

Unit 4 Test

See: Ch. 4: The Building Blocks: Binary Numbers, Boolean Logic, and Gates, Section - The Binary Numbering System

In a base-2 and a base-10 system, the value of a digit depends on its ____ within a number.

- ☒ specific position

A(n) ____ is an electronic device that operates on a collection of binary inputs to produce a binary output.

- ☒ gate

To construct an OR gate, you start with two transistors, and they are connected in ____.

- ☒ parallel

A(n) ____ transforms a set of (0, 1) input values into a single (0, 1) output value according to a specific transformation rule.

- ☒ gate

A large number of transistors, as well as the electrical conducting paths that connect them, can be printed photographically on a wafer of silicon to produce a device known as a(n) ____ circuit.

- ☒ integrated

CORRECT

The function of a(n) ____ is to select exactly one of its $2N$ input lines and copy the binary value on that input line onto its single output line.

- ☒ multiplexer

The most common format for storing color images is the ____ encoding scheme.

- ☒ RGB

The decimal-to-binary algorithm is based on successive divisions by ____.

- ☒ 2

Together, ____ and multiplexer circuits enable us to build computer systems that execute the correct instructions using the correct data values.

- ☒ decoder

CORRECT

Any an unsigned value greater than the largest unsigned whole number that can be represented in the computer results in the error condition called ____ overflow.

- ☒ arithmetic

CORRECT

The popular compression technique known as ____ code sets is often used to compress text but can also be used with other forms of data.

- ☒ variable-length

CORRECT

A ____ compression scheme is one in which no information is lost in the compression, and it is possible to exactly reproduce the original data.

- ☒ lossless

CORRECT

____ is when the leftmost bit of a number is used represent the sign while remaining bits are used to represent the magnitude of the value.

- ☒ sign/magnitude notation

CORRECT

Characters in the ASCII system are assigned to the integer values 0 to ____.

- ☒ 255

CORRECT

The ____ is the total number of cycles per unit time measured in cycles/second.

- ☒ frequency

CORRECT

A simple compression technique that can be used on almost any form of data is ____.

- ☒ run-length encoding

CORRECT

____ circuits are used to determine the order in which operations are carried out and to select the correct data values to be processed.

- ☒ Control

CORRECT

A(n) ____ circuit is a collection of logic gates that transforms a set of binary inputs into a set of binary outputs and in which the values of the outputs depend only on the current values of the inputs.

- ☒ combinational

CORRECT

The area of mathematics that deals with the rules for manipulating the two logical values true and false, is called ____.

- ☒ Boolean logic

CORRECT

To convert a description of a circuit's desired behavior into a circuit diagram composed of AND, OR, and NOT gates, a circuit ____ algorithm is used.

- ☒ construction

CORRECT