Welcome to your Life as a Programmer in 1970

(As lived at NCR Ltd. in London)
Please ask questions during the talk in 1970 terminology.

Welcome to your Life as a Programmer in 1970
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                          Topics
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   *  Communications

   *  Program design tools

   *  Program implementation

   *  Computer access

   *  Disk pack and drive care

   *  Computer operations tips
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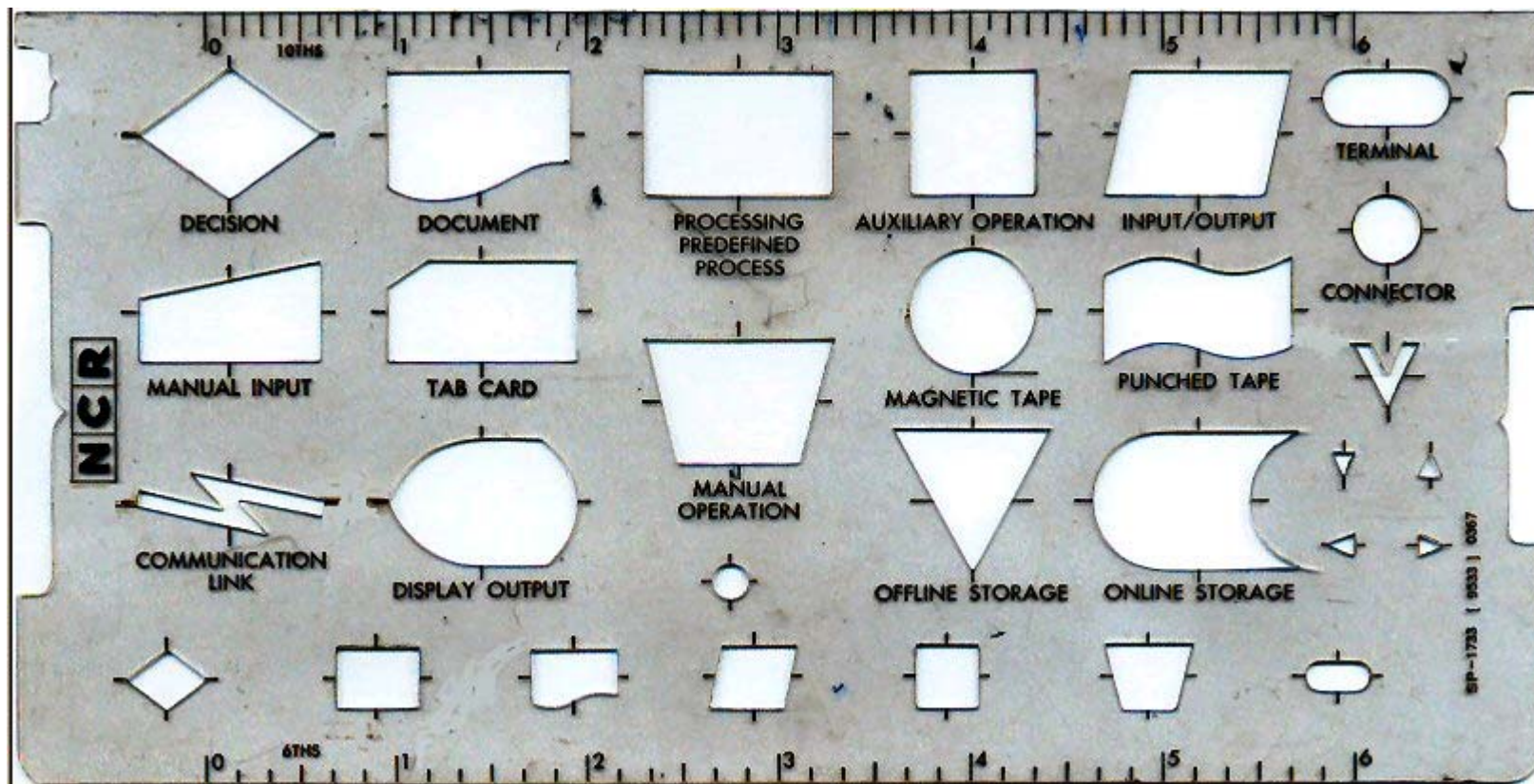
One-to-One, or to Few, Communications
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* Telephone - Effective and cheap within England. Less
  useful for talking to people in Dayton, because of cost
  and time zone issues.

* Inter-office mail envelope - works well within building,
  and to other NCR offices.

* Telex - Effective and cheap delivery of short text
  messages anywhere within a few hours. Mark "urgent" if
  it really is urgent, to get faster delivery.

* First Class Letter - Next day delivery in England. A few
  days for delivery to USA.

* Packages are <u>not</u> airmail, unless marked. Airmail
  requires additional postage. International non-airmail
  packages can take weeks.

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                  One-to-Many Communications
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* Short content: Write a memo.

  Fill out the memo form <u>clearly</u>.

  Take it to the typing pool.

  Proof read and mark corrections on the copy.

  Repeat the last two steps until it is correct.

  Initial by your name to indicate it is ready to send.

  Return to the typing pool for copying and distribution.

* Long content, such as documents for review:

  Attach a routing slip listing recipients, and give it
    to the first person on the list.

  When you get a routed document, review promptly, cross
    off your name, and pass to anyone who has not yet
    seen it. If you are the last reviewer, return it to
    the originator.

NCR

DECISION

DOCUMENT

PROCESSING
PREDEFINED
PROCESS

AUXILIARY OPERATION

INPUT/OUTPUT

TERMINAL

MANUAL INPUT

TAB CARD

MAGNETIC TAPE

PUNCHED TAPE

CONNECTOR

COMMUNICATION
LINK

DISPLAY OUTPUT

MANUAL
OPERATION

OFFLINE STORAGE

ONLINE STORAGE

Go To Statement Considered Harmful

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* Recent letter to the editor of Communications of the
  ACM, from Edsger W. Dijkstra. (March 1968)

* Highly controversial.

  Some groups have started applying these ideas, others
    think extensive use of GOTO is essential for writing
    sufficiently compact and efficient code.

* Groups following Dijkstra's ideas tend to use more
  pseudo-code and less flow charts.

* There is a utility to generate a line printer flow chart
  from a NEAT/3 program.

  Use this if you are not depending on flow charts for
    design, but management requires a flow chart on file.

CODING WORKSHEET

NCR CENTURY

NCR

⌐○○¬ = PAPER TAPE FORMAT CODE

Program _____ Prepared by _____

Date _____ Page ____ of ____

PAGE	LINE	REFERENCE	OPERATION	OPERANDS	COMMENTS	IDENTIFICATION
	0.3.0 C					
	0.6.0 C					
	0.9.0 C					
	1.2.0 C					
	1.5.0 C					
	1.8.0 C					
	2.1.0 C					
	2.4.0 C					
	2.7.0 C					
	3.0.0 C					
	3.3.0 C					
	3.6.0 C					
	3.9.0 C					
	4.2.0 C					
	4.5.0 C					
	4.8.0 C					
	5.1.0 C					
	5.4.0 C					
	5.7.0 C					
	6.0.0 C					
	6.3.0 C					
	6.6.0 C					
	6.9.0 C					
	7.2.0 C					
	7.5.0 C					
	7.8.0 C					
	8.1.0 C					
	8.4.0 C					
	8.7.0 C					
	9.0.0 C					

*TRADEMARK REG. U.S. PAT. OFF.

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              Punch Cards - Keypunch Service
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* Large key punch jobs should be turned in at the computer
  room office.

* Coding sheet pads for commonly used card layouts are in
  the office supplies cabinets in each department. If you
  cannot find one you need, ask your group secretary to
  order it.

* Use a soft pencil, so that you can erase without leaving
  an indentation.

* Write clear block capitals using one column for each
  character. A punctuation mark such as "," is a
  character.

* Cross the digit "0" and put serifs on the letter "I", or
  other consistent, clear, stated convention.

Typing your own Punch Cards
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* Key punch machines in the computer room and other locations

* Use for reasonably small numbers of cards

* A customized drum card will save time if you need to type multiple cards in the same format.

Computer Access
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* Computer room on first floor.

  NCR Century 100 16 KB and 32 KB

  All releasable software must be tested on 16 KB configuration unless there is permission to release with a larger required memory size. Note that only 13.5 KB is available for user programs.

  NCR Century 200 – Big machine, more memory, more hardware instructions.

* Book week in advance – form in computer room office

* To get smaller, more frequent, slots work with one or two other programmers to share an allocation.

* No smoking, food, or drink in the computer room.

* Always step on the sticky mat on the way in.

Care of Disk Packs and Drives

* Disk packs are big, heavy, but very delicate
* The disk drive's read-write heads float over the disk pack's surfaces, riding on the boundary layer, with a gap smaller than the diameter of a human hair.
* If any problem, such as failure to read data, mark both the <u>pack</u> and the <u>drive</u> "do not use" and inform computer operations immediately.
* Packs must not be mounted unless at stable computer room temperature.

  Allow enough time, overnight is best, between bringing a pack into the computer room and using it.

  Absolute minimum time depends on how long the pack was outside the computer room environment and the conditions to which it was exposed - consult computer operations.

* Unmount the disk pack before powering off the drive.

Computer Operation Tips
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* Power up processor, then peripheral controllers, then peripherals.

* Power down in the reverse order - do not just switch off at the wall.

* Be careful printing. A line printer driven by a program in a page feed loop is scary.

* When booting, always use a date card or tape with the correct date. The computer will believe you, and date files and printouts accordingly.

* If all else fails, power off completely, count to ten, and then power up again.

Images courtesy of THE CORE MEMORY, http://www.thecorememory.com