

**Dr. SNS RAJALAKSHMI COLLEGE OF ARTS & SCIENCE(AUTONOMOUS)**

Accredited by NAAC (Cycle III) with 'A+' Grade

Affiliated to Bharathiar University

Coimbatore-641049

**DEPARTMENT OF COMPUTER APPLICATIONS**



**II BCA B**

MANAGEMENT INFORMATION SYSTEM

COURSE CODE:21UCP302

UNIT-IV

## **UNIT-IV:**

### **Enterprise Management System:**

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An Enterprise Management System (EMS), also known as Enterprise Systems, is an application software package that helps organizations to manage various software tasks and achieve their software needs in real-time. The software is customized based on an organization's needs. If you operate a large business, investing in EMS can help you manage your business smoothly and achieve your goals.

### **Three Types Of Enterprise Management Systems?**

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#### **Customer Relationship Management**

This software helps an organization with managing interactions with customers. Its ultimate goal is to connect brands to existing and potential customers, process data, gather customer details, streamline processes, decrease the time used by employees on various tasks and grow businesses.

#### **Enterprise Resource Planning**

An organization implements Enterprise Resource Planning (ERP) for easy facilitation of processes. It helps smooth marketing projects, accounting, human resource management, finance, and procurement. The modules in this system are interconnected and play a crucial role in the effective distribution of information.

#### **Supply Chain Management**

Managing the supply chain is a challenging task that requires the right tools and resources. Using a supply chain management system helps an organization manage data, finances, and the flow of product or service delivery to the end-user. It helps an organization monitor the entire process, from purchasing raw materials to product delivery.

### **The Advantages Of Investing In An Enterprise Management System**

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### **Supports Complex Infrastructure**

An Enterprise Management System supports complex IT infrastructures without needing many hands from **IT professionals**. The system is easy to use because it comes in one package. It is an ideal tool that helps organizations streamline operations, leading to enhanced collaboration and efficiency.

### **Boosts Decision Making**

Handling big data can be challenging and time-consuming. Investing in EMS helps you get real-time data and make informed decisions. You will use the most accurate and up-to-date data to devise creative ways to offer better services to your customers. Your team can easily access data because this system integrates various elements of the business into one platform.

### **Increased Organization Performance**

EMS reduces paperwork, leading to increased performance and productivity. Since this system connects the inventory, supply, human resources, and sales, it gives quick access to data, thus, enhancing operations and improving efficiency. Using this system also minimizes human errors and reduces disruptions during production.

### **Enhanced Business Planning**

With enterprise management systems, you can quickly create business plans that help you track your organization's operations. The plan enables you to determine whether you are working towards achieving your goals or not. You can monitor overall service and customer satisfaction, expenses, and how production is coming along. You will also get notified of potential inventory problems that enable you to make the necessary changes in time.

### **Improved Data Accuracy**

Many organizations experience challenges managing operations due to duplicate records of data. This is why it is imperative to invest in a tool that can give you accurate data for effective operations. Using EMS creates a centralized information collection with enhanced data processing and storage. This makes it possible for the staff members to easily access and share data, thus, improving performance and collaboration.

### **Better Flexibility and Productivity**

Every organization longs to remain productive all year round. While this may seem straightforward, it can be challenging if you lack the right tools. EMS is an effective tool that automates specific processes, thus, increasing employee productivity. Your team will not waste time on various tasks because the software can handle the tasks automatically. The team will focus on other duties that contribute to the growth of your organization.

## **Reduces Running Costs**

When using enterprise systems, you do not need much paperwork. You will also experience reduced optimization of daily activities. Which means you will no longer need many hands to do various tasks. This saves you money on operating costs in the long run. You do not have to worry about hiring IT staff because the software can handle multiple tasks. This enables you to save money that you can use to expand your business in the long run.

## **Increased Data Security**

With advanced technology today, hackers continue to look for new strategies to hack systems and manipulate data. This leads to a data breach, hefty fines, and penalties for the affected organizations. If your business faces a data breach, you will lose money, experience business disruptions, and compromise the integrity of your organization. An EMS has an integrated security feature protecting customers and business data from data loss and theft. You will run operations with peace of mind, knowing that your data is safe.

## **Information technology**

Information technology (IT) is the use of any computers, storage, networking and other physical devices, [infrastructure](#) and processes to create, process, store, secure and exchange all forms of electronic data. Typically, IT is used in the context of business operations, as opposed to technology used for personal or entertainment purposes. The commercial use of IT encompasses both computer technology and telecommunications.

The *Harvard Business Review* coined the term *information technology* to make a distinction between purpose-built machines designed to perform a limited scope of functions, and general-purpose computing machines that could be programmed for various tasks. [As the IT industry evolved](#) from the mid-20th century, computing capability increased, while device cost and energy consumption decreased, a cycle that continues today when new technologies emerge.

## **What does information technology encompass?**

The IT department ensures that the organization's systems, networks, data and applications all connect and function properly. The IT team handles three major areas:

1. deploys and maintains business applications, services and infrastructure (servers, networks, storage);
2. monitors, optimizes and [troubleshoots the performance of applications](#), services and infrastructure; and

3. oversees the security and governance of applications, services and infrastructure.

Most IT staff have different responsibilities within the team that break into several key areas including:

- **Administration.** Administrators handle the day-to-day deployment, operation and monitoring of an IT environment, including systems, networks and applications. Admins often perform a range of other duties such as software upgrades, user training, software license management, procurement, security, data management and observing adherence to business process and compliance requirements.
- **Support.** Help desk staff specialize in answering questions, gathering information and directing troubleshooting efforts for hardware and software. IT support often includes IT asset and change management, helping admins with procurement, handling backup and recovery of data and applications, monitoring and analyzing logs and other performance monitoring tools and following established support workflows and processes.
- **Applications.** Businesses rely on software to perform work. Some applications are procured and deployed from third parties, such as email server applications. But many organizations
  - retain a staff of skilled [developers that create the applications](#) and interfaces -- such as APIs -- needed to deliver critical business capabilities and services. Applications might be coded in a wide array of popular languages and integrated with other applications to create smooth and seamless interactions between different applications. Developers might also be tasked with creating interactive business websites and building mobile applications. The trend toward agile or continuous development paradigms require developers to be increasingly involved with IT operations, such as deploying and monitoring applications.
- **Compliance.** Businesses are obligated to observe varied government- and industry-driven regulatory requirements. IT staff play a major role in securing and monitoring access to business data and applications to ensure that such resources are used according to established business governance policy that meets regulatory requirements. Such staff are deeply involved with security tasks and routinely interact with legal and business teams to prevent, detect, investigate and report possible breaches.

Data processing plays a significant role in these core business practices, among others, including:

- product development and design;

- marketing and market research;
- sales and invoicing;
- customer development and retention;
- accounting and taxes;
- human resources and payroll; and
- regulatory compliance.

Computing has penetrated practically every part of business and much of our personal lives. The ubiquity of computing -- also referred to as [pervasive computing](#) -- is another reason why IT is critical. Computing devices have evolved well beyond personal computers and servers. Today, all businesses and most individuals have and use multiple computing devices, including phones, tablets, laptops, game consoles and even doorbells, thermostats, vacuums and many kitchen appliances.

Virtually all these devices, many of which are part of the IoT, tap into the internet, which interconnects billions of devices worldwide. It's a complex and, potentially, perilous environment that requires IT expertise for management, security, maintenance and reliability.

### **Examples of information technology**

So how is IT actually involved in day-to-day business? Consider five common examples of IT and teams at work:

**Server upgrade.** One or more data center servers near the end of their operational and maintenance lifecycle. IT staff will select and procure replacement servers, configure and deploy the new servers, backup applications and data on existing servers, transfer that data and applications to the new servers, validate that the new servers are working properly and then repurpose or decommission and dispose of the old servers.

### **DATABASE MANAGEMENT SYSTEM:**

A database is an organized collection of structured information, or data, typically stored electronically in a computer system. A database is usually controlled by a database management system (DBMS).

## Types of DBMS

The types of DBMS based on data model are as follows –

- Relational database.
- Object oriented database.
- Hierarchical database.
- Network database.

### Relation Database

A relational database management system (RDBMS) is a system where data is organized in two-dimensional tables using rows and columns.

This is one of the most popular data models which is used in industries. It is based on SQL.

Every table in a database has a key field which uniquely identifies each record.

This type of system is the most widely used DBMS.

Relational database management system software is available for personal computers, workstation and large mainframe systems.

For example – Oracle Database, MySQL, Microsoft SQL Server etc.

Std ID	Name	City
201	Bob	Hyderabad
204	Lucky	Chennai
205	Pinky	Bangalore

In the above student table Std ID, Name and city are called as attributes and their values. Std ID is a primary key attribute which uniquely identifies each record in the student table.

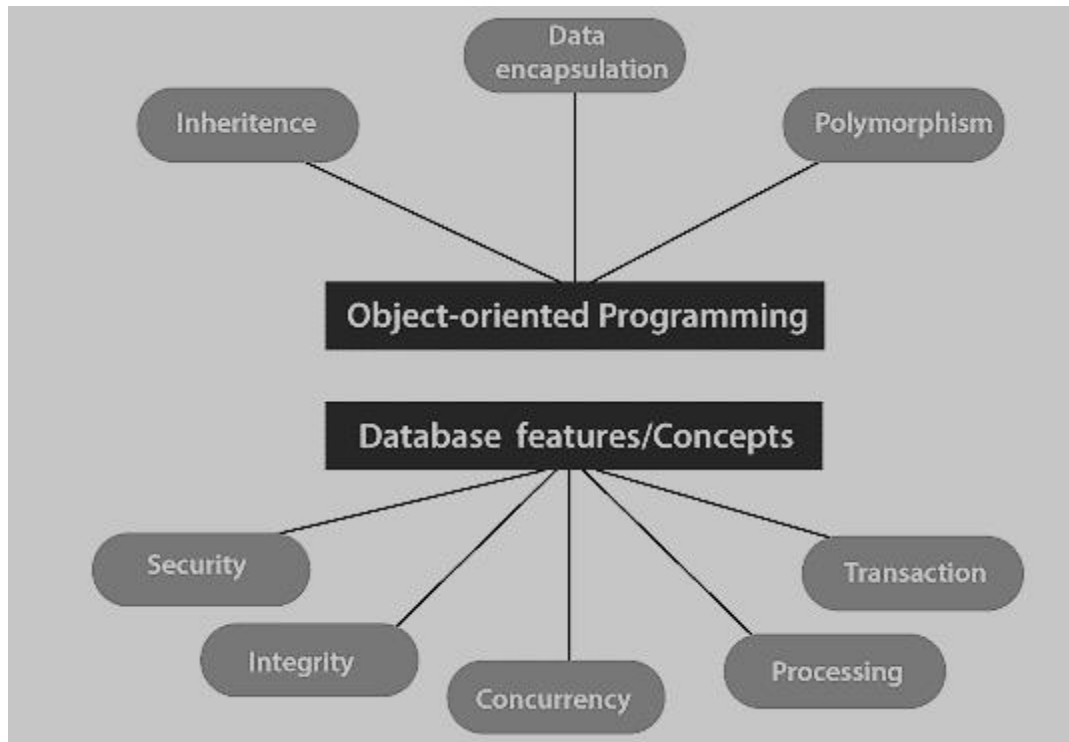
### Object Oriented Database

It is a system where information or data is represented in the form of objects which is used in object-oriented programming.

- It is a combination of relational database concepts and object-oriented principles.
- Relational database concepts are concurrency control, transactions, etc.
- OOPs principles are data encapsulation, inheritance, and polymorphism.
- It requires less code and is easy to maintain.

For example – Object DB software.

The object oriented database is represented in diagram format below –



### Hierarchical Database

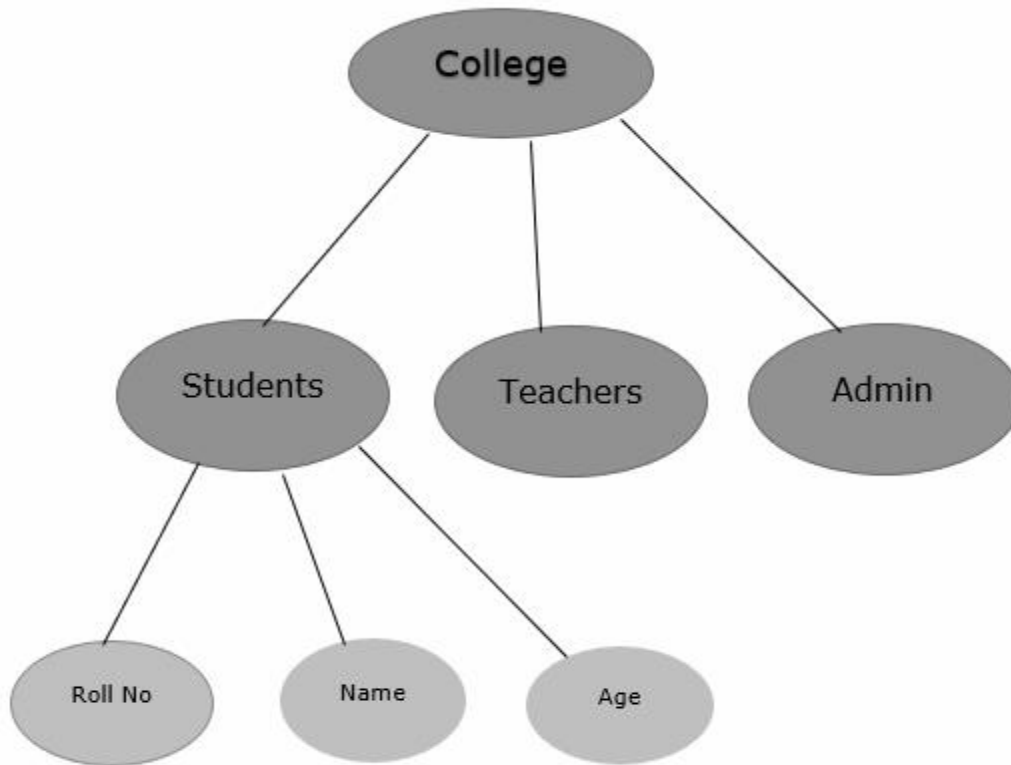
It is a system where the data elements have a one to many relationship (1: N). Here data is organized like a tree which is similar to a folder structure in your computer system.

- The hierarchy starts from the root node, connecting all the child nodes to the parent node.
- It is used in industry on mainframe platforms.

For example– IMS(IBM), Windows registry (Microsoft).

An example of a hierarchical database is given below –





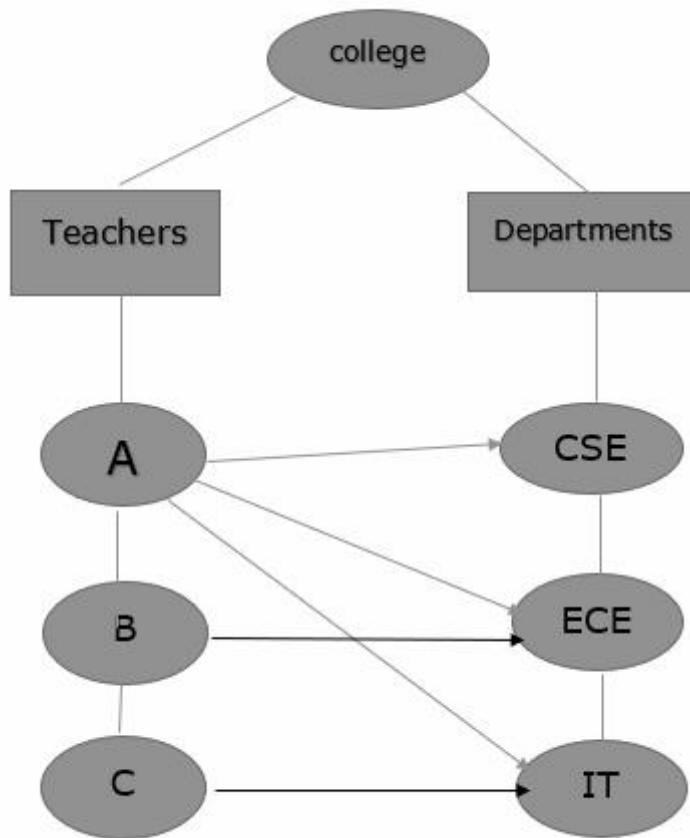
### Network database

A Network database management system is a system where the data elements maintain one to one relationship (1: 1) or many to many relationship (N: N).

It also has a hierarchical structure, but the data is organized like a graph and it is allowed to have more than one parent for one child record.

### Example

Teachers can teach in multiple departments. This is shown below –



### Object-oriented technology (OOT)

**Object-oriented technology (OOT)** is a software design model in which objects contain both data and the instructions that work on the data. It is increasingly deployed in distributed computing.

### OLE Objects

There are a wide variety of objects that are used as OLE objects. However, anything that can be displayed or controlled by an application can be an OLE object. With an OLE compliant document having the ability to contain different object types, OLE facilitates multimedia documents.

Examples of common OLE objects include:

- text
- charts
- spreadsheets
- bit-mapped pictures
- vector drawings

- sounds
- video clips

## Object Oriented Database?

An [Object Oriented Database](#) (OODB) is a system combining characteristics of a database with the manipulation of objects typically available in object oriented languages. The following is a breakdown of the database and object oriented features inherent in such a database. Not all characteristics MUST be present for a system to be considered an OODB, but the more it has, the closer it gets to the ideal.

DBMS features:

- Persistence: the ability of the programmer to have the data survive the execution of a process. In OODB, each object is allowed to become persistent independent of its type, without explicit casting.
- Secondary Storage Management: these are performance features (such as index management and query optimization) hidden from the user.
- Concurrency: the ability of the DBMS to offer all users working simultaneously the same level of service
- Recovery: the software is able to bring itself and its data back to some coherent state in case of hardware or software failure.

## Object Oriented Operating System

An object oriented operating system is an operating system that has the following characteristics:

- The operating system uses a dynamic collection of objects as its kernel and resources (Object-Based). This means that every command issued to the operating system such as "ls" or "dir" is a call to an object located within the class structures.
- The operating system supports an object-oriented application interface based on local and distributed objects, inheritance, and polymorphism. This means that every program ran on the operating system can use the objects and classes provided through the operating system and polymorphism and inheritance is supported.
- The operating system's subsystems are defined through the framework of classes. This means that all substructures such as I/O are built as class structures.

OODB”

- An OODB supports arbitrary structures, nested structures, dynamically varying structures, arbitrary many-to-many relationships and most others you can think of.
- An RDB supports simple operations such as select, project, and join over localized amounts of data through the use of SQL.
- An OODB allows arbitrary operations, defined by users, with arbitrary complexity. These operations might traverse inter-object relationships, affect many objects in different databases, or do any number of user-defined tasks.

## Structure of a Client Server System

In client server computing, the clients requests a resource and the server provides that resource. A server may serve multiple clients at the same time while a client is in contact with only one server.

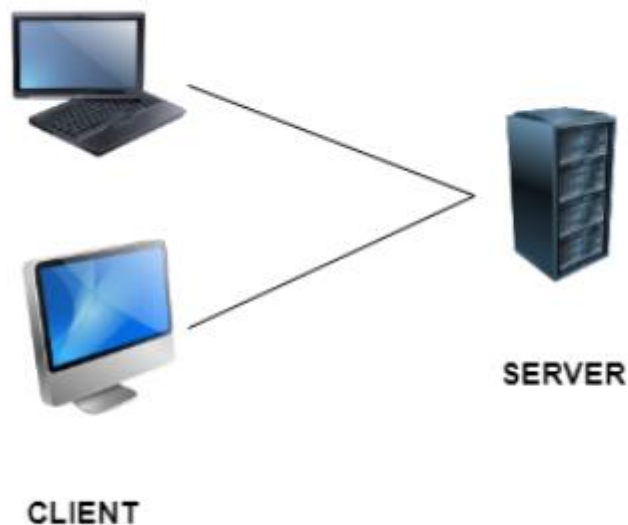
The different structures for two tier and three tier are given as follows –

### Two - Tier Client/Server Structure

The two tier architecture primarily has two parts, a client tier and a server tier. The client tier sends a request to the server tier and the server tier responds with the desired information.

An example of a two tier client/server structure is a web server. It returns the required web pages to the clients that requested them.

An illustration of the two-tier client/server structure is as follows –



### Advantages of Two - Tier Client/Server Structure

Some of the advantages of the two-tier client/server structure are –

- This structure is quite easy to maintain and modify.
- The communication between the client and server in the form of request response messages is quite fast.

### Disadvantages of Two - Tier Client/Server Structure

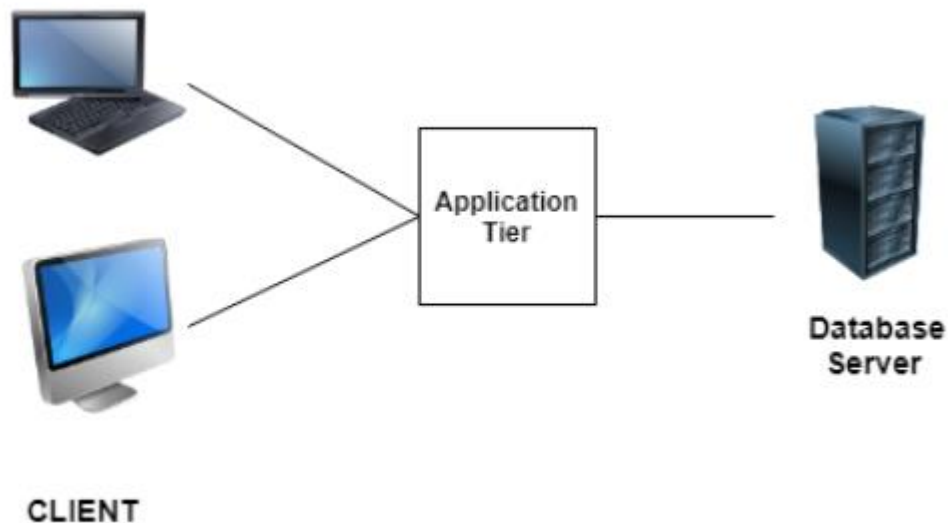
A major disadvantage of the two-tier client/server structure is –

- If the client nodes are increased beyond capacity in the structure, then the server is not able to handle the request overflow and performance of the system degrades.

### Three - Tier Client/Server Structure

The three tier architecture has three layers namely client, application and data layer. The client layer is the one that requests the information. In this case it could be the GUI, web interface etc. The application layer acts as an interface between the client and data layer. It helps in communication and also provides security. The data layer is the one that actually contains the required data.

An illustration of the three-tier client/server structure is as follows –



### Advantages of Three - Tier Client/Server Structure

Some of the advantages of the three-tier client/server structure are –

- The three tier structure provides much better service and fast performance.
- The structure can be scaled according to requirements without any problem.
- Data security is much improved in the three tier structure.

### Disadvantages of Three - Tier Client/Server Structure

A major disadvantage of the three-tier client/server structure is –

- Three - tier client/server structure is quite complex due to advanced features.

## **TQM – Total Quality Management**

Total Quality Management is defined as a customer-oriented process and aims for continuous improvement of business operations. It ensures that all allied works (particularly work of employees) are toward the common goals of improving product quality or service quality, as well as enhancing the production process or process

of rendering of services. However, the emphasis is put on fact-based decision making, with the use of performance metrics to monitor progress.

## **The key principles of Total Quality Management**

### **Commitment from the management**

- Plan (drive, direct)
- Do (deploy, support, and participate)
- Check (review)
- Act (recognize, communicate, revise)

### **Employee Empowerment**

- Training
- Excellence team
- Measurement and recognition
- Suggestion scheme

### **Continuous Improvement**

- Systematic measurement
- Excellence teams
- Cross-functional process management
- Attain, maintain, improve standards

## **Customer Focus**

- Partnership with Suppliers
- Service relationship with internal customers
- Customer-driven standards
- Never compromise quality

## **Process Oriented**

- Thinking about the process
- Handling of the process
- Processes which are result oriented

## **Decision Making Based on Facts Only and Not on Opinions**

- Integrated, strategic and systematic approach to ensure the entire organisation is aligned
- Communication must be open and at all levels of the organisation.

## **Benefits of Total Quality Management**

The benefits arising from the implementation of a Total Quality Management in an organization are:

- This will increase the awareness of quality culture within the organization.
- A special emphasis on teamwork will be achieved.
- TQM will lead to a commitment towards continuous improvement.

## Essential requirements for successful implementation of TQM

- **Commitment:** Quality improvement (in all aspects) must be everyone's job in the organization. An apparent commitment from the top management, breaking down the barriers for continuous quality improvement and steps required to provide an environment for changing attitudes must be provided. Training and support for this should be extended.
- **Culture:** There should be proper training to effect the changes in attitude and culture.
- **Continuous Improvement:** Recognize improvement as a continuous process, and not merely a one-off program.
- **Customer Focus:** Perfection in service with zero defects and full satisfaction to the end-user whether it's internal or external.
- **Control:** Ensure monitoring and control checks for any deviation from the intended course of implementation.

- Plan
- Do
- Check
- Act

This is also referred to as the PDCA cycle.

- **Planning Phase:** This phase is the most crucial phase of total quality management. Under this phase, employees have to come up with their respective queries and problems which need to be addressed. The employees apprise the management of different challenges which they are facing in their day to day



operations and also analyze the root cause of the problem. They need to do the required research and collect significant data which would help them find solutions to all the problems.

- **Doing Phase:** In this phase, a solution for the identified problems in the planning phase is developed by the employees. Strategies are devised and implemented to crack down the challenges faced by employees. The efficiency and effectiveness of solutions and strategies are also evaluated in this stage.
- **Checking Phase:** Under this phase, a comparison analysis of before and after is done in order to assess the effectiveness of the processes and measure the results.
- **Acting Phase:** This is the last phase of the cycle, in this phase employees document their results and prepare themselves to address other problems