Chapter 11:

IT Applications

Informatics Practices
Class XII (CBSE Board)

Revised as per CBSE Curriculum 2015

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Introduction

The modern e-technology changed our lives and facilitated to all the area of applications like Banking, Education, Entertainment and Government etc. Now days, Information & Communication Technology (ICT) enabled services are essential requirement of every walk of life.

In this chapter you will learn about some web-based IT Applications and development of new applications.

☐ **E-Governance**

☐ **E-Business**

☐ **E-Learning**

E-Governance

☐ **What is E-Governance ?**

E-Governance refers to the application of e-Technologies in governance to provide effective, efficient, faster and transparent services to citizens.

☐ **Objective of E-Governance Applications**

- To provide information and knowledge about political system and services to the citizens.

- To fulfill the requirement of citizens by providing services at minimal cost and at doorsteps.

- To facilitate faster, transparent, accountable, efficient and reliable system for various administrative and social activities of the Government.

Example of such applications are Birth/Death Registration, issuing Passport, making of Voter ID Card, Filing Income Tax returns, Railway Enquiry & Ticket booking, On-line delivery of Land records etc.

Important E-Governance Portals:

☐ National Portal of India

The National Portal of India is a single window to access all the information and services being provided by various Indian Government bodies. This contains information of Government Ministries and Departments at the Central, State and District level.

This Portal is designed and maintained by the National Informatics Centre (NIC), Deptt. Of Information Technology, Ministry of Comm. & Information Technology, Govt. of India.

URL: http://www.india.gov.in

☐ Govt. of India Web Directory

The Government of India Web Directory is repository of various Government Department's web sites including States and Union territories and Central Government Departments.

URL: http://www.goidirectory.nic.in

Important E-Governance Portals:

Income Tax Department's Portal

To meet the demand for easy access of Information about Income Tax Rules and efficient system for Income-tax collection, the Income Tax Department launched a centralized website in 2002. Presently this portal offers various services to citizen including PAN/TAN enquiries and Online filling of Income Tax Returns etc.

URL: http://www.incometaxindia.gov.in

Right To Information (RTI) Act Portal

Right To Information Act 2005 facilitates citizen to gain information regarding Government's activities. The RTI portal provides details about RTI procedures, Appellate Authorities, Public Information Officer (PIO) in various Departments and other related information.

URL: http://www.rti.gov.in

Social Impacts of E-Governance

☐ Positive Impact

❖ E-Governance Programs facilitates Government in <u>effective Administration</u> and service delivery.

❖ It provides <u>reliable, secure, economical and faster services</u> at door step.

❖ E-Governance has proved as a <u>successful tool to minimize the corruption</u> to some extent by providing transparent and easily-accessible services to common man.

☐ Limitations

❖ People in <u>rural and remote area could not get benefit</u> from these E-Governance projects due to <u>poor ICT infrastructure and lack of Awareness</u>.

❖ <u>Unavailability of computers, Internet and lack of knowledge of computer operation</u> has also prevented people to get benefit from E-Governance Applications.

❖ Not all the services can be computerized and offered by the E-Governance.

E-Business (E-Commerce)

☐ What is E-Commerce ?

E-Business or E-Commerce refers to any form of business or trade that uses e-Technologies to facilitate the selling or buying of products and services, transactions of money and goods etc.

☐ Benefits of E-Commerce Applications

- E-Commerce <u>reduces cost of production </u>by reducing overheads like high rent of shops or retail-outlet and reducing stock cost.

- It <u>increases profit by increasing sales volume </u>and offers opportunity to access new customer and market on the glob.

- It provides more accurate information about the product and <u>offers 24x7 access to market </u>and customer services.

- It provides <u>cost-saving, improved customer service </u>and faster response to customers.

Major E-Business Portals

☐ **IRCTC Portal**

The Indian Railway Catering & Tourism Corporation (IRCTC) Portal provides information of Trains, Availability of seats and On-line booking of Railway Tickets in India.

URL: www.irctc.co.in

☐ **Online Reservation site Yatra.com**

This portal provides facility for airline reservation. You can book flight tickets for domestic and International flights, Hotels and avail Tourist packages etc.

URL: www.yatra.com

☐ **Life Insurance Corporation of India**

LIC of India is one of the premier Insurance company of Govt. of India. This portal offers facilities like Online deposit of Premium, Sales of Insurance Policies and enquiry.

URL: www.licindia.com

Major E-Business Portals

- **E-Banking Site of State Bank of India**

  SBI is the largest government owned bank. It has launched e-banking services for customers to facilitate Personal Banking, Loan Lending and Fund Transfer etc.

  URL: www.statebankofindia.com

- **On-line Store Amazon.com**

  Amazon is the world's largest online store, which sells books, Music CDs and DVDs, Computer Software, Video Games, Furniture, Electronic goods and Toys etc.

  URL: www.amazon.com

- **On-line Auction Site – eBay India**

  eBay.in is India's most popular online shopping store which provides online sells, purchase, auctions for various products like Mobile, Cameras, Computers and others appliances.

  URL: www.ebay.in

Social Impacts of E-Business

☐ Positive Impact

❖ It <u>reduces Transaction and other overhead cost</u> of the products.

❖ It <u>increases productivity and efficiency</u> and offers improved customer services.

❖ It <u>opens the global market</u> for the Manufacturer and gives opportunity to sell the product on the globe.

❖ Offers easy shopping by Secure and Online payments system.

☐ Limitations

❖ <u>Lack of knowledge and poor Telecommunication Infrastructure</u> and unavailability of Internet connectivity in Rural areas are major issues for limited use of e-Business.

❖ People are still unaware about legal remedies. There are <u>high chances for fraud, theft of private information</u> due to lack of effective legal framework.

E-Learning

☐ **What is E-Learning ?**

E-Learning describe as a means of teaching and learning through e-technology like Internet and Multimedia enriched contents on CDROM or DVD.

☐ **Benefit of E-Learning**

❖ **For Trainer**

- It reduces Teaching and Learning times.
- It facilitates <u>consistent and fast delivery of Teaching-Learning contents</u> at low cost.
- E-Contents <u>can be updated and organized</u> easily.

❖ **For Learner**

- It provides opportunity to <u>learn Any time-Any Where</u>.
- It offers Multimedia (Text, Audio, Video, Graphics and Animation) contents for <u>easy and long-lasting learning</u>.
- It facilitates <u>Self-Motivational and Self-Paced</u> learning.

Major E-Learning Portals

☐ **Moodle.org**

Moodle is an Open Source Course Management System (CMS) also called Learning Management System (LMS). It help students in learning of various subjects/topics online.
URL: www.moodle.org

☐ **W3Schools.com**

It is free e-learning portal, where you can learn Web site designing, and other related subjects through online web tutorials.
URL: www.w3schools.com

☐ **Xerte Project**

It is also an Open Source e-learning developer tool, which is used to develop interactive e-learning materials for the students.

URL: www.nottingham.ac.uk/xerte

Social Impacts of E-Learning

☐ Positive Impact

❖ Cost effective, <u>Interactive and Multimedia enriched</u> Material for effective and long-lasting learning.

❖ No physical Interaction among Teacher and Learner is required i.e. <u>most suited for working people</u>.

❖ Easily available and facilitates <u>Any-time and Any-Where</u> Learning.

☐ Limitations

❖ <u>High dropout rate</u> due to lack of interaction among Trainer and Trainee.

❖ Sometimes less effective due to inappropriate learning contents.

❖ It <u>requires prior knowledge of Computer</u> and other Technologies.

Designing IT Applications

An IT application refers to a Application software which facilitates customers, users in various real-life applications like e-Governance, e-Commerce or e-Learning etc.

In General, an IT application comprises two major port-

☐ Front-end

It is an User-Interface which <u>collects input or response from the users</u>.

- ❖ It receives user's queries, requests and passes to the Back-end for further processing.
- ❖ Generally, it includes **Graphical User Interface** (**GUI**) through which user interacts using Mouse and keyboards.
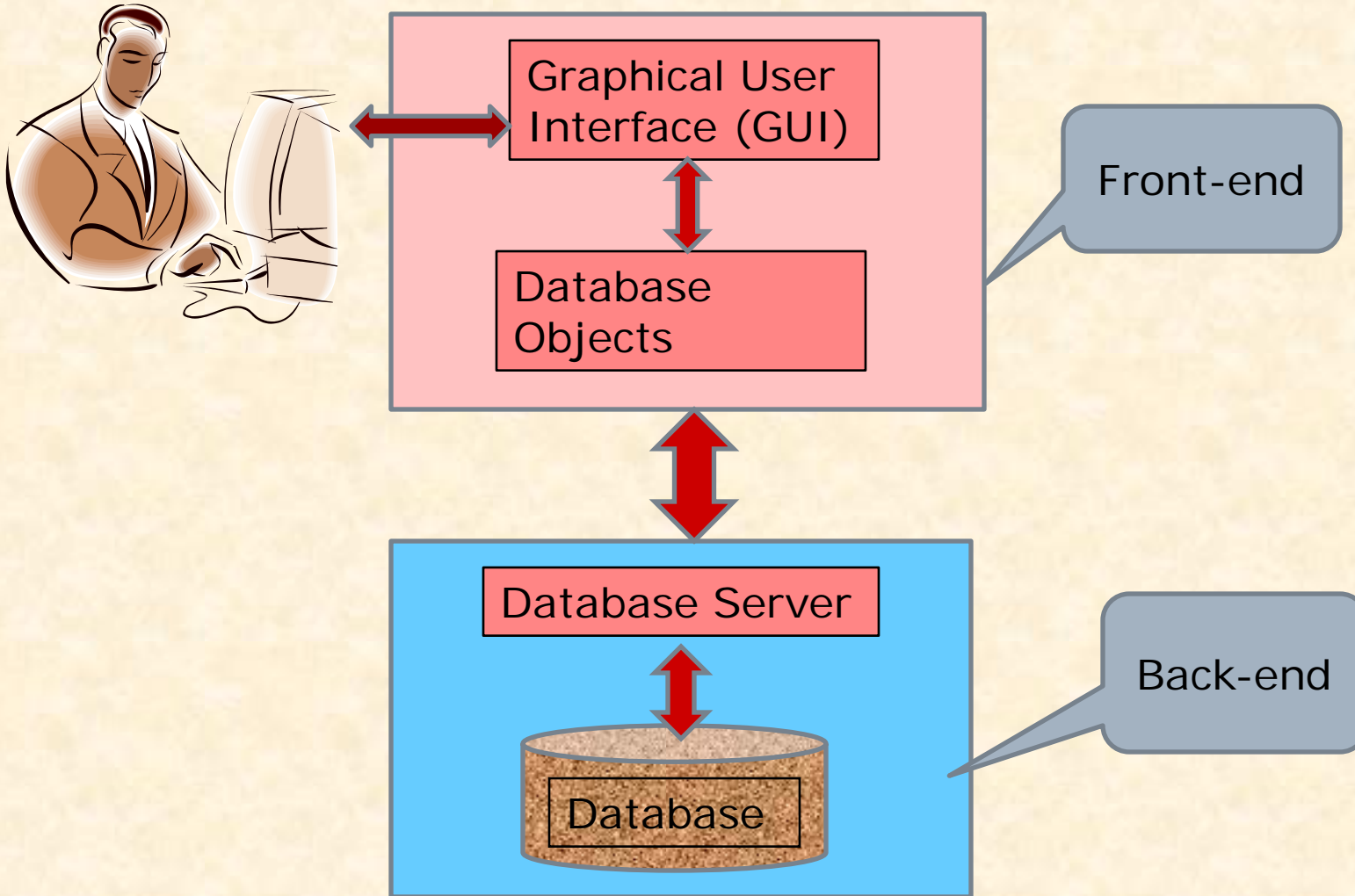
☐ Back-end

It is invisible component which <u>processes the user-requests</u> as received by the front-end.

- ❖ It handles queries and database access received from Front-end and sends results accordingly.
- ❖ Generally, it contains a **Database** with tables and other objects.

Front-end and Back-end

Designing Front-End (GUI Interface)

❖ The front-end is a face of any application which collects input or responses from the user and provide information to users using various Graphical components like Window, Text Boxes and Buttons etc.

❖ Goodness of Front-end depends on its design, placement and appearance of contents, and connectivity to Back-end.

The followings are desirable feature of a good Interface.

☐ **Display features:**
- ✓ Conventional use of Icons and messages.
- ✓ Provides Visual and Audible Feedback.
- ✓ Use of easy and most suitable controls.

☐ **Functional features:**
- ✓ Supports various Input devices like Keyboard and mouse etc.
- ✓ Support validation of data to avoid errors.
- ✓ User authentication and Security features.

Properties of a good Front-End

1. Consistency and Standard
    Front-End should be consistent in look and operation. It should follow a standard design and convention for Window (frame), Menus, Dialog Boxes and Labels etc.

2. User Familiar and Good looking Design
    Front-end should be user-familiar and always keeps user informed about what is going on. It should contain relevant information in visible font, size and color etc.

3. Error Prevention and Recovery
    Front-end should be to identify and prevent data-entry errors and supports recovery in case of failure.

4. Flexibility and efficiency of use
    Front-end should facilitate to Expert users as well as New users and supports customization as per user need.

5. Help Support and Documentation
    A good front-end provide Help documentation for its operation and explains itself.

Commonly used Controls for GUI Design

The following controls or <u>Window Gadget</u> (**Widget**) are commonly used during design of front-end.

- ☐ **Frame :** Used as a Basic Window or form.
- ☐ **Label:** Allows Non-editable text or icon to displayed.
- ☐ **TextField:** Allows user to input single-line editable text.
- ☐ **PasswordField:** It is used to get some secret/encrypted text.
- ☐ **Button:** An action is generated when pushed.
- ☐ **TextArea:** Allows user to input multi-line editable text.
- ☐ **CheckBox:** Allow user to select multiple choices.
- ☐ **RadioButton:** They are option button which can be turned on or off. These are suitable for single selection.
- ☐ **List:** Gives a list of items or choices from which user can select one or more items.
- ☐ **ComboBox:** gives dropdown list of items or new item cab be added. It is combination of List and TextBox.

Designing Back-End (Database)

✓ Any IT Application usually stores a lot of data in the form of Database also called Back-end, that responds to the request of the front-end or user.

✓ A database can be defined as a <u>collection of interrelated data</u> stored together to serve the applications. Basically it works as a <u>computer based record keeping system</u>.

✓ A Database is managed by Database Management System (DBMS) which is responsible to maintain the database and facilitate users to insert, modify, delete and search (query) information stored in the database in the form of records.

✓ A database may contains several tables to store records and avoids data redundancy.

✓ A table may holds some constraints to ensure validity of data and Keys like Primary key and Foreign Keys etc.

Development of IT Applications.

The development of an IT application involves various activities. The following steps may be followed while development of IT Applications.

- ☐ **Study of Problem:**

  The problem should be studied in terms of its best technical and economical feasible solution before development.

- ☐ **Design of Back-end:**

  Decision to be made regarding database tables and their structure (data type and size etc.) to meet the requirement.

- ☐ **Design of Front-end:**

  Decision to be made regarding Input to be taken from the user through Forms containing various controls like TextBox, RadioButtons etc. as per requirement and ease of use.

- ☐ **Establishment of Connection:**

  Connection between front-end and Back-end is established.

- ☐ **Testing and Implementation.**

  Finally, testing of Front-end and Back-end and their connectivity with sample data is carried out and Application is implemented, if testing is successful.

E-R Diagram – Modeling tool for the Database*

The Entity-Relationship (E-R) diagram is used to exhibit the model (design) of the database in terms of attributes, entities and their relationships. The following symbols are used in E-R diagram.

☐ **Entities (Table)**

An entity is a distinguishable object which may be place, person or concept e.g. Student, Teacher, Account, Book etc. It is represented by a rectangular Box.
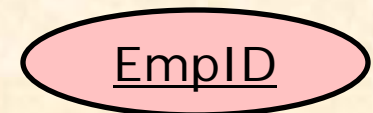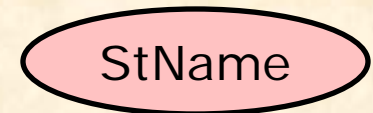
STUDENT

TEACHER
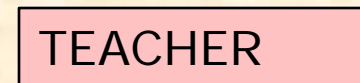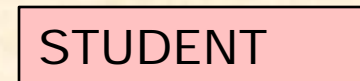
☐ **Relationship (Table)**

It shows the association among Entities and may be <u>One-to-One, One-to Many and Many-to-Many</u>. It is represented by diamond shaped box connecting Entities.

Teach

☐ **Attribute (Column)**

An attribute is a property of a given entity. It is shown by a Oval with the name of attribute. The Primary key attribute is underlined.

StName

<u>EmpID</u>

E-R Diagram – An Example

Let us model the simplest database of school. A school contains Teacher and Student Entity with some attributes as shown in the E-R diagram. Teaches is relationship, which connects both entities.