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Access 2024 cours et exercices corrigés

Microsoft Access est un système de gestion de base de données qui permet de stocker et de gérer de grandes quantités d'informations. Microsoft Access is a database management system (DBMS) developed by Microsoft, which combines the relational Access Database Engine (ACE) with a graphical user interface and software-development tools. It is part of the Microsoft 365 suite of applications, included in Professional and higher editions or sold separately. The software stores data in its own format based on the ACE, and can also import or link directly to data stored in other applications and databases. Developers, data architects, and power users can use Microsoft Access to develop application software using Visual Basic for Applications (VBA), an object-based programming language that references various objects including DAO, ActiveX Data Objects, and other components. The VBA code modules expose the methods and properties of visual objects used in forms and reports, allowing developers to declare and call Windows operating system operations. Prior to Microsoft Access, programs like Borland's Paradox, Ashton-Tate's dBase, and Fox's FoxPro dominated the desktop database market. However, with Microsoft's acquisition of FoxPro in 1992 and the incorporation of Fox's Rushmore query optimization routines into Access, it quickly became the dominant database for Windows, eliminating competition that failed to adapt from the MS-DOS era. Microsoft initially attempted to sell R:Base in the mid-1980s but ultimately developed its own solution, codenamed Omega, which was intended to be a database product for Windows and OS/2.[11][12][13] Although it included the "EB" Embedded Basic language and front-end capabilities for Microsoft SQL Server, the project faced issues with resource intensity and slower performance on 386 processors.[16] Initially scheduled for release in 1990, Omega's development was reset in 1989 and rescheduled for January 1991.[17][18] Parts of the project were later reused in other products like Access (codenamed Cirrus) and Visual Basic.[10] The Omega project was eventually scrapped, with some developers assigned to Cirrus and others to Visual Basic. Microsoft aimed to create a database application that could compete with Paradox or dBase on Windows. After acquiring FoxPro, the company decided to develop these projects in parallel. However, Access' development utilized Jet Database Engine (Jet Red) instead of Extensible Storage Engine (Jet Blue). In July 1992, Cirrus beta versions were shipped to developers,[24] and the name "Access" became official.[25] The Access logo was later reused for Office 2000 and Office XP. Microsoft released Access version 1.0 in November 1992 and an updated release in May 1993 to improve compatibility with other products and include Access Basic programming language. For Access v2.0, the company specified minimum hardware requirements as Windows v3.1 with 4 MB RAM and 8 MB of available hard disk space. The product was initially shipped on seven 1.44 MB diskettes, with a manual featuring a 1994 copyright date. As part of Microsoft Office 4.3 Professional with Book Shelf, Access 2.0 included sample databases like "NorthWind Trader," which showcased the Main Switchboard features introduced in 1994. Microsoft Access has undergone significant changes since its inception, with new versions released annually as part of the Microsoft Office suite. Starting with Access 95, which became part of the Professional Suite alongside Excel, Word, and PowerPoint, Microsoft has continued to update the software with each release of Office. The database engine used by Access has also evolved, with the Jet Database Engine being replaced by a new version in Access 2000. The native file format has changed over time, with significant transitions from earlier versions such as Access 97 to newer formats like ACCDB introduced in 2007. One notable feature of Access 2007 is its support for links to SharePoint lists and complex data types, allowing users to store multiple values or files in one field. The introduction of the File Attachment field also improved data storage efficiency. The release of Microsoft Access 2010 marked a significant shift towards web-based applications, with the introduction of Access Web services that allowed users to run Access applications without installing the software on their PC. This was particularly useful for Mac users and SharePoint users, who could access the web service with sufficient rights. However, automation was limited to the macro language, which was converted to JavaScript. In contrast, Microsoft Access 2013 offered traditional desktop applications alongside a significantly updated SharePoint 2013 web service, allowing users to create hybrid applications that combined basic views and edits with more sophisticated, traditional applications. Microsoft Access allows storing data in actual SQL Server databases, offering true relational database design with referential integrity, scalability, extensibility, and performance. The database solutions available on SharePoint 2013 feature a modern user interface to display multiple levels of relationships and support for touch, resizing for different devices. The Access desktop database has limitations, including discontinued features such as ADPs, pivot tables, and source code control, with a maximum size of 2 GB. Microsoft Access is no longer included in the one-time-purchase version of Microsoft Office 2021 but remains available in the Microsoft 365 counterpart. New features include an extended-precision date/time data type and dark theme support. Performance capabilities in Microsoft Access depend on several factors, including data size, tasks being performed, usage level, and application design. Generally, solutions with less than 1 GB of data can run smoothly, while simultaneous connections are typically limited to 100 or fewer (up to 255 concurrent users are supported). This makes it suitable for departmental applications. However, if a multi-user scenario is involved, the database should be "split" into front-end and back-end files to ensure efficient performance. Complex queries or analysis on large datasets require greater bandwidth and memory, which Access can handle by linking multiple databases or using a server like Microsoft SQL Server. Access's scalability allows it to support enterprise-level solutions with linked tables and backend databases. Although its web development capabilities were limited prior to version 2010, in newer versions have improved this feature. With the use of Terminal Services and Remote Desktop Application in Windows Server 2008 R2, organizations can host Access applications for web-based access. Additionally, Access 2013 allows direct creation of web applications on SharePoint 2013 sites running Access Services, which store data in a SQL Server database for better scalability. Compiled versions (MDE/ACCDE or ADE) of Access databases can be created to prevent users from modifying code and design surfaces, ensuring confidentiality. This feature is particularly useful when end-user modifications are not allowed or when source code needs to remain confidential. Microsoft's support for Access Services in SharePoint has been discontinued since the release of newer versions. Microsoft Access is a database software that provides various tools and features to help users create, manage, and distribute Access applications. It allows users to design tables, queries, forms, and reports, and connect them using macros. Advanced users can utilize VBA to develop rich solutions with advanced data manipulation and user control. Access offers report creation capabilities that work with any data source, making it an ideal tool for end-users to access data from various sources. The software also supports data import and export in multiple formats, including Excel, Outlook, and SQL Server. One of the key features of Access is its ability to link to existing data locations, allowing users to view, query, edit, and report on the data without affecting the original source. This feature enables users to perform heterogeneous joins between data sets stored across different platforms. Access is often used by individuals who download data from enterprise-level databases for manipulation, analysis, and reporting locally. The software's database format (MDB or ACCDB) allows developers to contain the application and data in one file, making it convenient to distribute to other users. From a programmer's perspective, Access offers compatibility with SQL and provides options for mixing VBA and macro programming. Users can also create parameterized queries and reference Access tables from other programs like VB6 and .NET through DAO or ADO. Microsoft Access 2010 introduced table-level triggers and stored procedures built into the ACE data engine, making it possible to use stored procedures without requiring a client-server database system. The software has also improved integration with Microsoft SharePoint 2010 and supports web-based applications. The 2013 edition of Microsoft Access introduced a mostly flat design and the ability to install apps from the Office Store, but did not introduce new features. A theme update was made again for 2016, although no dark theme was created for Access. Microsoft Access allows for querying a database, retrieving records, and displaying them on a browser via SharePoint Server 2010 using Access Services. This feature enables multiple users to interact with the application from any standards-compliant web browser. Access 2013 allows the ability to publish web solutions on SharePoint 2013, utilizing an actual SQL Server database or SQL Azure for scalability and relational integrity. Access can import data from other applications and databases, including Microsoft Excel, Outlook, HTML, and ODBC-compliant containers. The macro language is enhanced in Access 2013, supporting more sophisticated programming logic and database-level automation. Microsoft offers free runtime versions of Access, allowing users to run desktop applications without purchasing a retail version. These runtime versions enable developers to create freely distributable databases and can be downloaded from Microsoft for free. However, they do not allow users to modify the design of Access tables, queries, or forms. The runtime environment is compatible with earlier versions, but due to deprecated features in Access 2013, its runtime version cannot support those older features. Access allows users to set up jobs by dragging fields from one table to another. Users can view and edit SQL code if needed. Any Access table, including linked ones from different data sources, can be used in a query. Additionally, Access supports "pass-through queries" that connect to external data sources through ODBC connections on the local machine, enabling users to interact with data outside the program. Each Microsoft Access object, such as tables, queries, and macros, should be named accordingly, following conventions like Leszynski naming. While this is not a strict rule, it helps in VBA where object names might not indicate their data type. Many developers use Access for individual or workgroup projects, with the capability to handle databases under 1 GB in size and support up to 200 simultaneous users since Access 97. However, performance depends on database design and tasks, with disk-intensive activities taking more time. When a single user accesses the database or data isn't changing, processing speed can improve due to caching. In the past, packet latency affected record-locking systems, but this issue has been mitigated by broadband connections. Microsoft acknowledged an intermittent query performance problem affecting Access 2003 and earlier versions with Jet Database Engine code, as well as Access 2007 and later versions with ACE code. The company issued hotfixes for these issues but will not fix the problem with Jet 4.0 since it is out of mainstream support. In newer versions, Microsoft offers a "Runtime Only" version for free download, enabling royalty-free application distribution on Windows XP to 8.x. Access applications can adopt a split-database architecture, dividing the database into back-end and front-end files. This approach reduces network traffic and allows development of the application independent of data. One disadvantage is that this design requires each user's machine to have Microsoft Access installed, along with their application database. Managing version control for local copies of applications can be challenging due to frequent changes. However, when a new version is ready, the front-end database can be replaced without affecting the data database, utilizing built-in utilities like Database Splitter and Linked Table Manager in Microsoft Access. To facilitate this architecture, linked tables use absolute paths rather than relative ones, which may require same path configurations or custom VBA routines for optimal performance. Large Access databases might experience performance issues, prompting consideration of a SQL backend for enhanced scalability. Mainly, main article: Upsizing (database) involves migrating to Microsoft SQL Server or equivalent server database for enterprise-level solutions, resulting in significant maintenance reductions and increased security. To scale Access applications, users can utilize the Upsizing Wizard feature from Access 2000 through Access 2010, but this was removed from Access 2013. The SQL Server Migration Assistant for Access (SSMA) continues to be available for free download, offering various upgrading options after data and queries are migrated to SQL Server. However, limitations arise due to data type conversions, such as "Yes/No" types having only two states in SQL Server but three in Microsoft Access. Date/Time and Date/Time Extended formats also have higher precisions than their SQL Server counterparts, requiring careful consideration for optimal performance. Given article text here SQL Server offers a range of solutions for multi-table joins, supporting temporary tables and links to other data sources. However, migrating from Access databases can be challenging due to its more powerful SQL language and higher-level application procedures like VBA and macros. While some developers opt for ASP.NET or Java to replace Access databases entirely, others choose to keep major business processes within Access while using web-to-data interfaces with ASP.NET. In some cases, direct conversions may fail, requiring translation of VBA functions into T-SQL or .NET functions/procedures. Microsoft Access applications can be secured through various methods, including password access control, workgroup security with username and password requirements, and encryption. The ACCDB format offers advanced encryption, while locked/protected databases can be converted to .MDE files to prevent changes. However, certain elements like original VBA comments and formatting may be irretrievable. Access supports multiple file formats, including database templates, add-ins, and workgroup databases with user-level security. Protected databases with compiled VBA and macros also exist, offering an additional layer of protection against unauthorized modifications. The Access database file format has undergone various changes over the years, with different versions introduced for each major release of Microsoft Office. The earliest version, Access 1.0, was released in 1992 and only worked on Windows 3.0. Subsequent versions, such as Access 1.1 and 2.0, were released in subsequent years, each with new features and compatibility improvements. Access 95, released in 1995, was the first version to support OLE 2 capabilities, making it compatible with Word 7. The next major release, Access 97, was introduced in 1997 and became a significant milestone for the database software. Over the years, Microsoft continued to update and refine the Access database format, releasing new versions every few years, each with improved performance and features. Some notable releases include: * Access 2000 (1999), which included support for Windows NT 4.0 * Access 2002 (2001), which added support for Windows XP * Office 2003 (2003), which introduced a new user interface * Office 2007 (2007), which introduced the Ribbon interface and improved performance * Office 2010 (2010), which included significant improvements to data management and analysis * Office 2013 (2013), which added support for Windows 8 and Windows 10 * Office 2016 (2015) and Office 2019 (2018), which continued to improve performance and add new features * Office 2021 (2021), the latest version of Access, which includes significant improvements to data management and analysis Throughout its history, Microsoft has also maintained compatibility with various operating systems, including Windows XP, Windows Vista, Windows 7, and newer versions. The Access database file format has undergone numerous changes over the years, but it remains a powerful tool for managing and analyzing data. This article provides an overview of Microsoft Access and its history. It starts by citing sources from 1985 to 1992, including articles from InfoWorld magazine, which discuss the development of Microsoft's database management system (DBMS) for Windows, code-named Cirrus. The DBMS was later renamed to Access, and its first version was released in 1990. The article mentions various updates and changes made to the software over the years, including new features, service packs, hotfixes, and discontinued functionality. It also touches on Microsoft's attempts to integrate Access with other technologies, such as SharePoint, Terminal Services, RemoteApp, and ASP.NET Web Forms. Additionally, it provides information on migrating Access databases to SQL Server and creating web databases using Access. Some specific points mentioned in the paraphrased text include: * The development of Cirrus DBMS for Windows * The renaming of Cirrus to Microsoft Access * Updates and changes made to Access over the years * Integration with SharePoint, Terminal Services, RemoteApp, and ASP.NET Web Forms * Migration of Access databases to SQL Server * Creating web databases using Access Microsoft Access 2007 and later versions support programming in Visual Basic 6.0 (VB 6) and Visual Basic .NET (VB .NET), as well as native C or C++. The article discusses Microsoft Access, a database management system developed by Microsoft. It provides information on various versions of the software, including Microsoft Access 2016 and Microsoft Access 2019. The text also mentions Microsoft 365 Apps for Business, which includes Microsoft Access as one of its components. Additionally, it references external resources such as the official Microsoft Access website and a Wikimedia Commons page dedicated to the topic.