Unit – 5
Internet & New Technologies in IT

Internet

The internet is a network of computers linking many different types of computers all over the world.

- Physically interconnected.
- Capable of communicating & sharing data with each other.

Uses of internet

- Online communication.
- Online shopping ,education & banking.
- Online journals & magazines.
- Customer support service.
- Posting of information.
- Software sharing
- WWW
- World wide video conferencing.
- Remote login

History of Internet

- The history of the internet begin with electronic computers in the 1950's.Initial concepts of packet networking originated in several computer science laboratories in the United States, United Kingdom and France. The us department of Defense awarded contracts as early as the 1960's for packet network systems, I ncluding the development of the ARPANET.T he first message was sent over the ARPANET from computer science Professor Leonard Kleinrock's laboratory at University of California, Los Angels(UCLA) to the second network at Stanford Research Institute(SRI).

History

- Packet switching network such as ARPANET ,NPL NETWORK ,TELNET were developed in the late 1960s and early 1970 using a variety of communications protocols.
- In short Internet has root in the Arpanet system of ARPA of the U.S. department of Defense. Arpanet was the first WAN & had only four sites in 1969.

Concept of protocols

- A protocol is a set of rules that govern a given process. A protocol describes rules to govern transmission of data over communication networks.

Internet protocols

1. TCP/IP(Transmission control protocol/Internet protocol)
2. FTP(File transfer protocol)
3. HTTP(Hyper Text transfer protocol)
4. Telnet

TCP/IP

- It is a collection of protocols that govern the way that data travels from one machine to another across network.

IP component does the following:

- Envelopes & addresses the data.
- Enables the network to read the envelopes & forward the data to its destination.
- Defines how much data can fit in a single envelope(a packet).
- The relationship between data ,IP & networks is often compared to the letter, its addressed envelope & the postal system.

TCP/IP

- TCP component does the following.
- Breaks data up into packets that the network can handle efficiently.
- Verifies whether all the packets have arrived at their destination.

FTP

- FTP enables an internet user to move a file from one computer to another on the internet. A file may contain any type of digital information.

HTTP

The www uses client server model & an internet protocol called HTTP for interaction on the internet. Any computer on the internet using the http protocol , is called web server & any computer accessing that server is called web clients.

Telnet

Telnet service enables an internet user to log into another computer on the internet from his/her computer to start a login session on a remote login.

Multimedia
Introduction to multimedia

Media are something that can be used for presentation of information. Media are (text ,graphics ,audio & video) for storage ,representation ,manipulation ,generation etc.

Uses of multimedia

- Entertainment
- Software training
- Education & training
- On the web
- In office work

Multimedia tools

Multimedia tools are

1. Paint & draw application
2. Graphics effect : 2D & 3D
3. Graphics
4. Shading
5. Sound & music

   3D sound ,digital sound ,video etc.

Animation

- Computer animation deals with generation ,display of a set of images to create an effect of visual change ,motion. Animation is important component of multimedia.

Intranet :

An intranet is a company wide network run along the lines of the www. Many school & colleges have intranets & selected information is downloaded from the internet for students to access .

Extranet :

An extranet is a business to business intranet that allows limited ,controlled ,secure access between a company's intranet & designated ,authenticated users from remote locations.

E-commerce

E-commerce is a commercial activity that performs buying & selling of goods electronically.

or

E-commerce generally describes the methods of buying &selling products electronically. E- commerce stands for electronic commerce. E- commerce is a global phenomena of marketing through internet. It is an internet business.

Advantages of E- commerce

- 24*7 operation
- Global reach
- Cost of acquiring ,serving & retaining customers
- Improved customer service to your clients.
- Improved service quality
- Quick decision making

Disadvantages

- Less man power consume.
- Trained manpower is require.
- Difficult in pricing & currency conversions.
- Business often calculate the return on investment.

Types of E-commerce

1. B2B(Business to Business)
2. B2C(Business to consumer)
3. B2G(Business to Government)
4. C2C(Consumer to consumer)
5. C2B(Consumer to business)

1. B2B(Business to Business)

   B2B is a kind of e-commerce refers to a company selling or buying from other companies. The company communicates with the other company by electronic means. Many businesses have run by means of EDI(Electronic Data Interchange).

2. B2C(Business to consumer)

   B2C includes retail sales. It is also known as e-retail and other online purchases such as airline tickets, hotel rooms tickets & share of stock from the various web sites.

3. C2C(Consumer to consumer)

   Consumers sell directly to other consumers. Examples of c2c are traderonline.com,askme.com etc.

4. B2G(Business to government)

   A company communicates with the government. A company is agreement with the government which follows the business strategy. In other words, a company buying & selling our product through government.

5. Digital Middleman

It is a company that creates a virtual community or portals on the internet & then gathers several companies together into this community & supplies services to these community.

Hypermedia

- The term hypermedia comprises of a set of ideas, although it seems to be understand some what differently within different disciplines.
- The person to directly formulate the hypermedia concept was Vannevar Bush. American President Roosevelt appointed him manager of the organization, which co - ordinate technological research in the USA during World War II. In 1945 he published the article. Hypermedia is rather a method for structuring information.

Characteristics of Hypermedia

- It must be possible to use hypermedia both writing & reading information.
- The information must follow natural associations from one information unit to another.
- The information may be hierarchically structured.
- The information resides in a database.

Components of hypermedia

1. User interface
- Database design
- Search Engine
2. Programming interface
3. Hypermedia base
- Mesh topology
- Star topology

Application areas well suited for hypermedia

- Literature systems
- Publishing
- Instruction systems
- Problem solving systems
- Idea tools

Data warehouse

is defined as a process of centralized data management & retrieval. Data warehousing represents an ideal vision of maintaining a central repository of all organizational data. Centralization of data is needed to maximize user access & analysis.

Dramatic advances in data capture ,processing power ,data transmission & storage capabilities are enabling organizations to integrate their various databases into data warehouses.

Data Marts : is a subset of an enterprise – wide data warehouse ,

which typically supports an enterprise element(dept, region ,functions etc.)

Advantages of data warehouse

- More cost – effective decision – making.
- Better enterprise intelligence.
- Enhanced customer service.
- Business reengineering
- Information system reengineering.

Uses of data warehouse

- Standard reports & queries
- Queries against summarized data.

Data Mining

- Generally data mining (sometimes called data or knowledge discovery) is the process of analyzing data from different perspectives & summarizing it into useful information (information that can be used to increase revenue, cuts costs or both). Data mining software is one of the number of analytical tools for analyzing data. It allows users to analyze data from many different dimensions or angles.

  Data mining is the process of finding correlations or patterns among dozens of fields in large relational databases.

Evolution of Data Mining

- From the user point of view the four steps are necessary.
- Data collection(1960)
- Data access(1980) by using SQL ,ODBC
- Data warehousing & Decision support(1990) by using OLAP(Online Analytical Processing).

Advantages of data mining

- Automated prediction of trends & behaviors.
- Automated discovery of previously unknown patterns.

- Databases can be larger in both depth & breadth.

Technologies used in data mining

1. Neural network
2. Rule induction
3. Evolutionary programming
4. Case based reasoning(CBR)
5. Decision tree
6. Genetic algorithms
7. Non linear regression methods

1. Neural network

   Non – linear predictive models that learn through training & resemble biological neural networks in structure.

2. Rule induction

   The extraction of useful information by using rules from data based on statistical significance.

3. Evolutionary programming

   The underlying idea of the method is that the system automatically formulates hypothesis about the dependence of the target form of programs expressed in an internal programming language.

4. Case based reasoning(CBR)

   To forecast a future situation or to make a correct decision such systems find the closest past analogs of the present situation.

5. Decision tree

   Decision tree is like a tree structure which makes a set of decisions.

6. Genetic algorithms

   Genetic algorithm is a techniques that use processes such as genetic combination , mutation & natural selection during evolution.

7. Nonlinear regression methods

These methods are based on searching for a dependency of the target variable on the other variable. The obtained formula is more suitable for analysis & interpreting in principle.

In this way , data mining is the natural evolution of query & reporting tools. Every one , who creates queries & reports & then analyzing the data.

OLAP(Online Analytical Processing)

OLAP takes place on online in real time with rapid responses to a manager's or analysts queries.

- Slicing and dicing

  It refers to the ability to look at the database from different viewpoints.

- Drill Down
- OLAP can go in the reverse direction and automatically display details data that comprises consolidated data. This feature is called drill down.

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GIS(Geographical Information System)

- GIS is a system designed to capture ,store & manipulate geographical information especially maps. GIS applications are tools that allow users to create interactive queries.
- A GIS integrates hardware , software & data for capturing ,managing ,analyzing & displaying all forms of geographically.

The components of GIS are

- Hardware
- Software
- Data
- People
- Procedure s or methods

- GIS can be used in various sectors.
- Pipelining work in sea.
- Petroleum industry to extract petrol in ores.
- To find the path of different locations in sea or provide geographical path.
- It can be also used in managing data ,hardware & software geographically.

Application of GIS

- Scientific investigations.
- Resource management
- Asset management
- Environmental impact assessment.
- Urban planning
- Cartography(study & practice of making geographical maps.)
- Criminology
- Geographic history
- Marketing
- Logistics

Uses of GIS

- Perform geographic queries & analysis.
- Analyzing data quickly.
- Improve organizational integration.
- Make better decisions.
- Making maps.

How GIS works

- GIS stores information about the world as a collection of layers can be linked together by geography.GIS has proven invaluable for solving many real world problems from tracking delivery vehicles , to recording details of planning applications , to modeling global atmospheric circulation.