as punching, verifying, typing.
- ★ Magnetic Disk**: KEYING
- ★ Core**: Magnetic Drum
- ★ Magnetic Drum**: Other specific media for input/output functions.

**Merge and Extract:**

- MERGE**: Combining two or more sets of items into one set.
- ★ Callus**: Merging with extracting; forming two or more sets of items from two or more other sets.
- ★ Sort**: Arranging a set of items into sequence.
- ★ Off-line Storage**: Storing offline, regardless of recorded medium.
- EXTRACT**: Removal of one or more specific sets of items from a set.

**Display and Manual Input:**

- DISPLAY**: Information display by online indicators, video devices, console printers, plotters, etc.
- MANUAL INPUT**: Information input by online keyboards, switch settings, pushbuttons.

**Manual Operation:**

- MANUAL OPERATION**: Any offline process (at "human speed") without mechanical aid.
- AUXILIARY OPERATION**: Offline performance on equipment not under direct control of central processing unit.

**Communication Link:** Function of transmitting information by a telecommunication link. (Vertical, horizontal, or diagonal, with arrowheads for clarity; bidirectional flow shown by two opposing arrowheads.)

BASIC Symbols (shown on other side of envelope) also are used in systems flowcharting.

Your IBM representative can give information about computerized flowcharting with the IBM System/360 Flowchart Program

FLOWCHARTING TEMPLATE

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Symbols on this envelope — reflecting additions and changes — conform to the International Organization for Standardization (ISO) Recommendation R1028 Flowchart Symbols for Information Processing, and conform to American National Standard Flowchart Symbols and Their Usage in Information Processing, X3.5 — 1970. All ANSI (American National Standards Institute, Inc.) symbols are equivalent to the ISO symbols. IBM uses beyond ISO and ANSI are three symbols — offpage connector, transmittal tape, keying — identified IBM.

★ Composite Symbols (preceded by a star) are those drawn by adding to or combining shapes provided by cutouts in the template.

On this envelope, symbols are in three groups: (1) basic symbols; (2) processing and sequencing symbols related to programming; (3) input/output, communication link, and processing symbols related to systems.

BASIC Symbols

**PROCESS** (rectangle): Any processing function; defined operation(s) causing change in value, form, or location of information.

**★ Comment, Annotation** (star in circle): Additional descriptive clarification, comment. (Dotted line extends to symbols as appropriate.)

**INPUT/OUTPUT** (parallelogram): General I/O function; information available for processing (input), or recording of processed information (output).

**CONNECTOR** (circle): Exit to, or entry from, another part of chart.

**Special OFFPAGE CONNECTOR** (pentagon): For entry to or exit from a page.

**ARROWHEADS and Flowlines**: In linking symbols, these show operations sequence and allowable direction. Arrowheads required if path on any linkage is not left-to-right or top-to-bottom.

**Flowlines can cross**: Meaning they have no logical interrelation.

**Two incoming flowlines can join an outgoing line at junction point**.

**Three incoming flowlines can join an outgoing line at junction point**, if four flowlines are colinear in pairs, one pair requires opposing arrowheads.

Symbols related to PROGRAMMING

**DECISION** (diamond): A decision or switching-type operation that determines which of a number of alternative paths followed.

**PREPARATION** (hexagon): Instruction modification to change program—set a switch, modify an index register, initialize a routine.

**★ Predefined Process** (rectangle with star): One or more named operations or program steps specified in a subroutine or another set of flowchart.

**TERMINAL INTERRUPT** (circle with star): A terminal point in a flowchart—start, stop, halt, delay, or interrupt; may show exit from a closed subroutine.

**Parallel Made** (two vertical lines): Beginning or end of two or more simultaneous operations (note examples of arrowhead detail).

BASIC Symbols (shown at top) also are used in program flowcharting and in systems flowcharting (see other side of envelope).



