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EXHIBIT 12

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COMPREHENSIVE COVERAGE FOR ALL COMPUTER USERS

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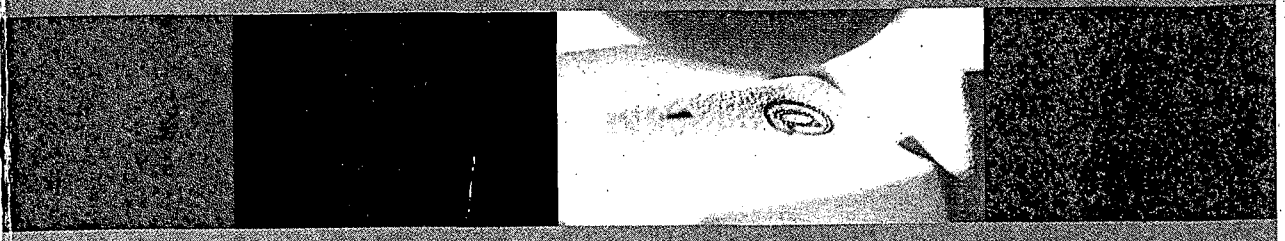
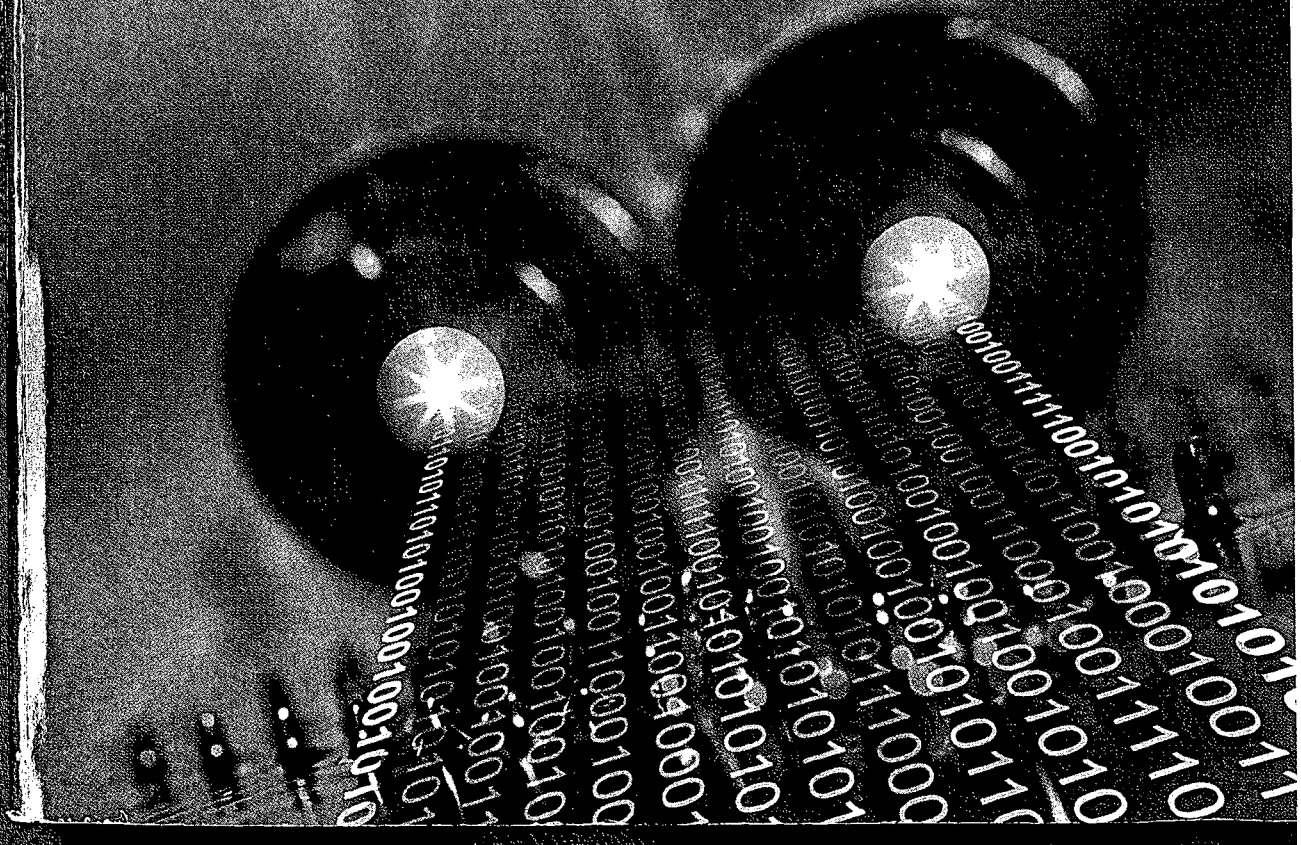


DICTIONARY OF Computing



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culation proceeds each solution can be used as a starting approximation in an *iterative method for solving the next problem.

continuous function A *function from one *partially ordered set to another having the property, roughly speaking, that least *upper bounds are preserved. A function

$$f: S \to T$$

is said to be continuous if, for every *directed subset X of S, f maps the least upper bound of X to the least upper bound of the *image of X under f. Continuous functions are significant in *denotational semantics since they correspond to the requirement that a computational process produces arbitrarily close approximations to the final output, given arbitrarily close approximations to the total input.

A continuous function $f(x)$ has no breaks or instantaneous changes in value. In the hierarchy of mathematical functions the smoothest are those, such as $\sin x$, $\cos x$, that can be differentiated any number of times, always producing a continuous function.

continuous inkjet printer *See* INKJET PRINTER.

continuous signal, system *See* DISCRETE AND CONTINUOUS SYSTEMS.

continuous simulation *See* SIMULATION.

continuous stationery *See* STATIONERY.

continuous-tone image An image, such as a photograph, where the gray levels in the image are continuous and not discrete.

contradiction *See* TAUTOLOGY.

contrapositive of a conditional, $P \to Q$. The statement

$$\neg Q \to \neg P$$

where $\neg$ denotes negation. The contrapositive of a conditional is therefore equivalent to the original conditional. *See also* CONVERSE, INVERSE.

control bus A *bus that is dedicated to the passing of control signals.

control character A character that when typed at a keyboard or sent to a peripheral device is treated as a signal to control operating functions. *See also* CHARACTER SET, ASCII.

control circuitry Electric circuits within a computer or peripheral that regulate its operation.

Control Data Corporation *See* CDC.

control design The design of a *control unit. Control units may be designed using *random logic or *microprogramming. Microprogramming was well suited to the control of the complex sequences of register transfers required by CISC instruction sets. Contemporary RISC processors with their emphasis on the rapid execution of simple instruction sets usually employ random logic control to optimize performance.

control flow The sequence of execution of statements in a program.

control-flow graph A *directed graph representing the sequence of execution in a program unit, in which nodes represent branching points or subprogram calls in a program, and arcs represent linear sequences of code. From the control-flow graph an analysis can show

the structure of the program,
starts and ends of program segments,
unreachable code and dynamic halts,
branches from within loops,
entry and exit points for loops,
paths through the program.

See also STATIC ANALYSIS.

control key *See* KEYBOARD, CONTROL CHARACTER.

controlled sharing Making used resources available to more than one using resource through an *access control mechanism.

controller A subsystem that governs the functions of attached devices but generally does not change the meaning of the data that may pass through it. The attached devices are usually peripherals or communication channels. One of the functions of the controller may involve processing the data stream in order to format it for transmission or recording.

control line A conductor in a multiwire interface that conveys a control signal.

control memory A
program store.

control points Poi
specification of curve
eral required shape.

control record A r
control totals derived
from other records i
or may not have son
Their purpose is to c
preceding records h
in some way. *See also*

control sequence
used to control the
eral device. The con
strings is defined in
dard does allow lati
to define proprietar
purposes, and many
use; 7-bit and 8-bit
characters are defin
widely used in the
also ESCAPE SEQUEN

control stack A st
contains an instruc
of the control unit
stack architecture.

control structur
language to expres
mon control struct
if...then...else,
repeat...until,

control total *See*

control unit (CU)
tral processor that
*registers, *count
to provide the fun
control the move
tween the memor
portions of the m
In the simplest
Neumann archite
contains a *progr
register, and a reg
decodes the *ope
two registers are
the *instruction regi*
then operates in
cycle. In the fetch
obtained (fetched
decoder determir
struction. If it is
struction the exe