Web Engineering

Lecture 6

Web Applications

Zulfiqar Ahmad
Lecturer
Department of Information Technology
Hazara University Mansehra
zulfiqarahmad@hu.edu.pk

Types of Applications

- Commonly used types of applications include:
  - **Client/server applications**
  - **Data warehouse applications**
  - **Web applications**

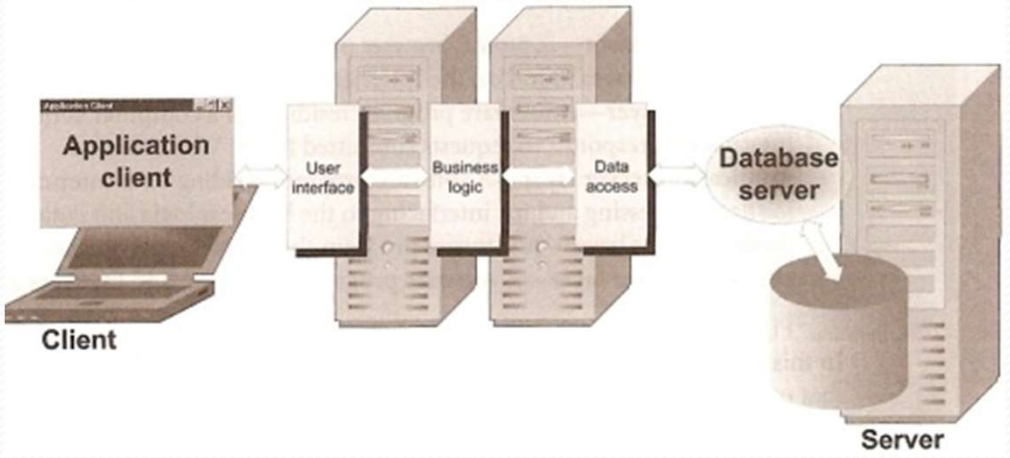
Client/Server Applications

- Provide a flexible and scalable structure that
  - takes advantage of the processing power of personal computers (PCs)
  - utilizes the capacity and power of dedicated servers

Client/Server Architecture

- The typical client/server architecture is made up of:
  - **Server –** providing services to **clients**
  - **Clients** – requesting services from the server
  - **Business Logic** – implementing business rules

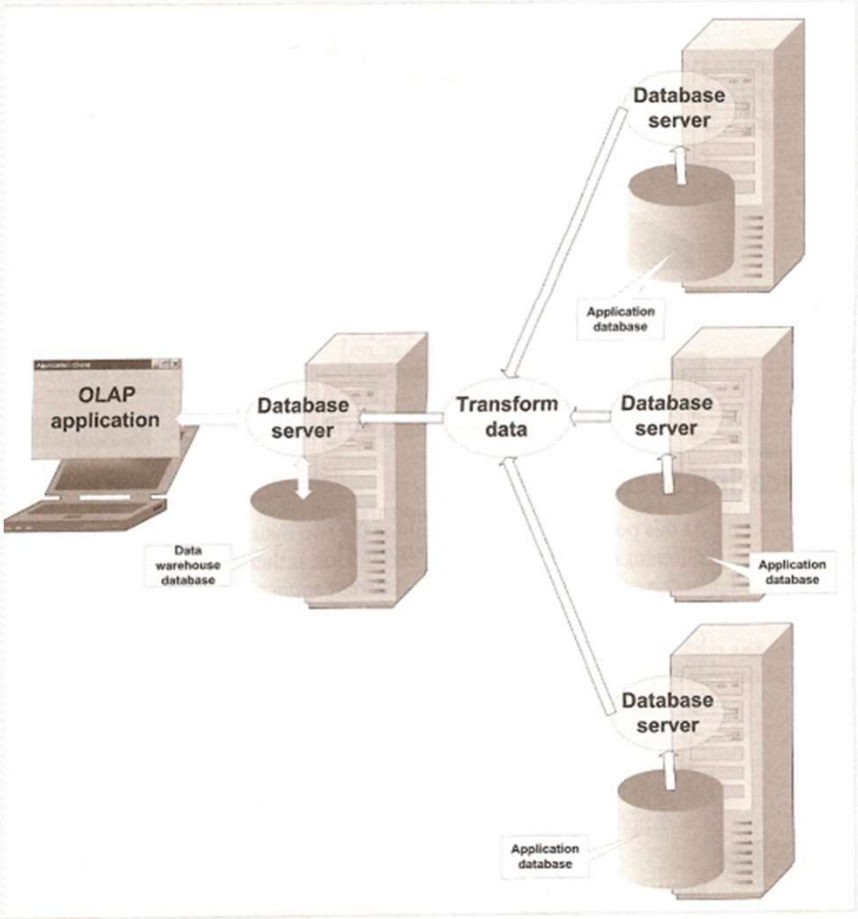
Physical Architecture of Client/Server Applications



Data Warehouse Applications

- Used in decision-support applications to support executive management in decision-making processes
- The data warehouse is accessed by software applications or reporting applications called online analytical processing (OLAP)
- The OLAP applications retrieve data and generate reports with the capability of data mining
  - **Data warehouse** – a collection of many types of data taken from a number of different databases that support various corporate departments
  - **Data mining** – set of activities used to find new, hidden, or unexpected patterns in data within a data warehouse

Physical and Logical Architecture of Data Warehouse Applications



Web Applications

- Client/server applications accessed with a Web browser over a network like the Internet or an Intranet
- Web applications have become popular because of the:
  - platform-independence of Web browsers and Web document formats
  - ability to update and maintain Web applications without distributing and installing software on several client computers

Web Application Architecture

- Composed of:
  - **Web browser** layer – allows users to navigate through Web pages on the Internet
  - **Web server** layer – responds to requests submitted by the Web browsers
  - **Application server** layer – used for data processing and interfacing to the business logic and database server
  - **Business Logic** layer – implements business rules
  - **Database server** layer – stores and manages data

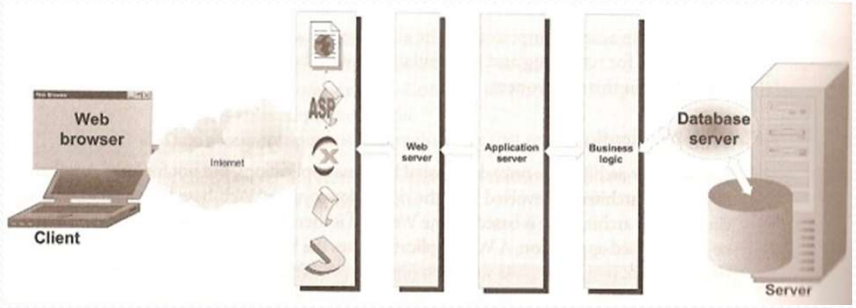
Web Application Architecture…

- Uses **Web browsers** as the front ends
- Uses the **Web** to communicate with the Web server
- Uses **HTTP** as the communication protocol between the Web browser and the Web server
- Uses HTML/XHTML pages created using, ActiveX, Java applets, ASP, JSP etc

Web Application Components

- Logical components of Web Applications

- Physical structure of Web Applications



Examples of Web Applications

- Examples of Web applications include:
  - Reservation systems
  - Weblogs
  - Massively-Multiplayer Online Role-Playing Game (MMORPG)
  - Online shopping
  - Online auction
  - Games
  - Multimedia applications
  - Calendars
  - Maps
  - Chat applications
  - Clocks
  - Interactive design applications
  - Stock tickers
  - Currency converters
  - Data entry/display systems

Nature of Web Applications

- Web applications:
  - have features and benefits of desktop applications
  - have some form of programmatic control either on the client side, or on the server, or both
  - emphasize on real data separation as opposed to markup/style separation
  - are usually smaller in file size than desktop applications
  - can have rich graphical-user interfaces (GUI)
  - have reduced client-requirements
  - have portable data

Building Web Applications

- Two major components needed to build web applications include:
  - **Hardware platforms** – could be a single shared server running on a web server and a database
  - **Software platforms**
    - **Schema** – for data storage
    - **Business rule (logic)** – for accessing and modifying data
    - **Interactive logic** – for presenting data to users