



UNLOCKING
CONSCIOUSNESS



BRIAN MIND FORUM

Appendix 034

A Short Description of Programming Languages

Computer languages were invented because writing program in the machine code in which all computers work is too difficult. The first was Fortran [FORmula TRANslation]. Languages fall into four categories. For some years program was either '*compiled* or '*interpreted*'.

1. A compiler is a program that translates the sequence of instructions written in the programming language (known as the subject code) into the machine code that on all subsequent occasions runs the applications (the object code). *Compiled* programs are more efficient, but the object code cannot be edited.
2. *Interpreter* programs are permanently resident in all the applications. The instructions written in these languages stay in the computer in the form in which they are written. Every time this program is activated the interpreter translates the instructions into machine code. Interpreted programs are slower but the program can be freely and easily edited to accommodate changing requirements, or to add new applications.
3. In the early eighties a variation of interpretive programs was developed to allow '*attributes*' of the data to be embedded into a text stream. These instructions caused the program to change the format of subsequent text. One of the first programming languages to expand interpretive programming in this way was CLUE (Commands and Layouts for the User made Easy) which made it easy to use the new personal computers on the market to be used as word processors.

Users could set up databases and print information like catalogues, using all the techniques of typesetting. Embedded program *instructions* selected the data; embedded *attributes* selected layout features like the size of type, bold, italic, centred and so forth. This concept was generalized in the typesetting instruction language developed later in the eighties in response to the arrival of laser printers. It is called SGML (Standard General Mark-up Language). This is an enabling framework that is open to users to specify. The architecture of SGML was so successful it was used as the basis for IITML (HyperText Mark-up Language) and then HTTP (HyperText Transfer Protocol), the language of the web. HTML is a fixed

language. XML extends this standard to provide an enabling framework, which can interpret attributes.

4. The fourth type of program language is both compiled and interpreted. An example is JAVA. The double process allows one single original program written in the JAVA language to operate across different operating systems, hardware and software.

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