CS 557 Chapter 15

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2. The ODBC is a driver that uses open database connectivity by Microsoft that allows applications to access data in database managing systems. The DAO is the data access objects which is an object-oriented application programming interface used to access MS access, FileMaker Pro and other Jet-based databases. The RDO is the remote data objects that are a higher-level, object-oriented application interface used to access remote database servers. RDO uses the lower-level DAO and ODBC for direct access to databases. They are all used to access local and remote relational data sources.

3. RDO uses DAO to access remote database server data. RDO allows access to relational database servers.

4. A ODBC is composed of 3 main components:

- A high-level ODBC API through which application programs access ODBC functionality

- A driver manager that is in charge of managing all database connections

- An ODBC driver that communicates directly to the DBMS

5. You first need to identify the driver to connect to the data source. Then you need the unique name, which the data source will be known to ODBC, and its applications. Lastly, most ODBC drivers require specific parameters to establish a connection to the database. Most of the time you need the username and password. Also, sometimes you need the server name and database name.

6. The object linking and embedding for databases is a database middleware that adds object-oriented functionality for accessing relational and nonrelational data.

7. The two types of objects are the Consumer and Provider objects. Consumer objects request and use data by invoking methods exposed by the provider objects. Provider objects manage the connection with a data source and provide data to consumers.

8. The ADO is a high-level interface so that it can interact with the OLE-DB. The interface allows you to access data from any programming language that uses OLE-DB objects.

9. The ADO.NET is a set of computer software components that programmers can use to access data of Microsoft’s .NET application framework.

13. The phrase “The web is a stateless system” means that the web server does not know the status of who its communicating with. It doesn’t have memory to maintain a communication. If the web needs to make a calculation it needs to reach out to database application servers. The web can only print text and do data entry validation.

14. A web application server is a middleware application that expands the functionality of web servers by linking them to a wide range of services such as databases directory systems and search engines. They can be used to query databases from a webpage or present data from a database in a webpage.

15. A script is a programming language that is not compiled but is interpreted and execute. Scripts are useful because they allow for manipulation and processing of data outside of the database.

16. XML is a meta-language used to represent and manipulate data elements. XML is designed to facilitate the exchange of structured documents over the Internet.

19. JDBC is Java Database Connectivity. It is an application programming interface that allows a Java program to interact with a wide range of data sources, including relational databases, tabular data sources, spreadsheets, and text files.

20. Cloud computing is a computing model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computer resources that can be rapidly provisioned and released with minimal management effort or service provider interaction. Cloud computing is a game changer because it allows corporations to build high performance, fault-tolerant, flexible, and scalable IT services quickly and economically.

21. There are 3 types of cloud computing, the public cloud, private cloud, and community cloud. The public cloud is the most common implementation of the three. It is built by a third-party organization to sell cloud services to the general public. An example is Amazon. The private cloud is often used by large organizations. It adds agility and flexibility to internal IT services. It is built by an organization for the purpose of servicing its own needs. Lastly, the community cloud is built by and for a specific organization like the military or higher education. They all share a common trade.

22. The characteristics of Cloud Services are:

* Ubiquitous access via internet technologies - All cloud services use Internet, so a basic requirement is that the device has access internet.
* Shared Infrastructure - The cloud service infrastructure is shared by multiple users which is made possible by web and virtualization technologies.
* Lower Costs and variable pricing - The initial costs of using cloud services tend to be significantly lower than building on-premise IT infrastructures.
* Flexible and scalable services - Cloud services are built on an infrastructure that is highly scalable, fault tolerant, and very reliable.
* Dynamic Provisioning - The consumer can quickly provision any needed resources, including servers, processing power, storage, and email.
* Service Orientation - Cloud computing focuses on providing consumers with specific, well defined services that use well known interfaces.
* Managed Operations - Cloud computing minimizes the need for extensive and expensive in-house IT staff.

23. The main advantages of cloud computing are low initial costs of entry, sustainability, support of multiple types of mobile computing and much more. The main disadvantages are that there are issues with security, privacy and compliance. There are some hidden costs of implementation and operation. Also, data migration is a difficult and lengthy process. In addition, there is complex licensing schemes and loss of ownership and control. There are a couple more disadvantages as well.

24. Advantages: Low initial costs, scalable, mobile, ubiquitous, highly reliable, and better performance, adaptable with fast provisioning for resources, and generally comes with a dedicated staff of support and infrastructure. Disadvantages: Security and privacy of data can be a concern, hidden costs can be hard to estimate, initial data migration can be difficult and lengthy, licensing can be difficult and complex, companies no longer completely own their services and data, vulnerable to potential changes in cloud service provider, and it can be difficult to integrate into in house IT systems.