Glossary

Access 2000 An easy-to-use tool to develop database applications. Part of the Microsoft Office 2000 suite.

ACID Stands for *atomic*, *consistent*, *isolation*, and *durable*, which describe the major characteristics of a *transaction*.

Active Directory A component of *Windows 2000 Server* that allows you to find information about various resources located across a network.

ActiveX A set of technologies that allows you to build and use *objects* using the *Component Object Model* (COM) and *Distributed Component Object Model* (DCOM).

ActiveX Controls Compiled software components developed with ActiveX technology that run on client computers.

ActiveX Data Objects (ADO) An object-oriented way to access a database such as Microsoft SQL Server, Access, and Oracle from an *application program*. This technology replaces older technologies such as *Data Access Objects (DAO)* and *Remote Data Objects (RDO)*. This is a high-level implementation of *OLE DB*, just like DAO and RDO are high-level implementations of *ODBC*.

ActiveX DLL A *COM* component residing in a *DLL* file that is loaded into the main program's address space at runtime. It is also known as an *in-process* object.

ActiveX EXE A *COM* component residing in an EXE file that is loaded into a separate *address space*.

Address Space The range of addresses that can be accessed by a program in virtual memory. Address space includes memory that can be used by an application and memory reserved for use by the operating system.

ADO See *ActiveX Data Objects*.

Administration Queue A *queue* that is used to hold system-generated acknowledgement messages, which indicate whether or not an *application message* reached its destination.

Aggregate The process of combining the values of a single column across a set of rows. Typical aggregation functions are: **Count**, **Max**, **Min**, and **Sum**.

Alias An alternate name for a column or table that exists only for the duration of a query.

ANSI SQL A standard for the *SQL* language from the American National Standards Institute (ANSI). The current version of the standard is referred to as SQL-92.

Apartment Model Threading A method that ensures that objects created in Visual Basic can be used by *multithreaded applications*. As each object is created, it is assigned to a single thread. All calls from code on different threads will need to be *marshaled* to access the object.

API See *Application Programming Interface*.

Application A collection of programs and *databases* that allows a *user* to solve a problem.

Application Log A file containing SQL Server status information in a Windows 2000/NT system.

Application Message A message generated by an application and sent using *COM+ Queued Components*. This is different from a *system message*, which is generated by the COM+ queued components, which stores copies of application messages after they are processed.

Application Programming Interface (API) A well-defined set of rules and calling conventions that describes how a programmer can invoke the services of another application or the operating system.

Application Queue A public or private *queue* that is used to send and receive application-specific messages.

Application Server A computer dedicated to running the *business rules* of an organization. These rules are often implemented using *transactions* running under the control of a *transaction server*.

Asynchronous Processing The type of processing that occurs when a program calls another program or component to perform a task and both programs continue to operate independently. See also *Synchronous Processing*.

Atomic A object that can't be subdivided. See *Atomic Field*. Also part of the *ACID* test for *transactions* when it refers to the concept that either all of the processing in a transaction must complete successfully or not if it completes. It ensures that there is no such thing as a partially-completed transaction.

Atomic Field A field whose contents can't be broken down any more. (For example, a date is not atomic since it can be broken down into day, month, and year, while a month is atomic since it can't be broken into smaller pieces.)

Authentication The process of establishing a *user's* identity. This usually involves providing a user name and a secret password to the operating system or to a *database server* to prove that you have access to the functions associated with the user name.

Authenticated User A person who has passed the *authentication* test.

Authorization The process of determining the access rights to functions and data that an *authenticated user* is allowed to perform.

Axis One dimension of an OLAP *cube*.

Backup A copy of the information in a database taken at a given point in time. It can be used to *recover* the information in the database.

Base Table A real table in the database that is referenced in a view.

Batch Job A process where a non-interactive program is executed, typically at a time when no one is around to control its execution.

Binary Large Object (BLOB) A *column* containing information such as an *image* that can exceed the size of a normal binary column. It often requires special handling when compared to a normal column.

Binding The process of locating an object and associating with your program. See also *early binding* and *late binding.*

BLOB See *Binary Large Object*.

BMP An *image* file format developed by Microsoft. It supports many different image formats (8-bit color, 24-bit color, and so on), but files are usually larger than with other image formats, such as *GIF* and *JPEG*.

Browser A program that is designed to translate *HTML* tags into a visible document.

Business Logic The set of *business rules* used to operate a business or other organization. The rules describe what an application program is supposed to do in a given situation. For example, a business rule may require a program to place an order for an item in inventory when its quantity on hand falls below a certain level.

Business Rule A set of instructions that implements a business procedure. For example, the steps that are taken to purchase a book by a business are considered a business rule. Business rules are often implemented as part of a *program* or set of programs that runs on a computer.

By Reference A type of parameter passing in which the address of a variable is passed to a routine. This allows the routine to directly change the contents of the variable. See also *By Value*.

By Value A type of parameter passing in which a copy of the variable is passed to the routine. If the routine changes the value of this parameter, the original variable remains unchanged. See also *By Reference*.

Cache A buffer that is used to hold frequently-used information. In a database system, a cache typically resides in the computer's memory and holds information from the database's disk storage.

Calculated Member A *member* of a *cube* that is computed on the fly based on data that already exists in the cube.

Cell The intersection of a *row* and a *column* in a *table*, containing a single value. In an OLAP *cube*, a cell represents the intersection of all of the *dimensions*.

Child A *member* in the next lower *level* in a *hierarchy*. This member represents a subset of the information of its *parent*.

Class Module A template from which an object is created. This template allows you to define *properties*, *methods*, and *events*, which can be used by other parts of your application. A *COM* component is built from one or more class modules in an *ActiveX DLL* or *ActiveX EXE*.

Client The user side of a multi-computer application. For example, Query Analyzer, Excel, and MapPoint can all be client programs for an SQL Server database.

Client/Server A programming technique where a *client* program makes requests of a *server* program. In the case of a *database server*, the *client* program running on the user's computer generates requests for information or supplies commands to the database server, which processes them and returns the results back to the calling application.

CLSID The class identifier for an object. All objects are assigned a CLSID, which is used as a key in the *Windows Registry* to locate the object's code. A CLSID is stored as a *GUID*, so that it will always be unique.

Clustered Index A special type of index that is used to determine the order of the rows in a table. A table can contain only one clustered index.

Codify A technique that replaces a field in a database with an encoded value that is used as a key to another table where the original field is extracted. This is typically used when dealing with "standard" text fields. For example, the text field JobTitle can be codified into an integer field called JobTitleCode. Using JobTitleCode in your database ensures that all employees have the same value for their job title. Since JobTitleCode is much smaller than JobTitle, you'll also save space in the database.

Column An attribute of a *table* that contains information. The concept of a column is similar to a *field* in a *record*. Also referred to as *data elements*.

COM See *Component Object Model*.

COM+ The next version of COM that includes many new services, some of which were previously independent of COM. These services include the *COM+ Transaction Server* (formerly known as the *Microsoft Transaction Server*) and *COM+ Queued Components*.

COM+ Application The primary unit of management by the *Component Services* tool. It consists of a single *DLL* or *EXE* file that contains a set of one or more *COM* components.

COM+ Queued Components An easy to incorporate *message queues* with COM+ components. This feature allows you to issue a method or access a property in an asynchronous fashion.

COM+ Transaction Server A software package that manages the execution of *transactions* under *Windows 2000 Server*. See also *Transaction server*.

Commit The act of saving a set of changes in a database. The changes can be abandoned by performing a *Roll Back*.

Compile-Time Refers to activities performed and events that occur while compiling a program.

Component An object that contains a set of *properties, methods,* and *events*. It is implemented in Visual Basic using a *class module* and represents a type that can be associated with a variable.

Component Object Model (COM) A technology used to create and access *objects* from a *Windows* program.

Component Services A utility included with *Windows 2000 Server* that is used to manage the *COM+ Transaction Server*.

Composite Field A field that can be broken into smaller parts. A date is an example of a composite field, since it can be broken into year, month, and day.

Composite Index An index that uses multiple columns as the key value.

Composite Key A *key* containing more than one *column*.

Concatenation The process of combining multiple *strings* into a single string by appending one string to the end of another.

Concurrency Occurs when multiple users share a resource; often requires *locks* to ensure that the sharing is done in an orderly fashion.

Connection A link between the client program and the *database server*.

Connection String A *string* containing the parameters necessary to connect to the *database server*. Typically used by ADO and RDO object models.

Consistent Part of the *ACID* definition of a *transaction*. It ensures that the work done by a *transaction* leaves the application in a consistent state.

Constituent Controls The set of controls that are used in an *ActiveX UserControl* object.

Constraint A restriction placed on a *column* or a set of columns that any value entered into the column must meet. Some examples of constraints are *foreign key*, *primary key*, and *unique*.

Container A c*ontrol* that can contain other controls.

Control An *object* that can be placed on a Visual Basic form or report to provide a specific function or to interact with the user. Some examples of controls are text boxes, where the user can enter and edit text *strings*, labels that display text values, and buttons that can be pushed by the user.

Cookie A set of data that is maintained by a user's *browser* and is available for processing by Web server based applications.

Cross-tabulation Report A report that aggregates every combination of two or more data fields.

Crosstab Report See *Cross-tabulation Report*.

Cube A set of data organized by *dimensions* and containing *measures*. The data is generally extracted from a *data warehouse* and is analyzed by tools like Excel *PivotTables*.

Cube Browser A tool included in the OLAP Manager that allows you to view the data in a cube.

Cube Editor A tool included with the OLAP Manager that allows you to view and change the structure of a cube.

Current Record The single row pointed to by the *cursor*. The current record can be changed by moving the cursor to a different row.

Cursor Used by an application program to point to a specific *row* in a *table* or *recordset*. This row is then considered the *current record*.

DAO See *Data Access Objects*.

Data Access Objects (DAO) An obsolete way to access a *database* from Visual Basic. *ActiveX Data Objects* have replaced this technology.

Data Bound Controls A way of linking a *control* in a Visual Basic program to a *column* in a *recordset*. Whenever the value in the column changes, it will automatically be updated in the control. Changing the value in the control will change the value in the *database*.

Data Consumer Receives data from a *data source* in the ADO object model.

Data Control A Visual Basic *control* that links other controls on a form to a *database*. This control supports scrolling through a *recordset* one record at a time and displaying the contents of the recordset on the *bound controls*. You can also use the data control to insert new records, update existing records, or delete existing records.

Data Dictionary A repository that contains detailed information about every field, table, and view in a database and how they are related to each other.

Data Element Another name for *column*.

Data Environment A tool in Visual Basic that simplifies database programming. It allows you to define and design your access methods to the *database*.

Data Mart A concept identical to a data warehouse, but smaller in scope. Rather than encompassing all of the data in an organization, a data mart may only contain information about a single department or application.

Data Scrubbing The process of analyzing data for consistency before data is loaded into a data warehouse.

Data Source The source of the data that is to be loaded into a *dimension* or *member* of a cube. A data source is also the source of data in the *ADO* model. It provides data to *data consumers* for processing.

Data Transformation Services (DTS) A tool in SQL Server that allows you to move and transform data from one database to another. This tool is extremely useful when you are extracting data from your production database to your data warehouse.

Data Type Defines the storage mechanism for a *column*. It also determines the set of basic operations that can be against the column. Some common data types include CHAR, which hold strings of characters, and INT, which hold numeric values.

Data Warehouse A central repository containing data that is made available to satisfy unstructured requests for information by end users. The data is generally extracted from production applications and summarized to minimize the amount of work needed to satisfy the request.

Database A collection of *tables, indexes,* and other *database objects* that are used by one or more *applications* stored inside a *database server*.

Database Administrator (DBA) A database administrator is the person responsible for the design and maintenance of a database. Besides creating and changing databases, this person is also responsible for such tasks as database backup and database recovery.

Database Client The computer that is used to access a *database server*. Typically, this computer will run either a tool such as Query Analyzer to perform *query* operations against the database or a custom application that allows the user to add, delete, and modify information in the database.

Database Diagram A graphical representation of a subset of the *database objects* contained in a database.

Database Management System (DBMS) A highly specialized piece of software that is used to store and retrieve data quickly and securely. It exists independently of an application program and allows concurrent access to the data it contains. See also *Database*.

Database Object A *table*, *column*, *index*, *trigger*, *view*, *constraint*, *rule*, *stored procedure*, or *key* in a database.

Database Owner (DBO) The *user name* of the individual who is responsible for the *database*. This individual is also known as the *database administrator*.

Database Query See *Query*.

Database Replication The process whereby the contents of one database are synchronized with another database.

Database Server The computer that contains the set of *databases* and the software that services requests from *database clients*.

Database Structure See *Database Object*.

DBA See *Database Administrator*.

DBMS See *Database Management System*.

DBO See *Database Owner*.

DCE See *Distributed Computing Environment*.

DCOM See *Distributed Component Object Model*.

DCOM Configuration Utility (DCOMCNGF) A utility program available in *Windows* that is used to maintain the additional information necessary to find *COM components* in a distributed environment.

Dead-Letter Queue A *system queue* that is used to hold *application messages* that can't be delivered.

Decision Support System An application designed to help people make better business decisions. Typically, a decision support system uses a data warehouse as the source of the data to be analyzed.

Delegation The impersonation of clients over a network when using DCOM or COM+. See also *Impersonation*.

Design-Time Refers to activities performed and events that occur while writing a program.

Dimension A part of the *cube* that is used to organize the *members* in the cube. A dimension may have one or more *levels,* which are used to group data values. For instance, a time dimension has the All level at the top, followed by a Years level containing the set of years, and a Months level containing the months in a particular year.

Distributed Component Object Model (DCOM) A superset of the *Component Object Model* (COM) that allows the distribution of objects over a local area and wide area network.

Distributed Computing Environment (DCE) The Open Software Foundation standards for distributed application services. These services include a distribute file system, a distributed security system, and *remote procedure calls*.

Dimension Table A table in a *data warehouse* that is used to index the values in a fact table.

DLL See *Dynamic Link Library*.

Drill Down The act of expanding the information displayed from a *cube* to see the next level of detail.

Domain A collection of computers in a Windows environment that share a common security database.

DTS See *Data Transformation Services*.

Dump See *Backup*.

Durable Part of the *ACID* definition of a transaction. It ensures that once a transaction has been completed, the operating system can always recover the work done by the transaction after a system failure.

Dynamic Link Library (DLL) A file containing compiled code that can be shared by multiple programs at *runtime*.

Early Binding Occurs when Visual Basic is able to determine the type of object you wish to access at development-time. To implement early binding, you must declare your variable as a specific object type, such as **Recordset** rather than **Object**. Early binding makes your program more efficient because less work is needed at *runtime* to determine the object's type. See also *Late Binding*.

Endpoints Represents each end of a TCP/IP connection. A specific TCP port number characterizes each endpoint.

English Query A tool included in Microsoft SQL Server 7 that allows you to enter queries using English-like questions and sentences.

Equijoin A join operation with two or more tables, where one field in one table must be equal to another field in the other table.

Event An external subroutine called by an *object* when a specific situation is encountered. This allows the program using the object to supply additional information to the object, or take a specific action based on information supplied by the object.

Excel 2000 A part of the Microsoft Office 2000 suite of programs that is used to analyze tabular data using worksheets and multi-dimensional data using PivotTables.

EXE See *Executable File*.

Executable File (EXE) Contains a compiled version of a program that can be loaded into memory and executed.

Export The process of moving data from a database to a file.

Expression An algebraic formula that can involve constants, columns, functions, and arithmetic operators. Often used in SQL statements.

External Transaction A *transaction* that includes units of work from more than one *resource manager*.

Fact Table A central table in a data warehouse whose primary key values link back to dimension tables. The remaining values typically describe a transaction within an organization such as a purchase. Sometimes these values are summarized according to the dimensions included in the table to reduce the amount of data stored.

Field An alternate name for *column* or *data element*.

Filter An expression that is used to identify a series of records in a query.

Friend Property A *property* that appears to be part of the public *interface* to a COM object, but can be accessed only by the other routines in the same project. Thus, you define a *friend property* in one *class module* and access it in another class module, just as if you had declared it as public. Friend properties can be used only in *ActiveX EXEs, ActiveX DLLs,* and *ActiveX Controls*.

Foreign Key A *column* or set of columns whose value must match the *primary key* of another *table*.

Full Backup A complete *backup* of a database. Can be used to restore the entire contents of a database without using any other backups.

Full-Text Query A *query* that searches for one or more words or phrases in a *column*.

Function A routine that returns a value based on zero or more parameters. Functions are typically used as part of an expression.

GIF See *Graphics Interchange Format*.

Graphics Interchange Format (GIF) A file format (which uses technology owned by Unisys Corporation) that is commonly used to store graphic *images* typically with 256 colors or fewer. Users whose *applications* use GIF images may have to pay a royalty fee to Unisys in order to use the technology.

Globally Unique Identifier (GUID) A 128-bit (16-byte) value that is generated by an algorithm that guarantees that the value will be unique. The algorithm that generates this value can be used at the rate of one new GUID per second for several centuries and never duplicate a value on your local computer or any other computer.

GUID See *Globally Unique Identifier*.

Hierarchy An arrangement of the *members* in a *dimension* into *levels* based on *parent child* relationships. For example, a time dimension is broken into years, years are broken into months, and so on.

Hierarchical Recordset A *recordset* in which a *column* in a particular *row* can contain another recordset.

HOPAP See *Hybrid OLAP Database*.

HTML See *Hypertext Markup Language*.

HTTP See *Hypertext Transport Protocol*.

HTTP User Agent A unique *string* that identifies the name and version of a Web browser. From this value, you can deduce its capabilities.

Hybrid OLAP Database (HOLAP) A Hybrid OLAP database uses techniques from both a MOLAP database and a ROLAP database to provide better performance than either approach.

Hypertext Markup Language (HTML) A simple language used to create a hypertext document consisting of tags to define formatting options and hypertext links.

Hypertext Transport Protocol (HTTP) A stateless object-oriented protocol used by Web clients and servers to communicate.

I/O See *Input/Output*.

Identifier A string of characters that is used to uniquely describe a database object, such as a *column* or *table*.

Identity Column A column in a table that contains a system-generated, monotonically-increasing value that is guaranteed to be unique within the table.

IID See *Interface Identifier*.

IIS See *Internet Information Server*.

Image A digital picture that can be stored on a computer. Many different image formats are available, such as *BMP*, *GIF*, and *JPEG*.

Import The process of copying data from a file to a *database*. This is the opposite of *export*.

Impersonation The ability to perform a task using the security permission of one user, while executing under the security permissions of another. See also *Delegation*.

In-process Object A *COM* object that is loaded into the same address space as the calling program. It is implemented in Visual Basic as an *ActiveX Control* or an *ActiveX DLL*.

Incremental Update The process whereby rows are added to a table, rather than replacing all of the rows in the table.

Index A database facility that stores details about the location of *rows* containing a specified *key* value. This *database object* allows the *database server* to retrieve rows from a *table* faster than without the index. Indexes are usually created based on typical searches performed by users to increase performance.

Input/Output (I/O) An operation whereby the computer either reads data from a device or writes data to a device. Some typical devices include disk drives, printers, keyboards, and modems.

Instance An object that has been allocated memory to hold information based on a template found in an *ActiveX DLL*, *ActiveX Control*, or *ActiveX EXE*.

Integrity Constraint See *Rule*.

Interactive User Refers to the user name associated with the keyboard and display on a *Windows* computer. While there is always an interactive user on a *Windows 98/95* computer, there may not always be an interactive user on a *Windows 2000/NT* machine. This is especially true of *Windows 2000/NT Server*.

Interface A way to access the services supplied by an *object*. A *COM* based object can contain zero or more *properties*, zero or more *methods*, or zero or more *events*. Standard interfaces are those defined by Microsoft. All *COM* objects are expected to implement IUnknown. IDispatch is required when you want to support late binding.

Interface Identifier (IID) The *GUID* that uniquely identifies an *interface*.

Internal Transaction A *transaction* where the *COM+ Queued Components* feature supplies the only resource manager.

Internet An international network that permits computers to communicate among one another using the TCP/IP suite of protocols.

Internet Information Server (IIS) Microsoft's high-performance Web server that runs on a *Windows 2000/NT Server* system.

Intranet An internal network for an organization that is based on the tools and protocols used by the Internet.

Intrinsic Controls *Controls* available in Visual Basic that are included with the runtime library. They are usually limited to performing relatively simple functions.

Isolation Part of the *ACID* definition of a *transaction*. It provides the viewpoint that each transaction operates independently of other transactions.

Job See *Batch Job*.

Journal Queue A *system queue* that is used to hold messages that have been processed and removed from a *transaction queue*.

Joint Photographic Experts Group (JPEG) An *image* file format optimized for 24-bit color images. It uses a compression scheme where data that may not be noticed by the user is thrown away and results in very small images.

JPEG See *Joint Photographic Experts Group*.

Junction Table The table in the middle of a *many-to-many relationship*.

Key A *column* or set of columns whose contents are used to identify one or more *rows*. See also *Primary Key*, *Foreign Key*, and *Index*.

Late Binding Occurs when Visual Basic is unable to determine the type of object you wish to access at development time. This happens when you declare your object variable as a general type, such as **Object** or **Variant**. Late binding slows your program at runtime because Visual Basic must determine the object's type each time it is accessed. See also *Early Binding*.

Level Describes the amount of detail displayed in a dimension. The lower the level, the more detail will be displayed.

License Key A way to prevent someone from redistributing an *ActiveX Control* you develop without your permission. The *license key* must be present either in the *Windows Registry* of the computer using the control or in the program using the control. Only controls whose license key is in the Registry can be used in the Visual Basic development environment.

Load Balancing The act of assigning new work or shifting existing work to the least-busy server in a defined group of computers. This helps to improve network performance by ensuring that all of the servers in the group of computers are equally busy.

Locking A process where a user is granted exclusive access to a particular *database object*. This prevents other users from changing the object until the first user has finished and released the lock.

Logical I/O An *I/O* request from the *database server* that may or may not be satisfied by information already in memory.

Login An identifier that gives an individual access to a *database server*. A *login* is mapped to a particular *user name* when accessing a specific *database*.

Many-to-Many Relationship A relationship between two *data elements* where a particular value for one field implies that the other field can have a particular range of values, while that field implies that the first field may also have a range of values. For example, an author may write many books, while a book may be written by many authors.

MapPoint 2000 An application that is a member of the Microsoft Office 2000 suite that is used to analyze geographic data.

MAPI See *Messaging Application Programming Interface*.

Marshaling The technique of sending interface message calls to an object on a different thread in the same address space or in a different address space.

Master Database The *database* used by the *database server* to manage all the other databases under its control.

MDX See *Multi-dimensional Expressions*.

Measure A numeric column that is included in a *fact table*. Typically contains information that can be analyzed.

Member An item in a *dimension* that represents one or more occurrences of data. The combination of a member and its parent values must be unique.

Message Information that is generated by an application or by the system and stored in a *message queue*.

Message Queue An application-generated queue that contains application-generated messages. Also used to refer to *Microsoft Message Queues*.

Messaging Application Programming Interface (MAPI) An interface developed by Microsoft to provide functions that developers could use to create e-mail enabled applications.

Metadata A collection of attributes that describes your database including, the data type of each column, the format that should be used to present the data, a description of the data, plus any other information that is useful in understanding how the data is created and how it should be used.

Method A way to access a subroutine or function to perform a specific task within an *object*.

Microsoft Message Queues (MSMQ) A feature that allows you to send asynchronous messages from one application program to another.

Microsoft Transaction Server (MTS) A server that manages distribute application *objects*. MTS has been superceded on Windows 2000 systems by COM+ Transaction Server.

Middle Tier The middle level of processing in an *n*-tier application system. Typically this tier consists of a *transaction server* such as the *COM+ Transaction Server*.

Model Database A *database* that contains all the default *tables* and supporting information that must exist in an empty database.

Module-Level Variable A variable defined at the start of a module. This variable can be accessed by any routine in the module, even if it is declared private. If it is declared public, it may be referenced by code outside the module. A *public variable* in a *class module* is treated as an object's property.

MTS See *Microsoft Transaction Server*.

Multi-dimensional Expressions (MDX) A language that is used for building queries that access a cube.

Multi-dimensional Database A multi-dimensional database stores information in a collection of large multi-dimensional arrays. This makes it easy to locate a specific piece of information quickly. However, this structure is extremely time consuming to load.

Multiprocessor A computer system with more than one CPU that is under *Window's* direct control. This allows two or more *threads* to be running at the same time.

Multithreaded A process that can have two or more active *threads* running at the same time.

N-Tier Application Indicates the number of computers where processing is performed as part of an application. A stand-alone computer is one-tier, and client/server computing is two-tier. DCOM and COM+ allow you to perform three-tier processing by adding another computer in between the client and server computers.

Nested Query A **Select** statement that contains one or more *subqueries*.

Nontransactional Message A *message* generated by an application that is not part of a *transaction*.

Nontransactional Queue A *queue* that is used to receive *nontransactional messages*.

Normalization The process of designing a database according to a set of well-defined rules that minimize duplication of information.

Null A condition that exists when a *column* doesn't have a value. This should not be confused with an empty string, whose value is a string of characters with a length of zero.

Object A software component that contains one or more *interfaces* that can be used to request information or perform functions.

Object Browser A function of the Visual Basic IDE that allows you to see the definitions of the *properties*, *methods*, and *events* of an object available to your program.

Object Code A collection of machine instructions and data that is loaded into memory for execution.

Object Pooling A facility in *COM+* that allows you to create a set of object instances that can be shared by the *transactions* running in the *COM+ Transaction Server*.

ObjectContext The object used to track the status of a transaction under *COM+*. It is created at the beginning of a *transaction*. At the end of the transaction, you can mark the transaction as successfully completed or abort all of the activities associated with the transaction.

OCX File A file that contains one or more *ActiveX Controls*. It is similar in structure to an *ActiveX DLL* file, but it must include extra *interfaces* that provide the graphical interface.

ODBC See *Open Database Connectivity*.

OLAP See *Online Analytical Processing*.

OLAP Manager A utility that allows you to manage an OLAP Server and contains tools that allow you to design and populate OLAP cubes.

OLAP Server A type of *server* that is designed to store *multi-dimensional databases* and to process queries against the data.

OLAP Services A facility in Microsoft SQL Server that includes tools like the *OLAP Manager* and a special server called OLAP Server that responds to requests to *Multi-dimensional OLAP databases*.

OLE DB An object-oriented programming interface to access a *database* or other data source that supports Microsoft's COM technology.

OLE DB Consumer A program that requests information from a data source using *OLE DB provider*.

OLE DB Provider A program that responds to requests for information from an *OLE DB consumer*.

One-to-Many Relationships A relationship between two *data elements* where a particular value for one *field* implies that the other field can have a particular range of values, while that field implies that the first field can have only one value. For example, there is a one-to-many relationship between a biological mother and her children. A mother may have many children, while a child has only one biological mother.

One-to-One Relationship A relationship between two *data elements* where a particular value for one *field* implies that the other field will have a particular value and vice versa. For example, there is a one-to-one relationship between a person and that person's social security number.

Online Analytical Processing (OLAP) A database technology that allows you to view multi-dimensional structures for data analysis.

Open Database Connectivity (ODBC) A technology developed by Microsoft that permits Windows programs to access different database systems. This technology has been superceded by *OLE DB*.

Operator A symbol that is used to perform computations, comparisons, and other tasks within an *expression*.

Out-of-Process Object A *COM* object that is loaded into its own address space. It is implemented in Visual Basic as an *ActiveX EXE* file.

Package The collection of information defined to Data Transformation Services that is used to *import* or *export* data from your database.

Page The fundamental unit of physical database storage. All *tables*, *indexes*, and other database information are mapped onto one or more pages, which are transferred as needed between disk and memory. In SQL Server 7.0, one page equals 8K bytes worth of data. 128 pages equals 1 megabyte of data.

Parameter A value or expression that is passed to a function.

Parent A *member* in the next higher *level* in a *hierarchy*. The parent represents the aggregation of the values of all of its *child* members.

Partition A storage container for data and aggregations of a cube. Every cube has at least one partition. Note that multiple partitions are only with some editions of SQL Server.

Partial Backup An incomplete *backup* of your database. A partial backup records the changes made since another backup was taken. Its primary advantage is that it runs much faster than a *full backup*. To completely recover your database, you will need a *full* backup and any other partial backups that were taken after the full backup was taken.

Pass-Through Query A query that is passed through the current server untouched onto another server for execution.

Pathname The fully qualified name of a queue. It is stored using the format machinename\queuename, where machinename is the name of the computer containing the queue and the queuename is the name of the queue.

Permission The ability to perform a specific function inside a *database*. Each user must have the proper *authorization* in order to use the resource specified by the permission.

Persistence The ability to save the information inside an object before it is destroyed and restore it after the object is recreated. An example of persistence is when Visual Basic saves the property values associated with an *ActiveX Control* from one development session to the next.

Personal Web Server (PWS) A lightweight Web server designed for use with *Windows 98/95*, *Windows 2000 Professional*, and *Windows NT Workstation*.

Physical I/O An *I/O* or output request that results in a physical transfer of data from or to a disk drive or other hardware device. This differs from a *logical I/O*, where the information may be buffered in memory and no physical transfer occurs.

Pivot The process of exchanging one dimension for another in a *cube* or *PivotTable*.

PivotTable A facility in *Excel* that allows you to analyze multi-dimensional data. The data can be extracted locally from a *worksheet* or remotely from a *database server* or an *OLAP Server*.

PivotTable Service A tool on a *client* computer that communicates with an *OLAP Server* to provide data for a *client application* such as *Excel*.

Precalculate The process of performing *aggregations* on *multi-dimensional* data in anticipation of future queries.

Primary Key The *column* or columns in a *table* that will uniquely identify a *row*.

Private Dimension A *dimension* that is used only by a single *cube*, as opposed to a *shared dimension*, which is common to multiple cubes.

Private Message A message that has been encrypted before being sent to a *queue*.

Private Queue A *message queue* that is registered only on the local machine. This queue is not published in the *Active Directory*, making it harder to find.

Private Variable A variable whose scope is limited to the routine or module in which it was declared. If the variable is declared inside a routine, it may not be accessible from outside the routine. If it was declared as a *module-level variable*, it cannot be accessed from outside the module.

Process The collection of an *address space*, *threads*, and other information that is associated with the running of a single program. See also *Refresh*.

Processing Processing is the act of loading data into a cube. This must be done each time a cube is created, when its structure has been changed, or when the data in the data warehouse has changed.

Production Application An application that implements *business logic* to help an organization perform its primary goals.

Property A way to access a data attribute stored inside an *object*. A property may be read/write, read-only, or write-only.

Property Bag An object associated with a Visual Basic *class module* that is used to provide persistent storage. Before the object is destroyed, you are allowed to save information in the *property bag*. When the object is created, you can restore this information from the property bag.

Property Page A *COM* object that allows a user to access the properties associated with an *ActiveX control* as design-time.

Protocol A set of rules that define how two or more computers communicate with each other.

Public Queue A *queue* registered in the *active directory*, which makes it easier to find.

Public Variable A variable that can be accessed from any module in your application program. If it is included as part of a *COM* object, it becomes a *property* available for any routine to read or write.

Publisher The source of data in the replication model.

PWS See *Personal Web Server*.

Query A request to retrieve, insert, update, or delete information in a *database*.

Query Optimizer A part of the *database server* that analyzes a database *query* to determine the most efficient way to execute the query.

Queue An object to hold messages between applications. Implemented by *Microsoft Message Queues*.

Queue Name The name of a *queue*. It may contain up to 124 characters, except for the backslash (\), semicolon (;), and dollar sign ($).

Rapid Application Development Tool A tool that allows you to build applications quickly, at the cost of execution efficiency.

RDBMS See *Relational Database Management System*.

RDO See *Remote Data Objects*.

Record A collection of fields containing related information that is treated as a single entity. Also known as a *row* in a *table*.

Recordset A collection of records retrieved from a database and made available to a Visual Basic program through a *COM* object. Recordsets are objects present in the *ADO*, *DAO*, and *RDO* object models.

Recovery The process of rebuilding a *database* based on database *backups* and *transaction logs*.

Referential Integrity A way to ensure that the information in the *database* is valid by only permitting values to be entered into a *table* if the value in the *foreign key* is found in the *primary key* of another table.

Registry The area in *Windows* that holds configuration information about the operating system and application programs.

Refresh The set of operations that deletes the data from a cube and loads the cube with a fresh set of data from the data warehouse. See also *Process*.

Relational Database A *database* that appears to the user as a simple collection of *tables*, where each table consists of a series of *columns* or *fields* across the top and a series of *rows* or records down the side. The underlying data structures used to hold the data are totally invisible to the user.

Relational Database Management System (RDBMS) A collection of *relational databases* on a single *database server*.

Relational OLAP Database (ROLAP) A Relational OLAP database stores its information in a relational database. This has the advantage of being easy to load, but can be time-consuming to search.

Relationship A situation whereby a *foreign key* in a table is linked to a *primary key* in another table. A relationship may be a *one-to-one relationship*, a *one-to-many relationship* or a *many-to-many relationship*.

Remote Data Objects (RDO) A technology that allows a program running on *Windows* to access a database using *ODBC* technology. This technology is much more efficient than *Data Access Objects* for accessing large databases. It has since been superceded by *ActiveX Data Objects*.

Remote Procedure Call (RPC) A technique used to allow a program on one computer to call a subroutine on another computer that is attached over a network.

Repeating Group A variable that contains multiple occurrences of information. This is similar to an array with dynamically-defined bounds. An example of a repeating group would be book authors, where book authors might have one, two, three or more authors depending on the particular book.

Replication A way of keeping two *databases* with the same information in sync.

Replication Model See *Database Replication.*

Report Queue A *queue* used to track the progress of *messages* as they move to the *Destination Queue*.

Repository See *Data Dictionary*.

Response Message An application-generated message that is returned to a *response queue* specified by the sending application.

Response Queue A *queue* used to receive a *response message* from the application that received a message.

ROLAP See *Relational OLAP Database*.

Role A predefined set of *permissions* in the *database*. When a *login* id is assigned to a role, it inherits all the permissions associated with the role.

Roll Back The process of undoing a set of changes to the database that have not yet been committed.

Row A collection of *columns* that are stored in a *table*.

RPC See *Remote Procedure Call.*

Rule A way to verify a value entered in a *column*. A rule is created by adding an *Integrity Constraint* to a table. You can specify a list of permitted values or place other limits on the particular values that are considered acceptable.

Run Time When the program is being executed as opposed to *design-time* (when the program is being written) or *compile-time* (when the program is being compiled).

SA See *System Administrator*.

Schema A description of the *database* using a language such as *SQL*.

Secondary Key A *column* or set of columns that can be used to identify a *row* in a *table*. Unlike the *primary key*, a secondary key need not be unique.

Server A server side of a client-server application. This program responds to requests from *client* applications.

Shared Dimension A dimension in an *OLAP database* is common to multiple cubes.

Single Threaded A block of code that can only be executed by one thread at a time. This typically includes functions where global data is in the process of being updated, such as a global counter or a complex database update that affects global data.

Slice and Dice The act of moving and combining dimensions while selecting one or more individual level values in a cube to see data from different viewpoints.

Snowflake Schema A database design where a fact table is surrounded by one or more dimensions and each dimension is represented by one or more tables. See also *Star Schema*.

Source File Contains the programming language statements that a compiler will translate into an *executable file,* which can be loaded into memory and run.

SQL See *Structured Query Language*.

SQL Server Microsoft's high performance database management system. Includes a number of tools, such as the Query Analyzer, Enterprise Manager, English Query, and OLAP Server.

SQL Statement A single *query* written in the *SQL* language.

Star Schema A database design where a fact table is surrounded by one or more dimensions and each dimension is represented by a single table. See also *Snowflake Schema*.

Stored Procedure A set of *SQL* statements that are executed on the *database server* and can optionally return a result to the database client program. Using stored procedures is usually more efficient than trying to perform the same function directly on the database client, because they are precompiled and may also be contained in the server's memory. Also, if multiple steps are included in the stored procedure, there is no need to transfer data between the database server and client, which also tends to improve performance.

Strategic Application Deals with the long range business goals of an organization. A *data warehouse* is an example of a strategic application. See also *Tactical Application*.

String A sequence of characters that can be stored in a *database* or manipulated by a program. Strings can contain ASCII characters or *Unicode* characters.

Structured Query Language (SQL) A language originally developed by IBM in the 1970s that has become the standard language for accessing relational *databases*.

Subquery A **Select** statement that is nested inside another *SQL statement*.

Subscriber The destination of data in a replication model.

Synchronous Processing The type of processing that occurs when a program calls a task and the calling program is blocked from performing any other work until the program it calls completes. See also *Asynchronous Processing*.

System Administrator (SA) The *login* associated with the individual responsible for an SQL Server database system. The system administrator is exempt from all security rules and is treated as the *database owner* of whatever *database* is being used.

System Catalog The *tables* found in the *Master Database*, which are used to store information on the other databases in the *database server* and also hold the database server's configuration information.

System Databases In SQL Server, the system databases include the *Master Database*, the *Temporary Database* (tempdb), and the *Model Database*. These *databases* are required to operate SQL Server.

System Queue A *queue* created by the *COM+ Queued Components* feature that is required to operate the queued components.

System Table A *table* required by a *database server* to hold information about itself. This includes such information as *user databases, tables, columns, indexes*, and so on.

Table The only database object that contains business data. It provides a view of this data by a series of *columns* and *rows*. Each column of data corresponds to a *field*, while a row is also known as a *record*.

Table Scan The process where the database server must read every row in a table in order to satisfy a *query*.

Tactical Application Deals with the day to day issues of running an organization. A payroll application is an example of a tactical application. See also *Strategic Application*.

Temporary Database A *database* in SQL Server that holds temporary information such as temporary tables and other temporary storage needs. All temporary tables are stored in this database, no matter which database the user is accessing. This database is known as "tempdb".

Thread An execution path through the same instance of a program.

Threading Model Describes how your application will use threads in an address space. A *single-threaded* application can take advantage of only one execution path through the program. A *multithreaded* application can have more than one execution path active at the same time.

Transact-SQL The name of the *SQL* language implemented in SQL Server. It consists of many extensions to the ANSI standard, including local variables, assignment statements, If statements, and other control flow statements that help you build *stored procedures*.

Transaction A logical unit of work that consists of one or more changes to a *database*. Either all of the steps in the transaction are completed or none of them. The classic example of a transaction is transferring money from one account to another, where the funds are subtracted from the source account and then added to the destination account. If only half of the transaction is completed, the database will be in error. In *COM+*, every transaction must meet the *ACID* test.

Transaction Log A file containing a list of changes made to the *database*. This information can be used to undo changes made to the database, or it can be combined with a *backup* file to recover *transactions* made after the backup was made.

Transaction Server A piece of operating system software that manages the execution of *transactions*. See also *COM+ Transaction Server*.

Transactional Message A message sent as part of a *transaction*.

Transactional Queue A *queue* that is used to hold *transactional messages*.

Trigger A special type of *stored procedure* that is called whenever a *row* is inserted in, deleted from, or updated in a *table*. If a severe error is encountered while running the trigger, the *transaction* will automatically be rolled back. It is used primarily for ensuring that new data is valid or to cascade changes from one table to another. For example, you may include a trigger on an order entry table that ensures that the customer ID exists in the customer table before an order is placed.

UDL File See *Data Link File*.

Underlying Table See *Base Table*.

Unicode A way to store international characters in a 16-bit character. This makes it easier for processing multilingual data.

Unique Index An index in which each row must have a unique *key* value.

Universal Data Link See *Data Link File*.

User Database A *database* where user information is kept.

User Name An *identifier* associated with a *login* that is used to determine an individual's *permissions* in a *database*.

View A virtual *table* that is created through the use of an *SQL* **Select** statement. A view appears to the user exactly as a table for all read operations and some write operations, depending on how the view was created.

Virtual Cube A logical cube that is created from existing dimensions and measures from one or more physical cubes. A virtual cube is similar in concept to a view.

Virtual Dimension A logical dimension that is created from an existing dimension in a cube.

Visual Basic A rapid application development tool that is often used to build database applications.

Visual Basic Script A version of Visual Basic that runs inside another application such as Data Transformation Services to provide the ability to customize a task.

Web Page A document typically written in *HTML* that is made available over the *Internet* for display on a *browser*.

Windows A family of operating systems from Microsoft.

Windows 98/95 An operating system designed to support interactive processing. Currently there are three versions of Windows 98/95: Windows 98 Second Edition, Windows 98, and Windows 95.

Windows 2000 Professional An operating system designed to support interactive processing. This operating system replaces Windows NT Workstation.

Windows 2000/NT Server An operating system designed to support various *servers*, such as a database server or a Web server.

Windows NT Workstation An operating system designed to support interactive processing. Typically used by power users.

Wizard A sequence of dialog boxes that are used to prompt a user for information that is used to perform a complex task.