Faculties Using ICT

Name of the Full time teacher	Designation	Name of the departmen
DR. M RAVISHANKAR	Principal & Professor	CSE
MS. MEENAKSHI H N	Associate Professor & Hod	CSE
MR. MADHUSUDHAN G K	Assistant Professor	CSE
MR. ADITYA C R	Assistant Professor	CSE
MR. THEJA N	Assistant Professor	CSE
MS. RUMANA ANJUM	Assistant Professor	CSE
MS. AKSHATHA M	Assistant Professor	CSE
MS. PALLAVI J	Assistant Professor	CSE
MS. SHILPA B L	Assistant Professor	CSE
MS. NITHAKSHA N	Assistant Professor	CSE
MS. RAMYA M	Assistant Professor	CSE
MS. RAKSHITHA R	Assistant Professor	CSE
DR.SHESHA PRAKASH M N	Professor& Hod	CV
DR. CHANDRASHEKAR B	Professor	CV
DR. ANANTHAN H	Professor	CV
DR. CHANDRA SHEKHAR R G	Associate Professor	CV
MR. VINAY KUMAR B M	Assistant Professor	CV
MR. JAYANTH K	Assistant Professor	CV
MR. ADARSH S	Assistant Professor	CV
MR. DEEPAK R	Assistant Professor	CV
MR ARUN L	Assistant Professor	CV
MR. SHIVAKUMAR N	Assistant Professor	CV
MS.SHAMBAVI K V	Assistant Professor	CV
MS. JEEVITHA K N	Assistant Professor	CV
MS. MANASA M P	Assistant Professor	CV
MS. ANUSHREE S	Assistant Professor	CV
MS.LOKESHWARI N	Assistant Professor	CV
DR. BINDU A THOMAS	Professor and Head	EC
MS. SUMA	Associate Professor	EC
MS. ANITHA D B	Associate Professor	EC
MR. NARAYANASWAMY G	Associate Professor	EC
MS.BHAVYA V	Assistant Professor	EC
MR. N YOGESH	Assistant Professor	EC
MS.RAJALAKSHMI M C	Assistant Professor	EC
MR. ROHITH M N	Assistant Professor	EC
MS.LALITHA N	Assistant Professor	EC
MS.ANUPAMA S	Assistant Professor	EC
DR. SUBRMANAYA M B	Assistant Professor	EC
MS. ASHA A	Assistant Professor	EC
MS.NAVYASHREE D	Assistant Professor	EC
MS.NAMRATHA D'CRUZ	Assistant Professor	EC
MS.BHANUSHREE C	Assistant Professor	EC
MR.NITESH K A	Assistant Professor	EC
MS.AMSAVENI P	Assistant Professor	EC
MR. MADHU SUDAN M P	Assistant Professor	EC
MS.KOMALA KUMARI	Assistant Professor	EC

MS. SHARANYA A R	Assistant Professor	EC
MS.SHRUTHI H O	Assistant Professor	EC
MS. DIVYASHREE G	Assistant Professor	EC
MS.POORNIMA K	Assistant Professor	EC
DR. SUREKHA MANOJ	Professor and Head	EE
MS.KAVERI K B	Associate Professor	EE
MS.SHEILA H	Associate Professor	EE
MS.SHAMALA N	Associate Professor	EE
MR.MANJUNATHA B	Assistant Professor	EE
MR.CHANDRASHEKHAR P	Assistant Professor	EE
MS.VARSHA V	Assistant Professor	EE
MR.P S KIRAN KUMAR	Assistant Professor	EE
MR.ZUHAIB BAIG	Assistant Professor	EE
MR.CHANDRASHEKHAR P	Assistant Professor	EE
MR.HEMANTH KUMAR S	Assistant Professor	EE
MS.SUSHMA H S	Assistant Professor	EE
MS.SOWMYA G	Assistant Professor	EE
MS.JAYASHREE C M	Assistant Professor	EE
MR.SURENDER KUMAR	Assistant Professor	EE
MS.SWATHI K	Assistant Professor	EE
MS.GANAVI C N	Assistant Professor	EE
MR.KARTHIK R P	Assistant Professor	EE
MS.SUMA S	Assistant Professor	EE
MS.KAVYASHREE S	Assistant Professor	EE
MS.VARSHITHA N	Assistant Professor	EE
MR.YATHISH BABU A M	Assistant Professor	EE
MR. SYED SALEEM	Assistant Professor	IS
MS. ASHWINI.P	Assistant Professor	IS
MS.DAKSHAYINI.K.B	Assistant Professor	IS
MS. SEEMA H R	Assistant Professor	IS
MS. NISARGA P	Assistant Professor	IS
MS. SUMAN JAYAKUMAR	Assistant Professor	IS
MS.VINAYASHREE	Assistant Professor	IS
MS.BINDU SHREE	Assistant Professor	IS
MR.HEMANTH	Assistant Professor	IS
MS.CHANDINI M S	Assistant Professor	IS
DR. NARENDRA BABU B. R.	Professor	ME
DR. KEERTHIPRASAD K. S.	Professor	ME
DR. SRIRAM N. S.	Professor	ME
MR. ALLWIN YESUVADIAN R.	Assistant Professor	ME
MR. ANIL KUMAR	Assistant Professor	ME
MR. ASHOK B. N.	Associate Professor	ME
MR. BHARATH P	Assistant Professor	ME

MR. MAHESH M	Assistant Professor	ME
MR. MANOHAR V.	Assistant Professor	ME
MR. NAVEED ANJUM	Assistant Professor	ME
MR. CHIKKADEVEGOWDA S. S.	Associate Professor	ME
MR. SANDEEP B	Assistant Professor	ME
MR. ARUN MARIBASHETTY	Assistant Professor	ME
MR.HEMANTH KUMAR B N	Associate Professor and Head	MCA
MR.SHANKAR B S	Assistant Professor	MCA
MR.PARIMAL KUMAR K R	Assistant Professor	MCA
MS. UMADEVI C	Assistant Professor	MCA
MR.THOUSEEF ULLA KHAN	Assistant Professor	MCA
MS. SAHANA P	Assistant Professor	MCA
MS.DEEPTHY ASHOK M	Assistant Professor	MCA
Dr. MOHAN MONTEIRO	Assistant Professor	MBA
Mr. RAGHAVENDRA G	Assistant Professor	MBA
Ms. KRITHI C NAIK	Assistant Professor	MBA
Dr. VASANTHI REENA WILLIAMS	Assistant Professor	MBA
Mr. LOKESH K N	Assistant Professor	MBA
Mr. CHANDAN D N	Assistant Professor	MBA

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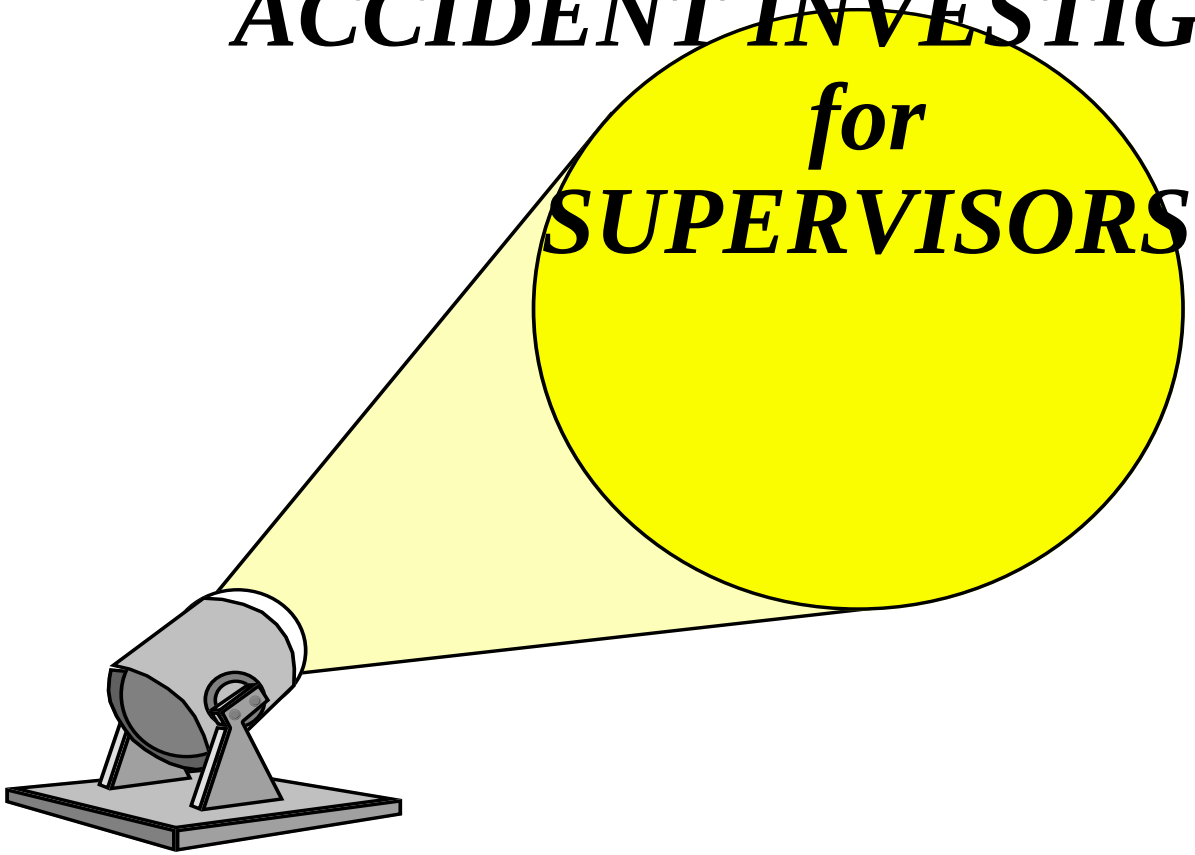
INTRODUCTION
to
ACCIDENT INVESTIGATION
for
SUPERVISORS



TRAINING OBJECTIVES

- **Explain the <u>need</u> for Accident Investigations**
- **Explain the <u>benefits</u> of Accident Investigations**
- **Provide the <u>information</u> necessary to properly complete Accident Investigations**
- **Provide the <u>tools</u> necessary to properly complete Accident Investigations**

WHAT IS ACCIDENT INVESTIGATION?

- **Process to determine the underlying causes of accidents**
- **Causal information used to identify and take preventive action**
- **Basic component of loss prevention**

BENEFITS OF ACCIDENT INVESTIGATION ?

GROUP DISCUSSION

BENEFITS OF ACCIDENT INVESTIGATION...

- **Prevention of future, similar losses**
- **Contribution to the bottom line**
- **Reduction of human suffering**
- **Continuous improvement process**

WHY DO ACCIDENT INVESTIGATIONS FAIL ?

GROUP DISCUSSION

WHY ACCIDENT INVESTIGATIONS FAIL...

- **Lack of time to complete**
- **Lack of motivation to complete**
- **Lack of accountability**
- **Lack of skills & knowledge**
- **Investigation stopped short and didn't reveal all causes of the accident**

ROLES & RESPONSIBILITIES

- **Branch Management**
- **Safety Director**
- **Supervisors**
- **Task Force / Committee**

DEFINITION OF KEY WORDS

- **Accident / Incident**
- **Frequency / Severity**
- **Exposure / Control**
- **Illness / Injury**
- **Property Damage**
- **Near Misses**
- **Root Causes**
- **Contributory Causes**

PRE-ACCIDENT PLANNING

- Clearly defined roles and responsibilities
- Training of key staff members
- Communications established
- Standard procedures established
- Necessary equipment and forms on hand

WHICH ACCIDENTS NEED TO BE INVESTIGATED ?

- **Injury?**
- **Illness?**
- **Property damage?**
- **Near miss?**

RECORD YOUR ANSWERS !

WHICH ACCIDENTS NEED TO BE INVESTIGATED ?

- ☑ **Injury?**
- ☑ **Illness?**
- ☑ **Property damage?**
- ☑ **Near miss?**

ANSWER: ALL OF THE ABOVE !

ACCIDENT INVESTIGATION: A 6-STEP PROCESS

- **Collect Information**
- **Analyze All Causes**
- **Assess Future Accident Potential**
- **Develop Corrective Action**
- **Report Data and Recommendations**
- **Take Corrective Action and Monitor**

COLLECTING INFORMATION

ON-SITE:

- Securing the scene
- Investigating at the scene
- Recording key information
- Equipment is needed...

ACCIDENT INVESTIGATION KIT

- Camera
- Measuring tape
- Barricade tape
- Plastic vials with caps
- Graph paper
- Accident investigation forms

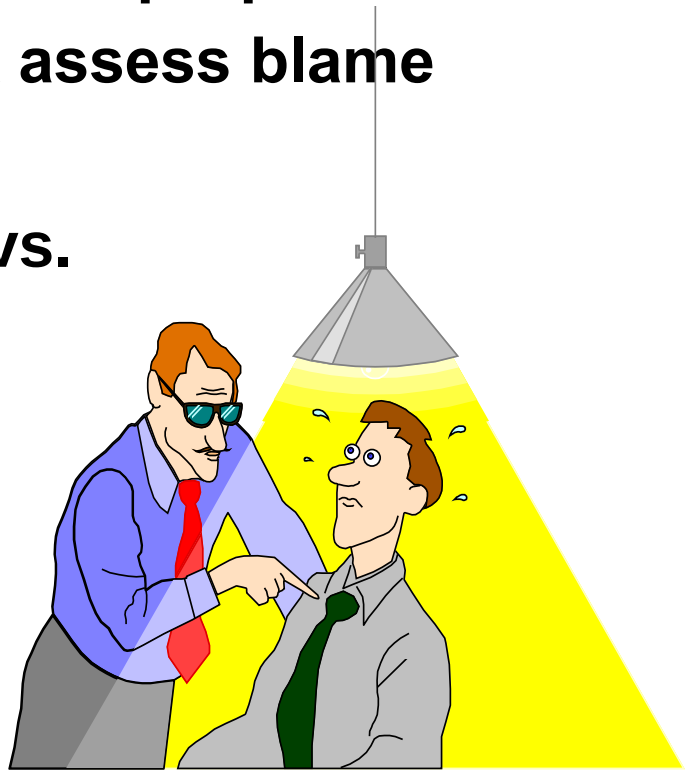
COLLECTING INFORMATION

OFF-SITE:

- Interview key people
- Assess past accident history
- Review pertinent records

INTERVIEWING TIPS

- Put the person at ease, explain purpose
- Fact-finding process, don't assess blame
- Ask open-ended questions
- Investigating the accident vs. disciplining the employee



REVIEWING RECORDS

- Standard Work Practices
- Job Safety Analysis
- Material Safety Data Sheets
- Employee Personnel Records
- Maintenance Logs
- Past Accident History
- Inspection Records
- MVRs

DETERMINING CAUSES

- The root cause is the most fundamental and direct cause of an accident or incident
- There may be one or more contributory causes, in addition to the root cause
- Accident Investigation is ineffective unless all causes are determined and corrected

CATEGORIES OF ROOT CAUSES

Can be classified as:

- **Workplace Factors - Largely a function of Management Practices**
- **Employee Factors - Largely a function of Employee Behavior**

CATEGORIES OF ROOT CAUSES

- **Workplace Factors: Examples**

  - Improper Tools & Equipment
  - Inadequate Maintenance
  - Lack of Job Procedures
  - Poor Workstation Set-Up
  - Poor Housekeeping
  - Lack of Job Supervision
  - Lack of Job Training

CATEGORIES OF ROOT CAUSES

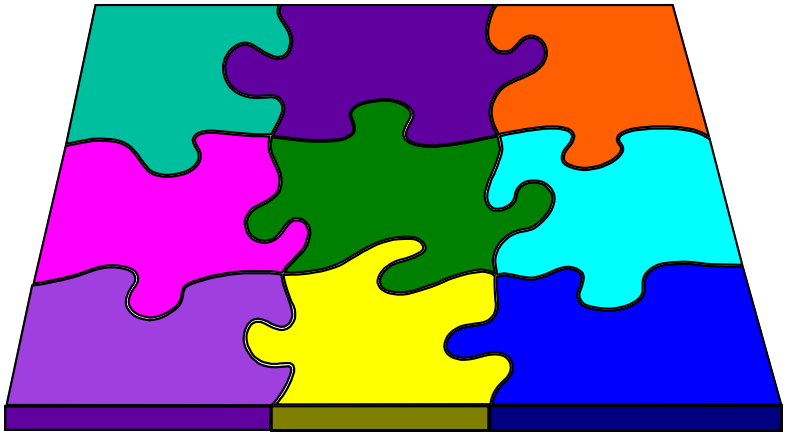
- **Employee Factors: Examples**

  - Failure to Apply Training
  - Task Exceeds Physical, Mental Capabilities
  - Risk-Taking Behavior
  - Fitness for Duty
    (Substance Abuse, Fatigue, Effects of Medication, Emotional Distress)

DETERMINING ROOT CAUSES

- **After answering Who, What, Where, When and How initially, this step answers Why and "completes the puzzle"**

- **Don't Stop Short !**



ASSESS FUTURE POTENTIAL

- **Assess Severity**

  - Class A Hazard (Major)
  - Class B Hazard (Serious)
  - Class C Hazard (Minor)

CLASS "A" HAZARD (MAJOR)

- **A condition or practice likely to cause permanent disability, loss of life, body part and/or extensive property loss or damage**

CLASS "B" HAZARD (SERIOUS)

- A condition or practice likely to cause serious injury or illness (resulting in temporary disability) or property damage that is disruptive, but less severe than Class A

CLASS "C" HAZARD (MINOR)

- A condition or practice likely to cause minor (non-disabling) injury or illness or non-disruptive property damage

CORRECTING THE CAUSES

- Control(s) must directly address each cause identified
- Consider short term controls if permanent controls are not readily available
- More than one control may be needed
- Use the “Control HIT (Hazard assessment, inspection and tool box) List” to make sure that the “best” control has been found

THE CONTROL HIT LIST

1. Eliminate the Hazard
2. Substitute a less hazardous material
3. Use Engineering Controls
4. Use Administrative Controls
5. Personal Protective Equipment (PPE)
6. Training of Employees

REPORT DATA & RECOMMENDATIONS

- **Document facts only**
- **Determine if the corrective action applies to more than one employee, more than one job function, more than one shift, etc.**
- **Prioritize corrective actions based on future accident potential**
- **Submit both short term and long term solutions, if necessary**

TAKE ACTION & MONITOR

- **Ensure that long term solutions don't get "lost in the shuffle"**

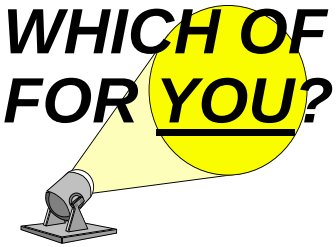
- **Evaluate the effectiveness of implemented controls:**

  - Interview Employees
  - Job Safety Analysis
  - Accident / Incident Experience

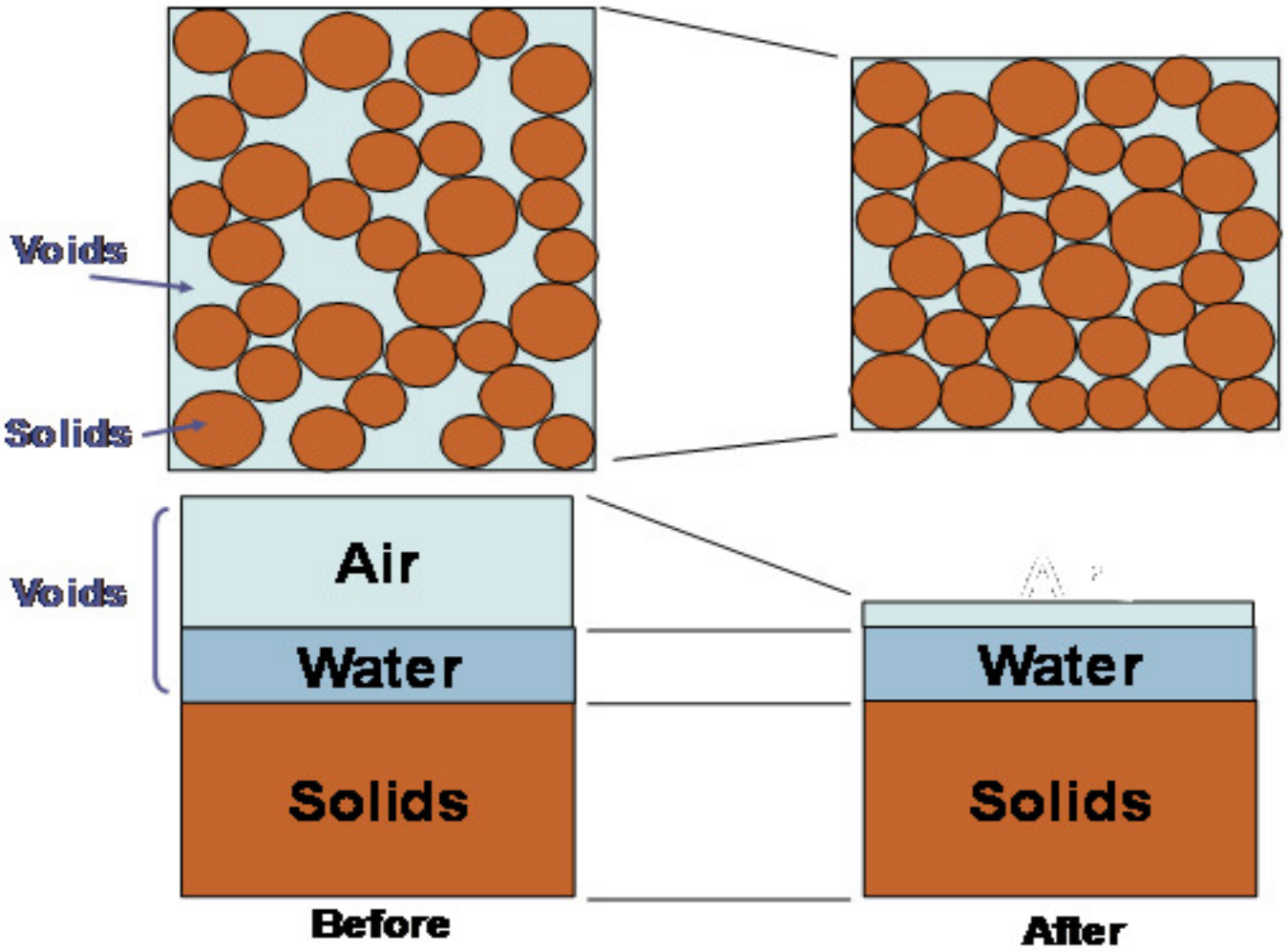
WHY ACCIDENT INVESTIGATIONS FAIL...

- **No time to complete**
- **No motivation to complete**
- **Lack of accountability**
- **Lack of skills & knowledge**
- **Investigation stopped short and didn't reveal the root causes of the accident**

WHICH OF THESE WILL BE AN OBSTACLE FOR YOU?



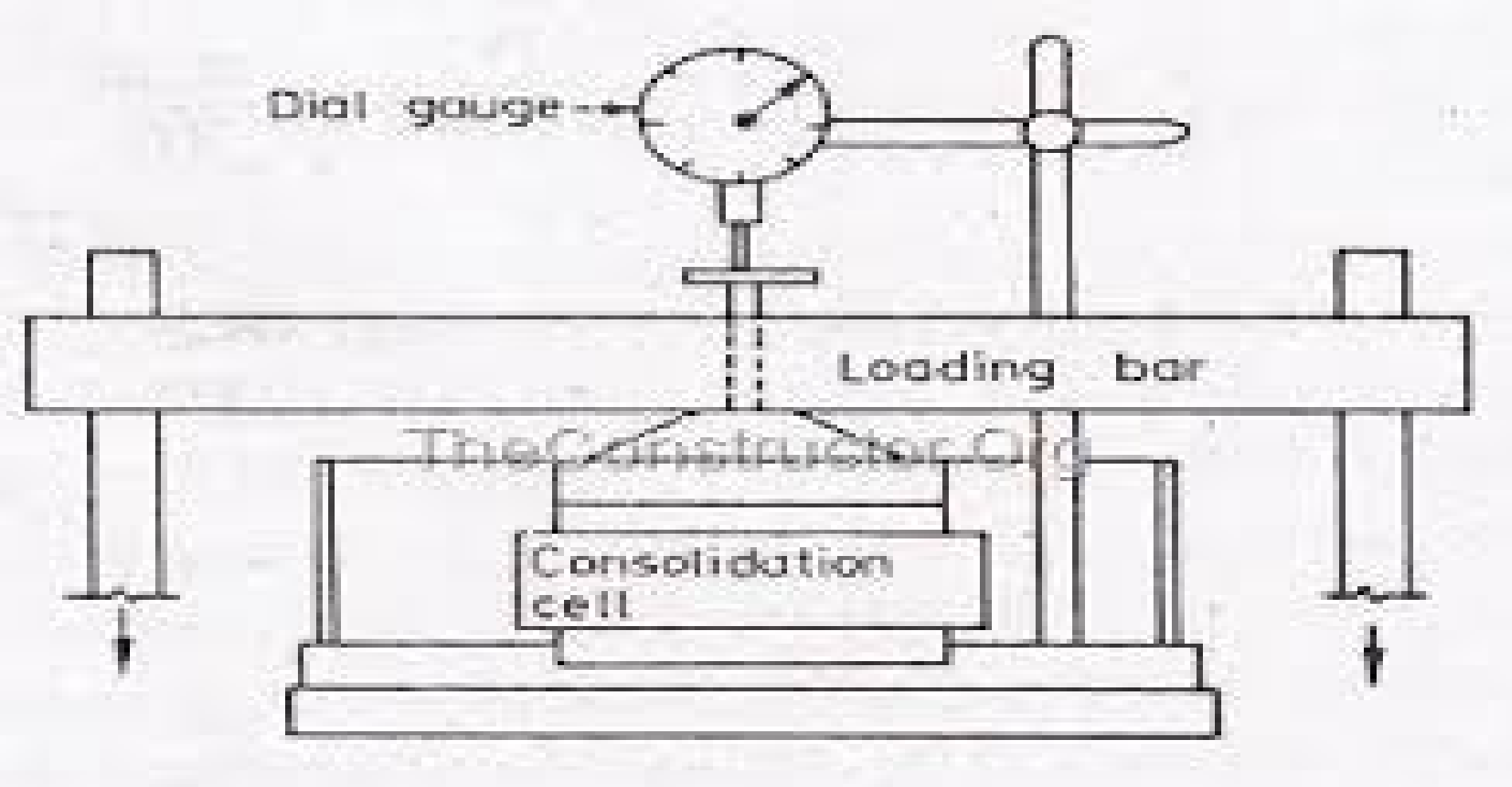
CONSOLIDATION OF SOIL


Voids
Solids
Voids
Air
Water
Solids
Water
Solids
Before
After

- **The process in which gradual reduction in volume of soil mass occurs under sustained loading due to expulsion of Pore water**

- **Compression of saturated soil under steady static pressure**

- **Both water and soil are considered incompressible**



CONSOLIDOMETER

PRIMARY CONSOLIDATION:-

- Reduction in soil volume due to water expulsion from pore depends on the permeability of soil.
- This reduction in volume is called Primary consolidation

SECONDARY CONSOLIDATION:-

- Volume reduction continues at a slow rate even after excess hydrostatic pressure developed by applied pressure is fully dissipated.
- This additional volume reduction is called Secondary consolidation

Mass-Spring Analogy

- **Karl Terzaghi demonstrated mechanics of consolidation by 'Piston and spring analogy'**

Terzaghi's one dimensional consolidation

Assumptions:-

- Soil is homogeneous and fully saturated
- Soil particles and water are incompressible
- Darcy's law is valid
- Co-efficient of permeability is constant during consolidation
- Load is applied in one direction and deformation occurs in the same direction
- Change in thickness of soil layer is insignificant
- Secondary consolidation is neglected

Limitations:-

- Soil is not actually homogeneous and incompressible
- Co-efficient of permeability is constant only when void ratio is constant
- Consolidation is one dimensional (holds good only in laboratory)

Soil classification based on consolidation

Over consolidated soil	Normally consolidated soil	Under consolidated soil
• Present σ' has exceeded max overburden pressure (σo) • Eg: Glacier on top of soil	• Never subjected to σ' greater than existing σo • Complete consolidation due to present σo	• Soil is not fully consolidated due to present σo • Primary consolidation is incomplete

Determination of Pre-consolidation pressure

- Geometrical technique proposed by CASGRANDE

- Undisturbed soil sample is consolidated in lab and pressure – void ratio relationship is plotted on semi log sheet

Visvesvaraya Technological University

Project Presentation On

SUMMARIZATION AND SENTIMENT ANALYSIS FROM USER HEALTH POSTS

By

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Under The Guidance of

Mrs. SHILPA B L

Department of Computer Science and Engineering

Vidya Vikas Institute of Engineering and Technology

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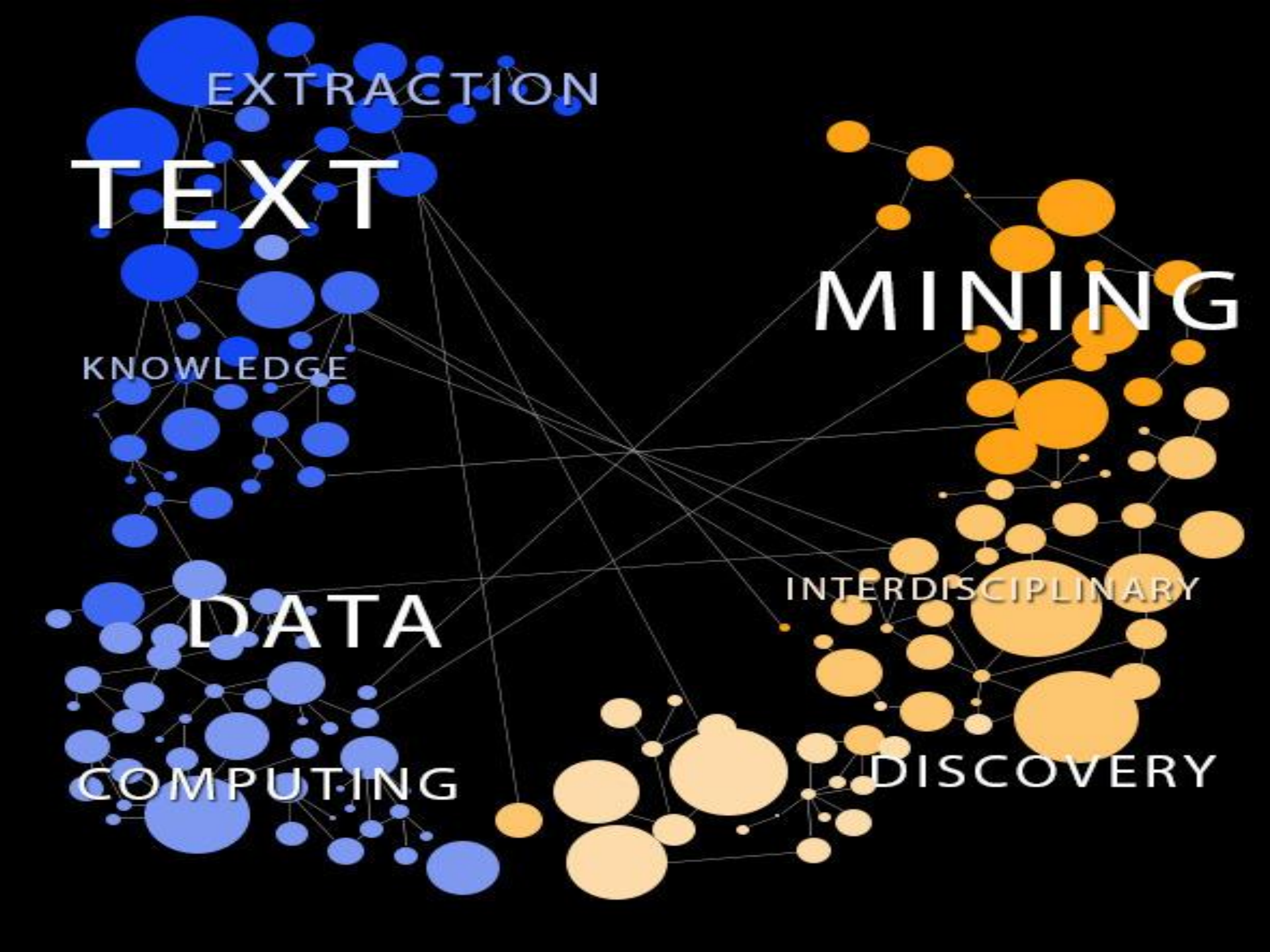

EXTRACTION
TEXT
MINING
KNOWLEDGE
DATA
INTERDISCIPLINARY
COMPUTING
DISCOVERY

EXISTING SYSTEM

• Health communities' just collects real time health posts, where patients express their views, including their experiences and side-effects on drugs used by them.

•These systems just collects the data, stores in database and retrieves the same in future, but no extraction of useful information which helps the medical practitioners.

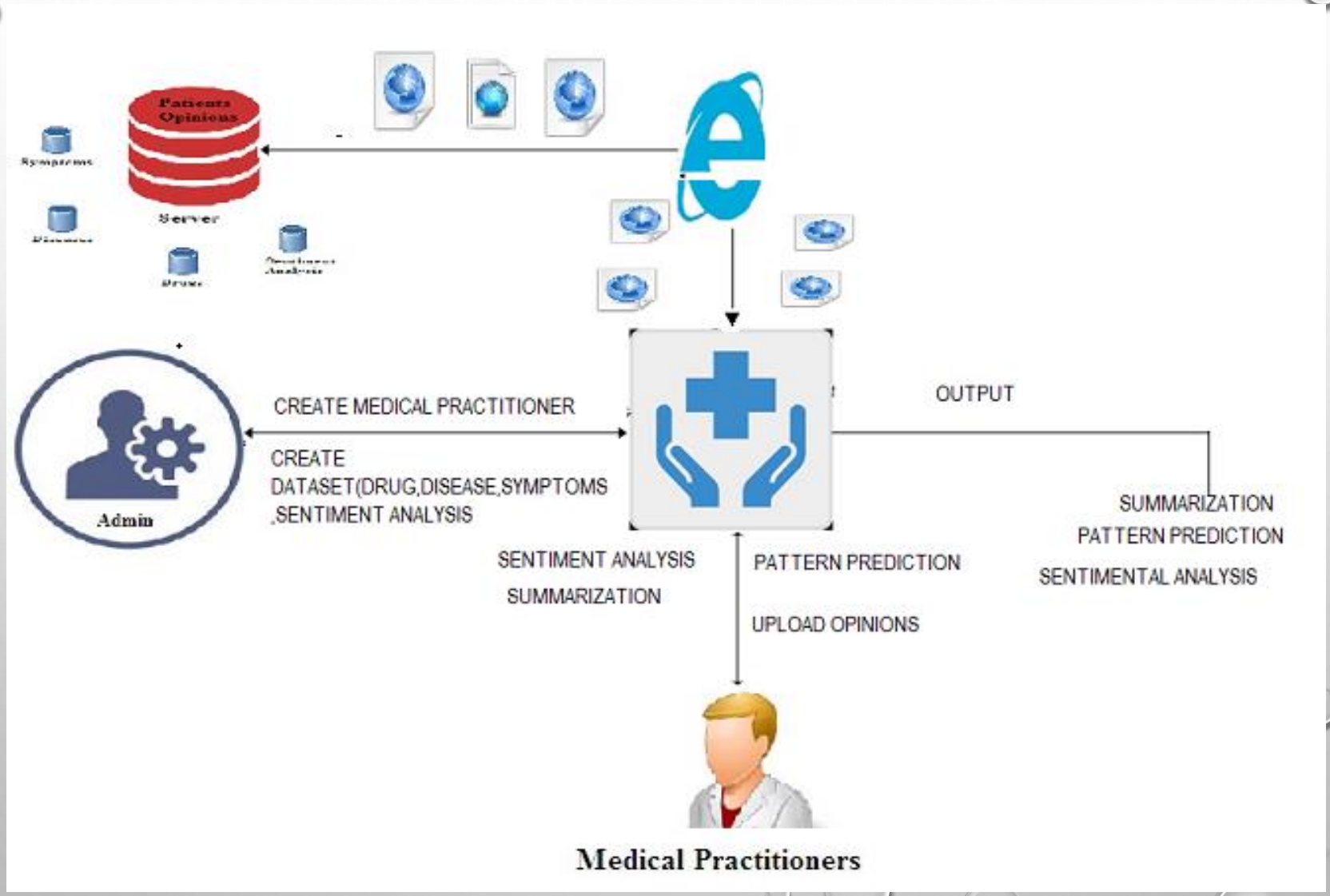
•**Disadvantages of the Existing System**

1. Just stores the health posts
2. No Summarization
3. No extraction of useful information
4. Less user satisfaction
5. Stores huge amount of data
6. Difficult to analyze the huge amount data

OVERVIEW

Proposed system collects real time health posts from reputed websites, where patients express their views, including their experiences and side-effects on drugs used by them. proposed system perform summarization of user posts per drug, and come out with useful conclusions for medical fraternity as well as patient community at a glance. also, proposed system perform knowledge discovery from user posts, whereby useful `patterns' about the triad `drugs-symptoms-medicine' is done by association rule mining.

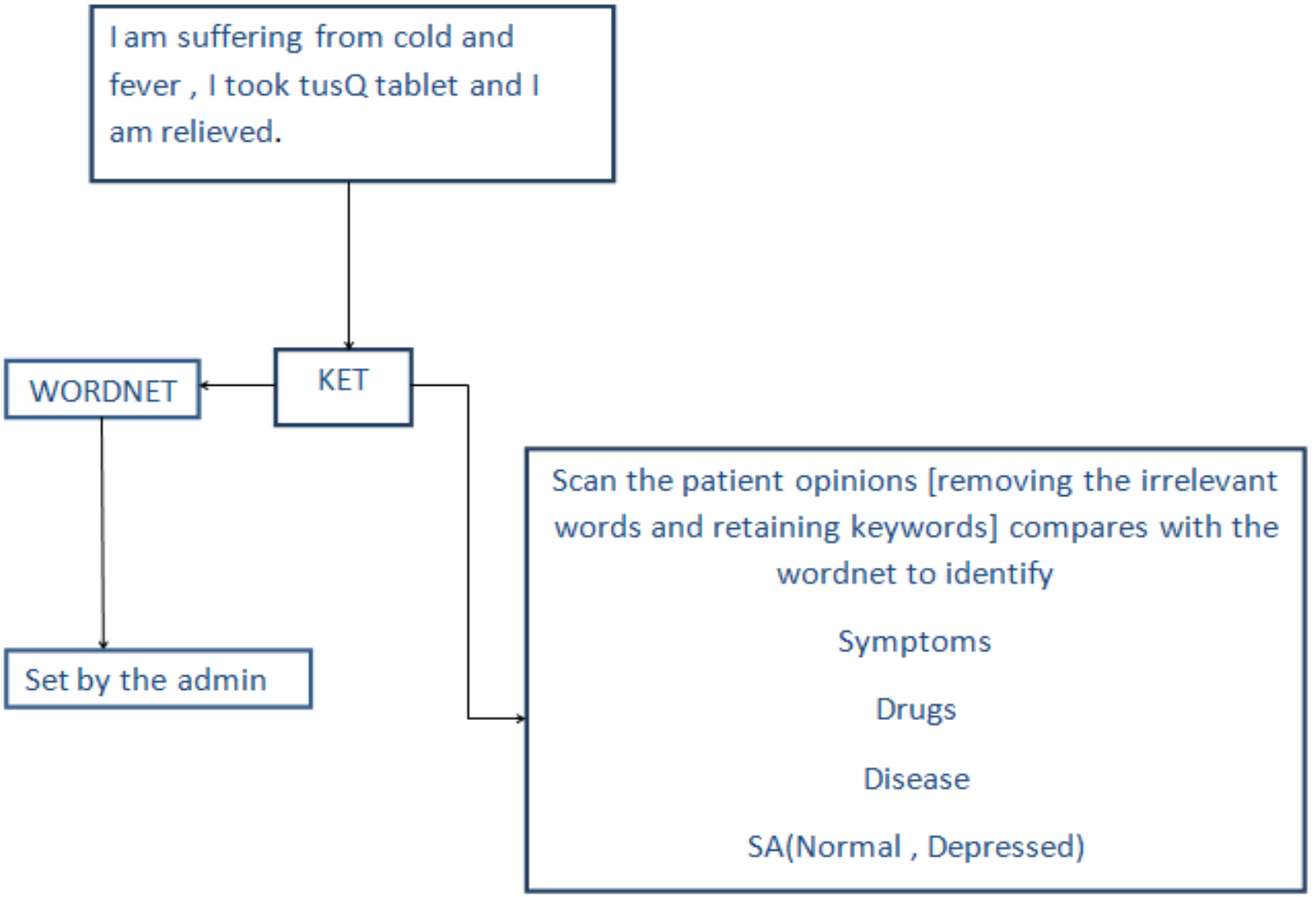
SYSTEM ARCHITECTURE



LESK BASED ALGORITHM

- scan the opinion database (retrieval of all patient opinions)
- scan wordnet (collection of all symptoms, diseases, drugs and sa words)
- for each entry ui[opinions] in buffer[storage server] do
- trace all keywords, using the following steps
  - tokenization [keyword extraction method – removing the stop words and retrieving the keywords]
  - remove punctuation, special characters, number etc..
  - clustering the keywords (grouping of similar objects)
    - by comparing with the predefined dataset (created by the admin)
    - string comparisons and identify the symptoms, diseases, drugs and positive and negative words.
- output - summarized results

LESK BASED METHOD



•Association rule mining is a popular and widely-known data mining task.

•It is used to find out interesting relations between variables in large database.

1. Association Rule generation
2. Interesting Rule Selection

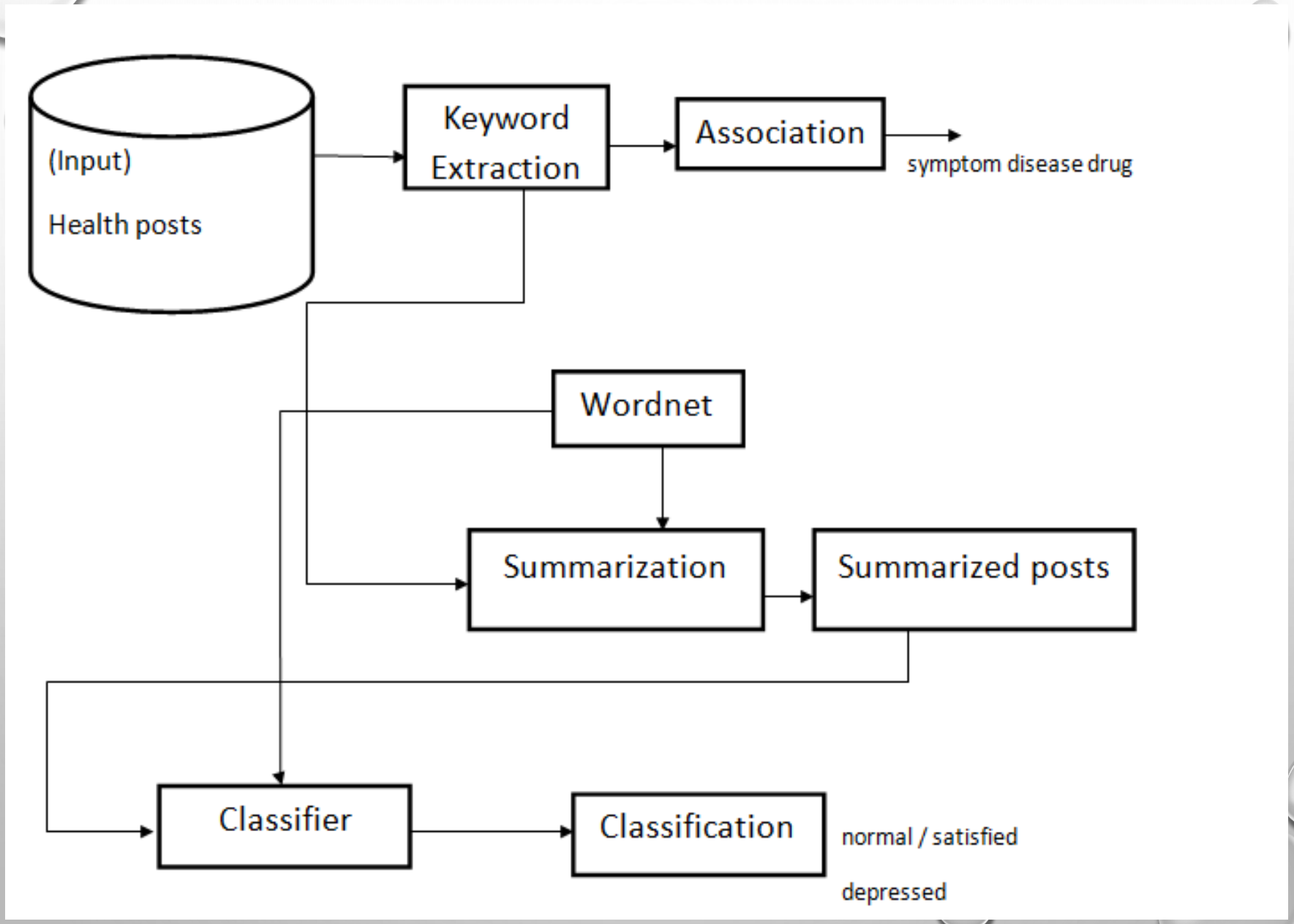
•Sentiment Analysis (SA) or Opinion Mining (OM) is task of finding sentiments from text.

• These sentiments may take different forms like – opinions from people, attitudes and emotions toward an entity.

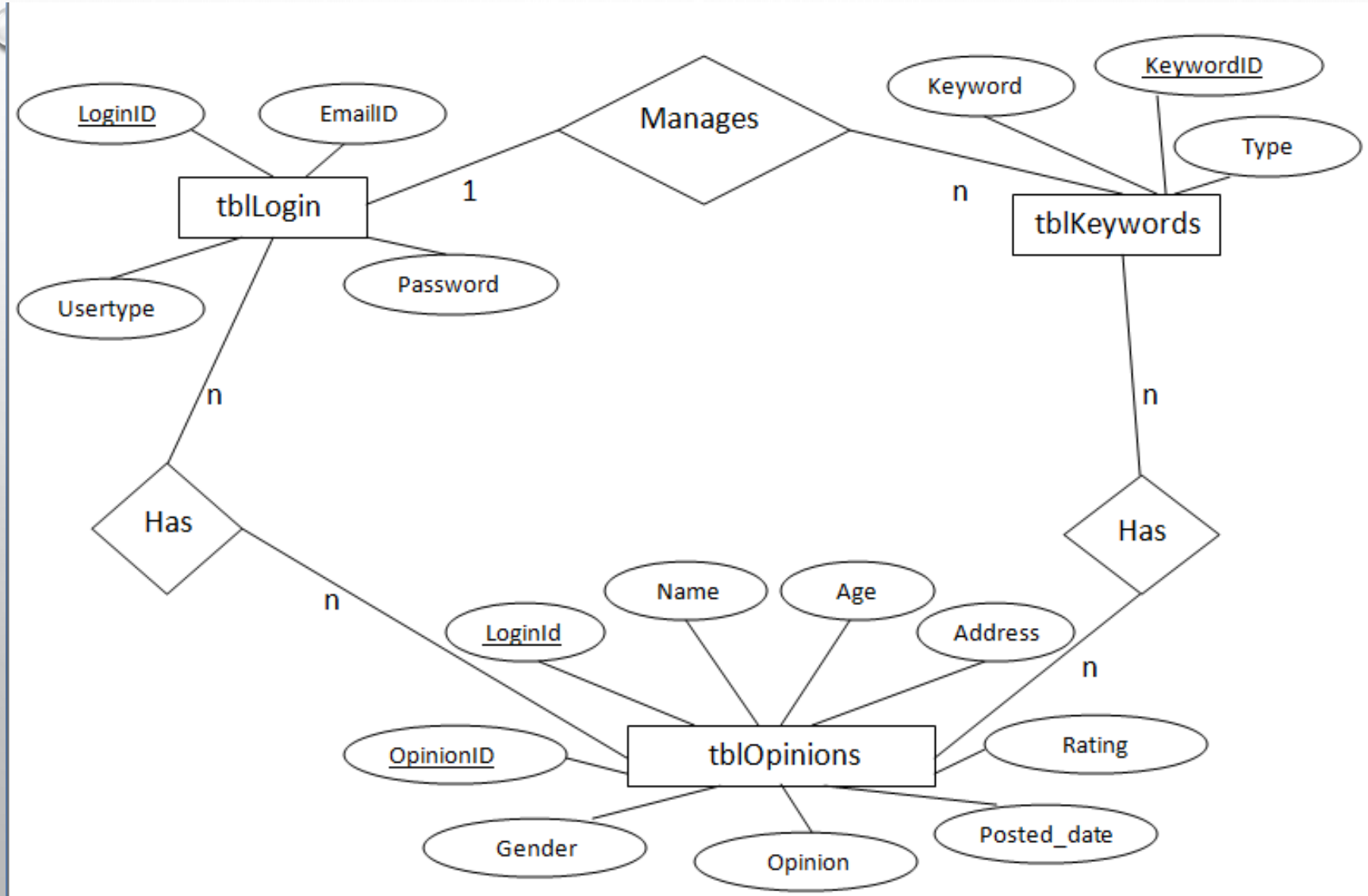
APRIORI ALGORITHM

- *step 1:* scan the opinion data set and determine the support(s) of each item.
- *step 2:* generate l1 (frequent one item set).
- *step 3:* use lk-1, join lk-1 to generate the set of candidate k - item set.
- *step 4:* scan the candidate k item set and generate the support of each candidate k – item set.
- *step 5:* add to frequent item set, until c=null set.
- *step 6:* for each item in the frequent item set generate all non empty subsets.
- *step 7:* for each non empty subset determine the confidence. if confidence is greater than or equal to this specified confidence .then add to strong association rule.

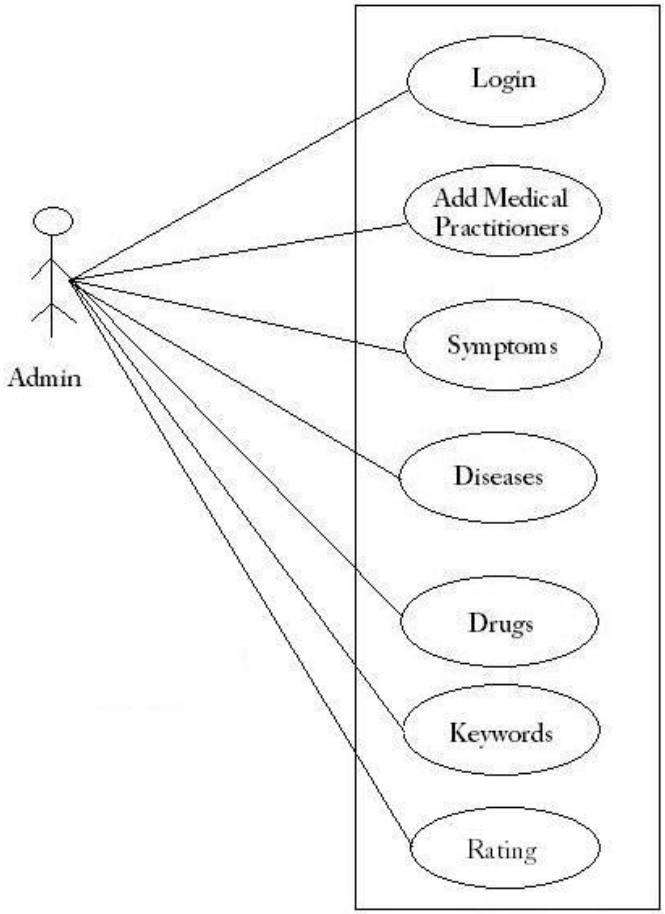
BLOCK DIAGRAM



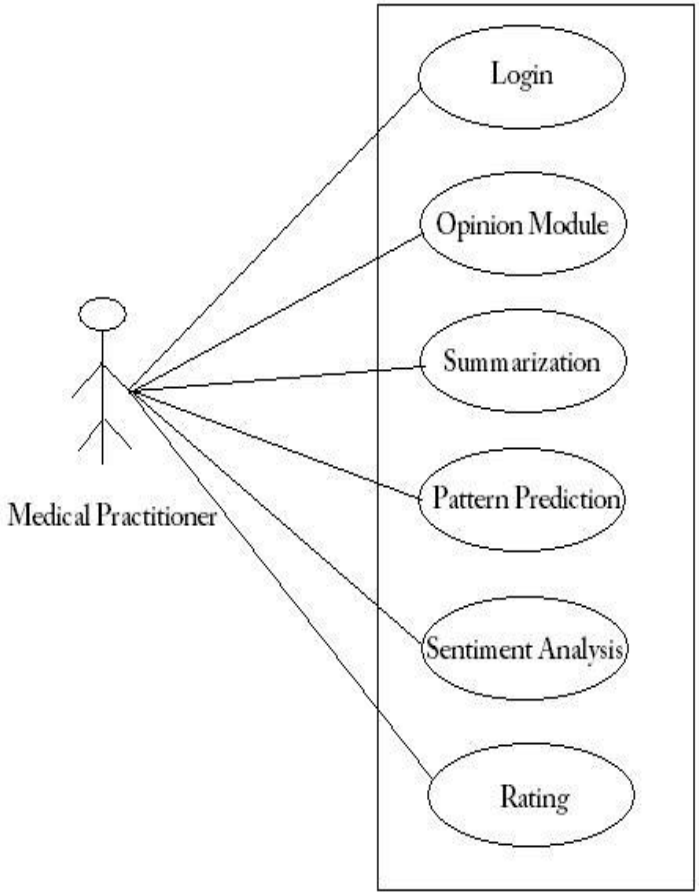
ENTITY RELATIONSHIP DIAGRAM



USE CASE DIAGRAM

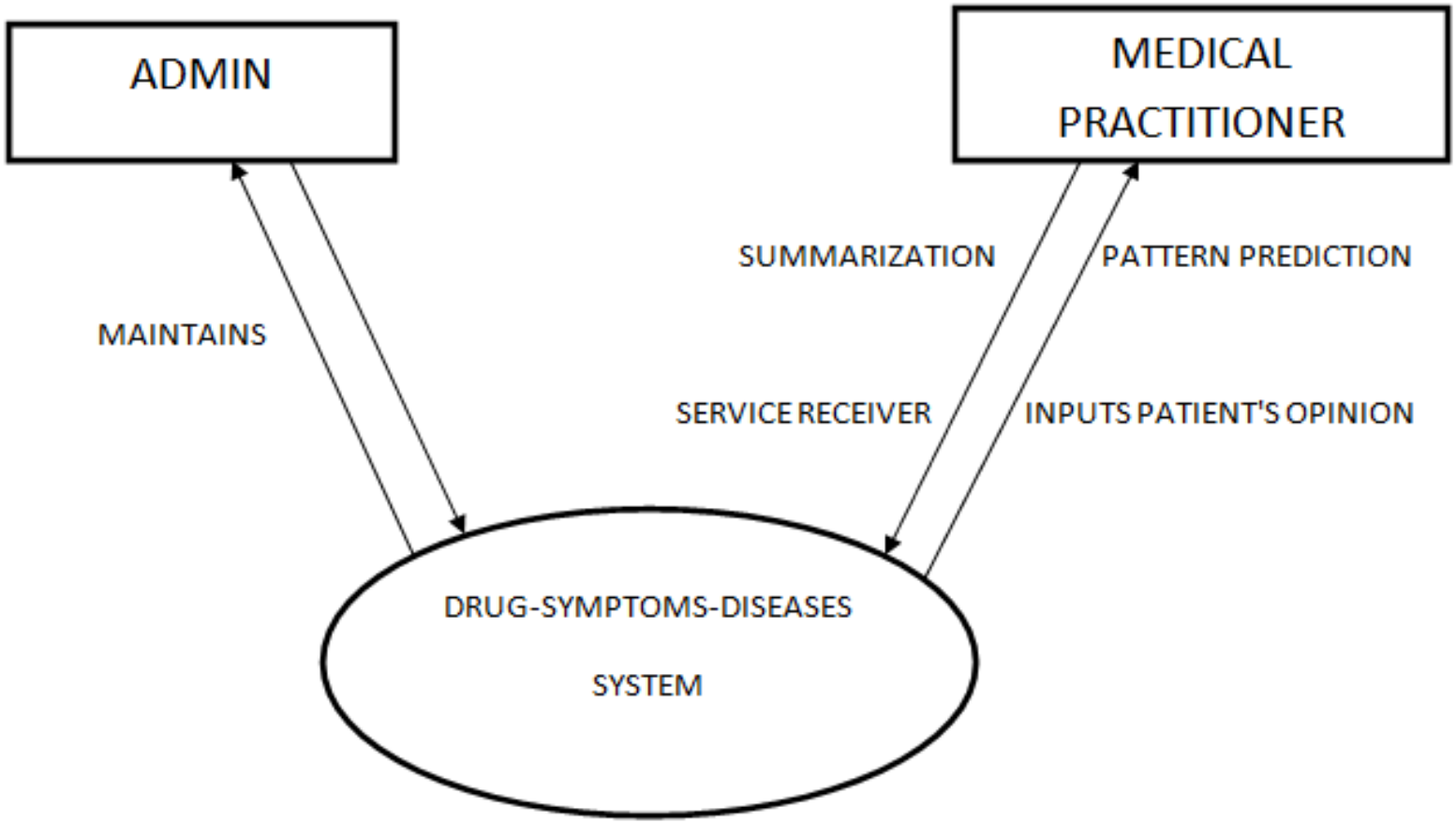


Usecase Diagram - Administrator



Usecase Diagram - Medical Practitioner

CFD


ADMIN
MEDICAL PRACTITIONER
MAINTAINS
SERVICE RECEIVER
SUMMARIZATION
PATTERN PREDICTION
INPUTS PATIENT'S OPINION
DRUG-SYMPTOMS-DISEASES SYSTEM

SYSTEM REQUIREMENTS

software requirements

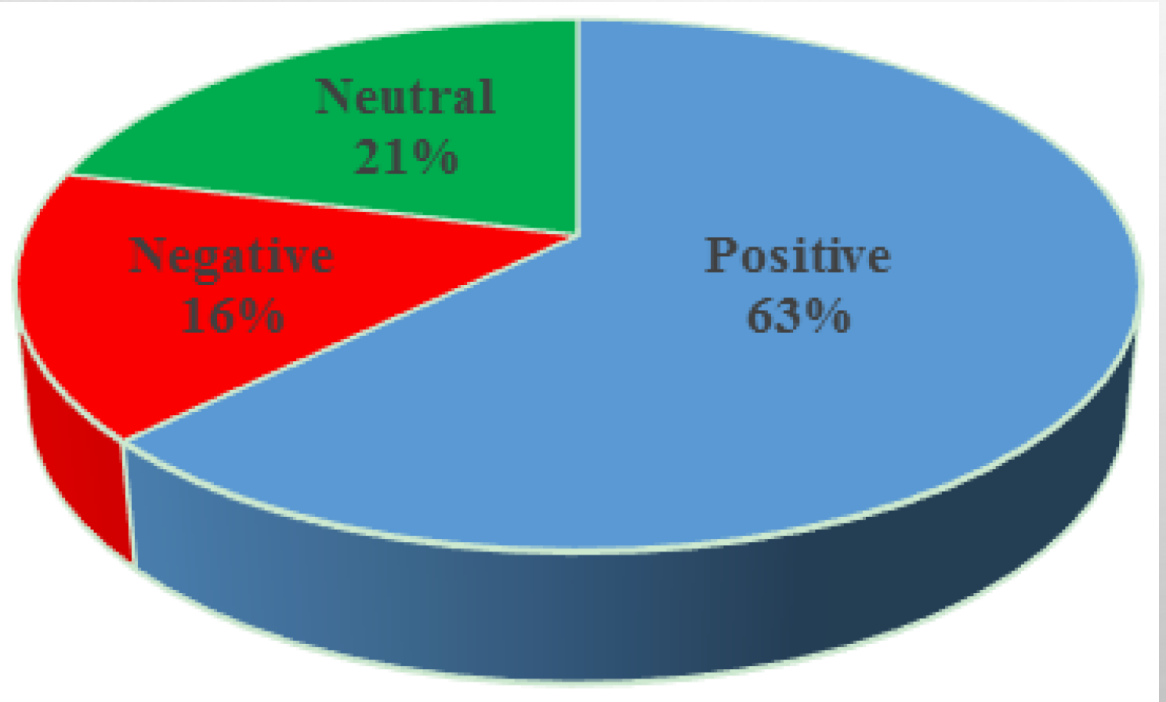
- Operating system : windows 2000/nt/xp/higher
- back end : sqlserver 2005/2008
- designed tool kit : visual studio 2010
- front end : asp.net 4.0
- programming language : c#

HARDWARE REQUIREMENTS

- intel p4 +
- 1.5ghz or above
- 2gb ram
- 20gb hdd minimum


SENTIMENT ANALYTICS

EXPECTED OUTCOME



THANK YOU

Visvesvaraya Technological University

Final Project Synopsis Presentation

On

Review of Student Profile Management System Using QR Code

By

SANIYA KHAN	4VM14CS037
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Under the Guidance Of

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INTRODUCTION

- The QR code is the quick Response code which was developed by Masahiro Hara from Denso Wave a subsidiary of the Toyota car company in 1994. In 2000, the QR code was established as an international standard by the International standard by the international Organization for Standardization(ISO).
- The 2D code was first used in automotive industry to track the inventory (parts of vehicles) throughout its delivery process. From then, it was slowly getting recognised in the industries.
- The QR code was mainly created to overcome the limitation of a traditional barcode. The 2 dimensional barcodes are much faster as compared to the barcode.

SCOPE

- The Scope of this system is to eliminate the gap between the student and the institutional management.
- This is not only an efficient profile management system but also reduces the problem of queue, wastage of time and reduction in paper consumption.
- This way, there is a smoother and systematic management at the student’s side as well as the administration side .

Objectives

- The main objective is suggesting a way of management of student's record by creating a Student profile using his basic registration information.
- This profile can be simultaneously updated.
- A system where the student profile is managed by the administrators. Basically, a student profile is communication or any other purpose.

Methodology

- . We are using QR code technology in order to implement the system.
- The QR codes are very easy to scan as they can be captured from any angle. For scanning a QR code, a QR code scanner is required or they can be easily scanned by any mobile device containing a QR code scanning application.
- Nowadays, inbuilt QR code scanning applications are by various mobile companies. SO it is not always necessary to go to the play store and download the QR code scanner.

Software hardware requirements:

Hardware Configuration

- Processor - i3 and above
- Speed - 1.1 Ghz
- RAM - 2GB and above
- Hard Disk - 80 GB

Software Configuration

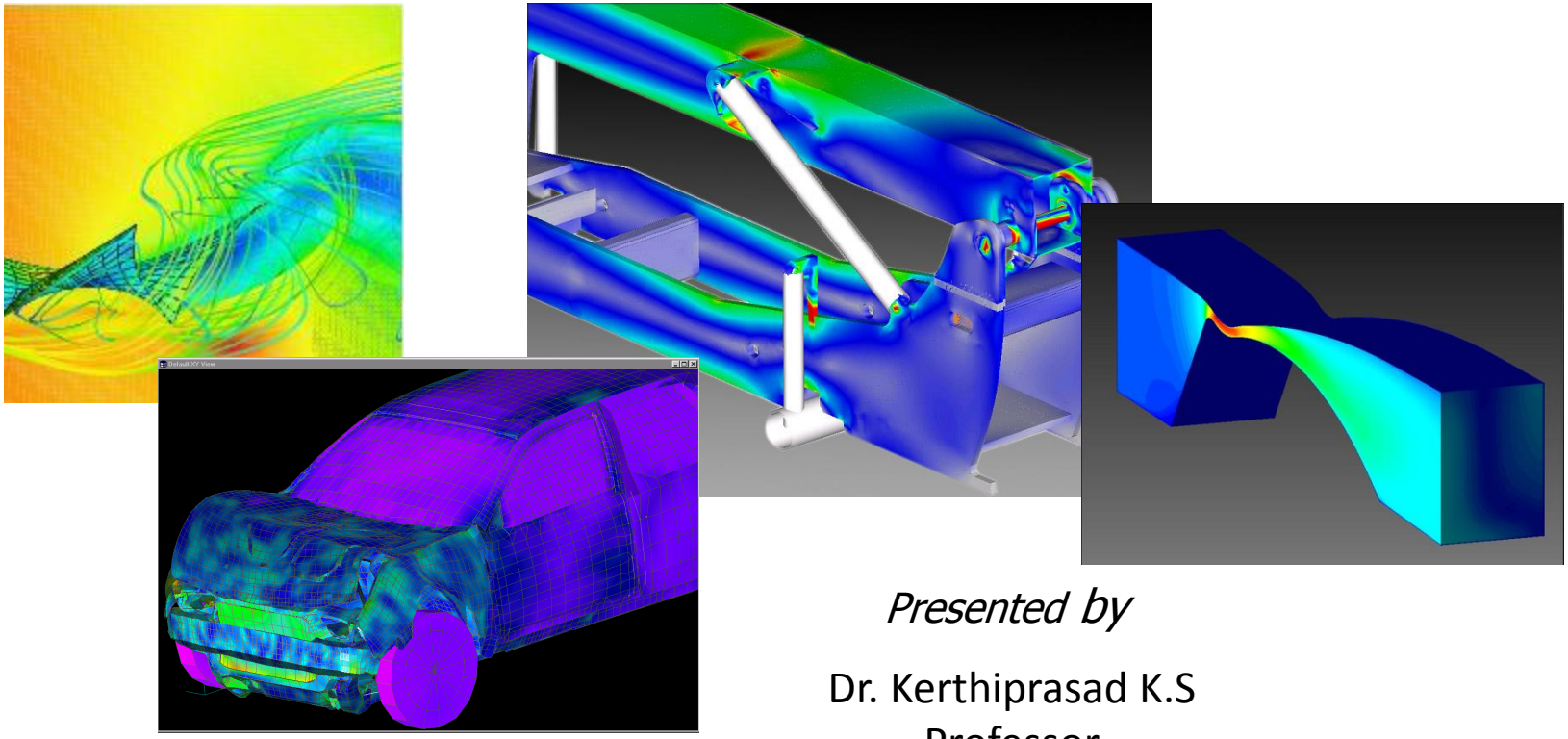
- Operating System : Windows 7 & above
- Programming Language : JAVA/Dotnet
- Storage :Mysql/MS Sql Server
- Front end language :HTML,CSS,JAVASCRIPT, BOOTSTRAP

Conclusion

- We are trying to facilitate a easy way to interact with our educational system using QR Code System. This is not only an efficient profile management system but also reduces the problem of queue, wastage of time and reduction in paper consumption. This way, the intent of this system is smoother and systematic management at the student's side as well as the administration side. Here,
- we have studied how to provide easy way to interact with our educational system using QR Code System

THANK YOU

Finite Element Analysis



Presented by

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Material Properties

- Strength
- Hardness
- Stiffness
- Resistivity
- Elasticity
- Resilience
- Conductivity

Forces

- There are two types of forces/loads that may act on structures, namely static and dynamic forces
- ***Static forces*** are those that are gradually applied and remain in place for longer duration of time.
- These forces are not dependent on time

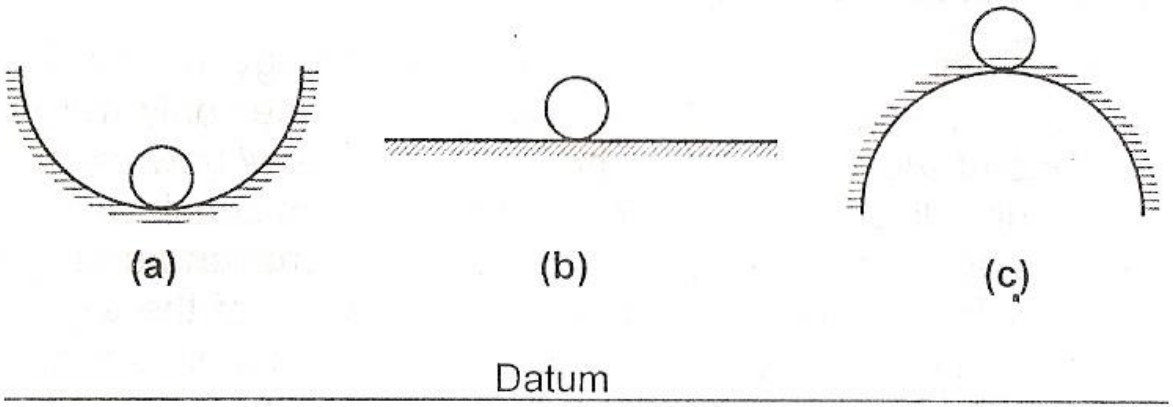
Forces

- ***Dynamic forces*** are those that are very much time dependent and these either act for small interval of time or quickly change in magnitude or direction.

- Examples : Earthquake forces, machinery vibrations and blast loadings.

Equilibrium

a) Stable equilibrium
b) Neutral equilibrium
c) Unstable equilibrium



(a) Stable equilibrium π is minimum

(b) Neutral equilibrium π is unchanging

(c) Unstable equilibrium π is maximum

Types of Problems

- **1-Dimensional Problems**
- **2-Dimensional Problems**

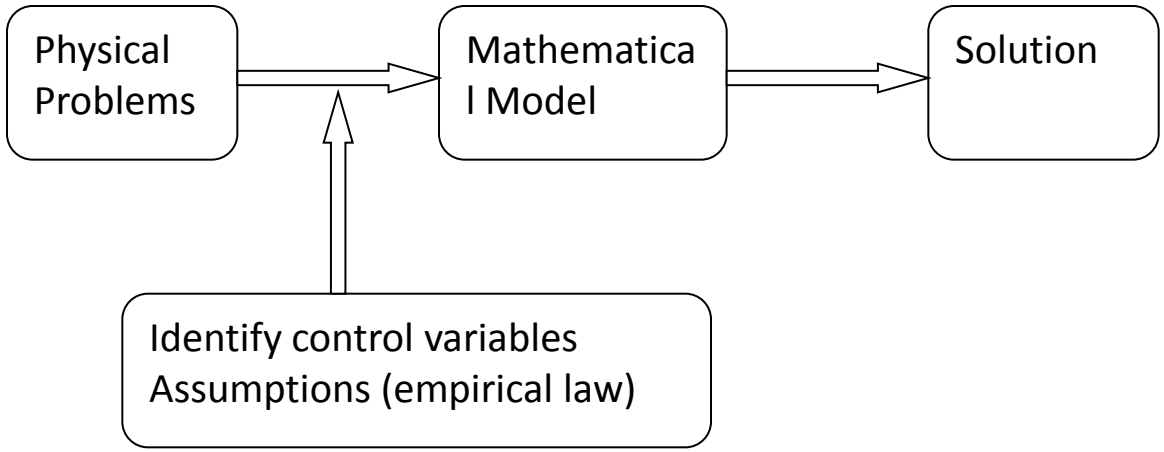
  Plane Stress and Plane strain
- **3-Dimensional Problems**

Need for Computational Methods

- **Solutions Using Either Strength of Materials or Theory of Elasticity Are Normally Accomplished for Regions and Loadings With Relatively Simple Geometry**
- **Many Applicaitons Involve Cases with Complex Shape, Boundary Conditions and Material Behavior**
- **Therefore a Gap Exists Between What Is Needed in Applications and What Can Be Solved by Analytical Closed-form Methods**
- **This Has Lead to the Development of Several Numerical/Computational Schemes Including: Finite Difference, Finite Element and Boundary Element Methods**

Mathematical Model

(1) Modeling



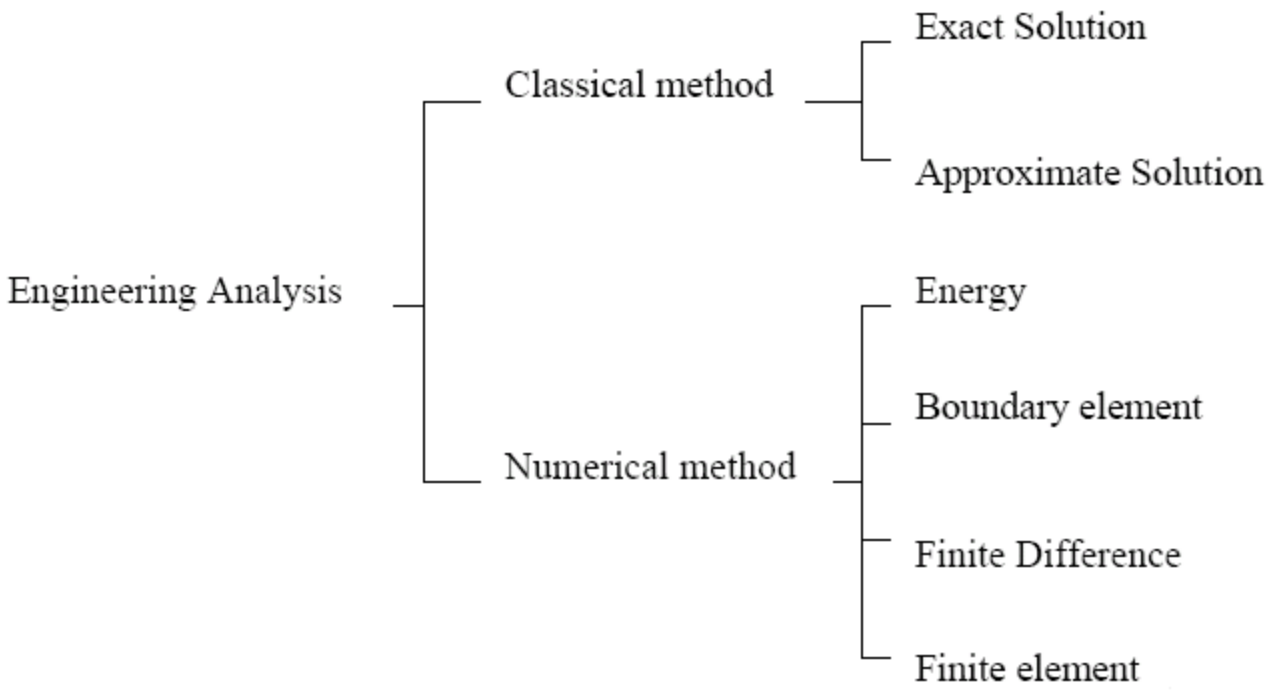
(2) Types of solution

Sol. \ Eq.	Exact Eq.	Approx. Eq.
Exact Sol.	◎	◎
Approx. Sol.	◎	◎

Analysis

- ***Analytical Method***
- ***Experimental Method***
- ***Numerical Method***

Methods of Solution



(3) Method of Solution

A. Classical methods
They offer a high degree of insight, but the problems are difficult or impossible to solve for anything but simple geometries and loadings.

B. Numerical methods
(I) Energy: Minimize an expression for the potential energy of the structure over the whole domain.
(II) Boundary element: Approximates functions satisfying the governing differential equations not the boundary conditions.
(III) Finite difference: Replaces governing differential equations and boundary conditions with algebraic finite difference equations.
(IV) Finite element: Approximates the behavior of an irregular, continuous structure under general loadings and constraints with an assembly of discrete elements.

Why FEA ?

Modern mechanical design involves complicated shapes, sometimes made of different materials that as a whole cannot be solved by existing mathematical tools. Engineers need the FEA to evaluate their designs

What is FEA ?

A complex problem is divided into a smaller and simpler problems that can be solved by using the existing knowledge of mechanics of materials and mathematical tools

FEA

What is Finite Element Analysis (FEA)?

- **A numerical method.**
- **Traditionally, a branch of Solid Mechanics.**
- **Nowadays, a commonly used method for multiphysics problems.**

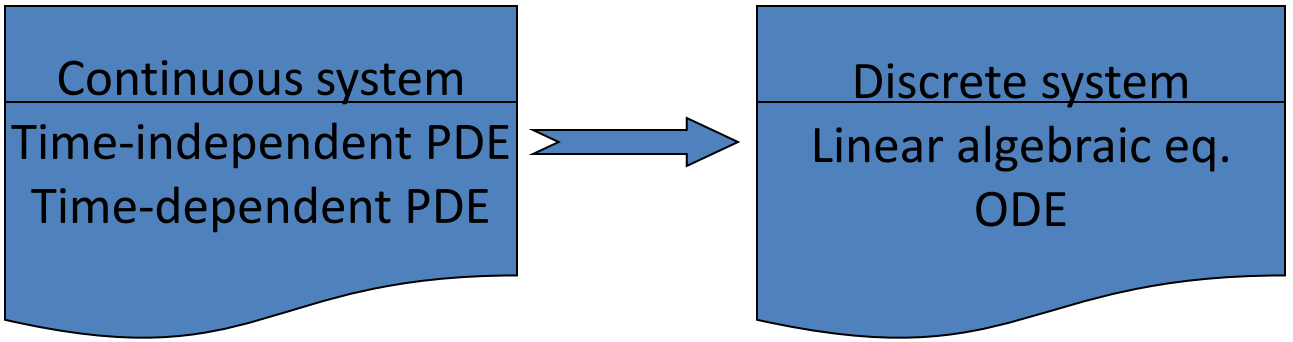
What areas can FEA be applied?

- **Structure analysis: a cantilever, a bridge, an oil platform…**
- **Solid mechanics: a gear, a automotive power train …**
- **Dynamics: vibration of Sears Tower, earthquake, bullet impact…**
- **Thermal analysis: heat radiation of finned surface, thermal stress brake disc…**
- **Electrical analysis: piezo actuator, electrical signal propagation…**
- **Biomaterials: human organs and tissues…**

2. Finite Element Method

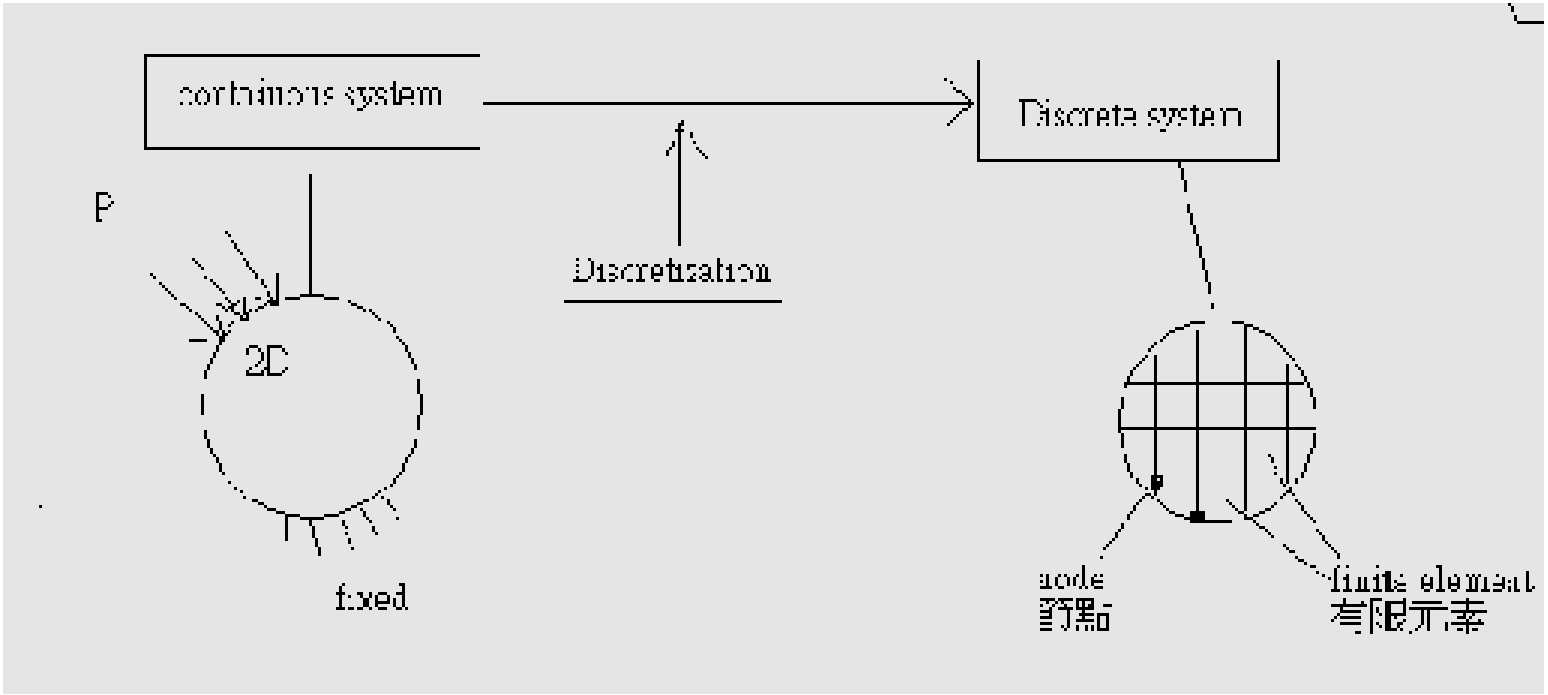
(1) Definition

FEM is a numerical method for solving a system of governing equations over the domain of a continuous physical system, which is discretized into simple geometric shapes called finite element.



(2) Discretization

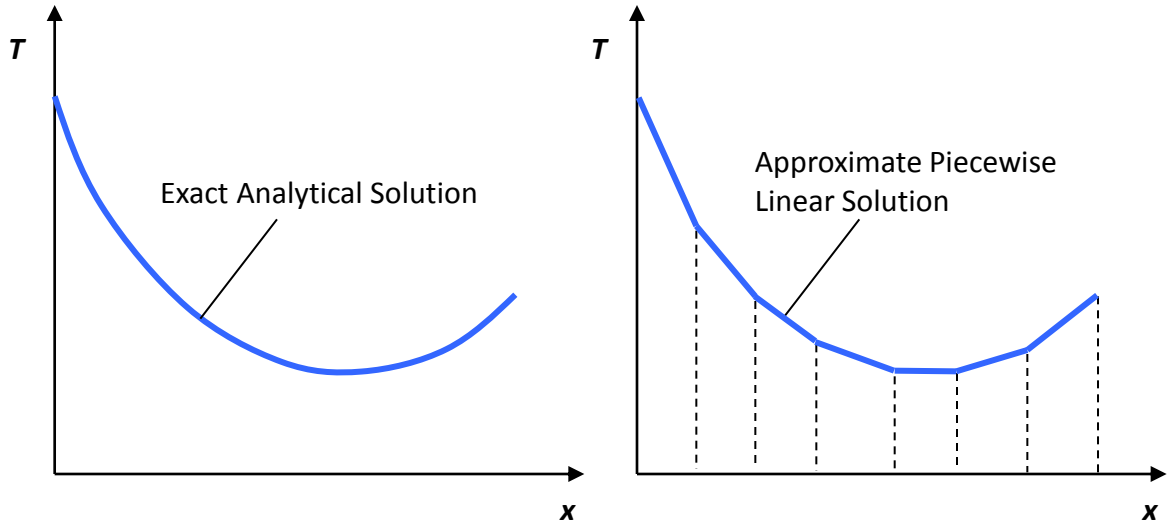
Modeling a body by dividing it into an equivalent system of finite elements interconnected at a finite number of points on each element called nodes.



Basic Concept of the Finite Element Method

Any continuous solution field such as stress, displacement, temperature, pressure, etc. can be approximated by a discrete model composed of a set of piecewise continuous functions defined over a finite number of subdomains.

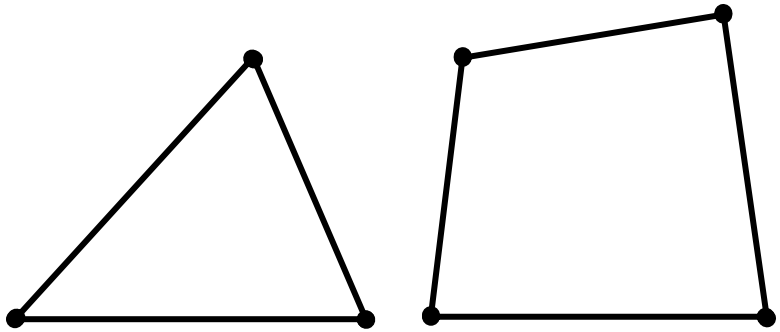
<u>One-Dimensional Temperature Distribution</u>



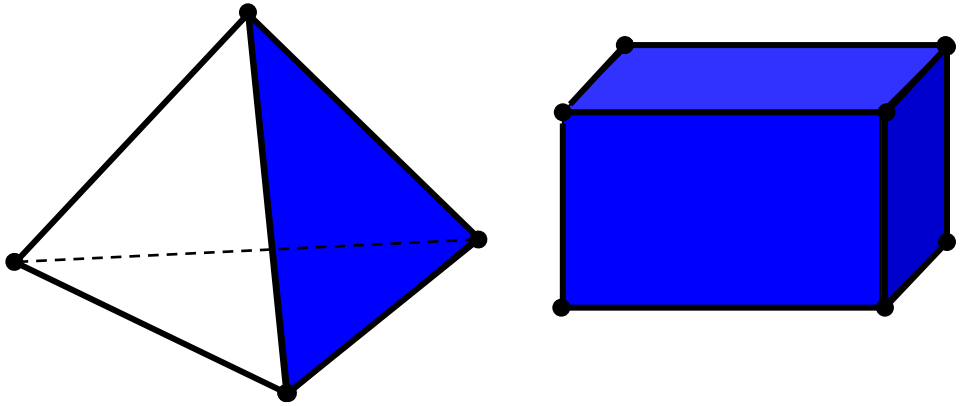
Common Types of Elements

<u>One-Dimensional Elements</u>
Line
Rods, Beams, Trusses, Frames

<u>Two-Dimensional Elements</u>
Triangular, Quadrilateral
Plates, Shells, 2-D Continua



<u>Three-Dimensional Elements</u>
Tetrahedral, Rectangular Prism (Brick)
3-D Continua



4. Analytical Processes of Finite Element Method

(1) Structural stress analysis problem

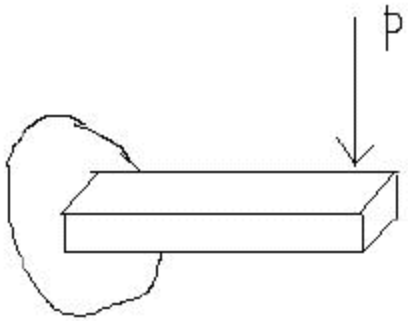
A. Conditions that solution must satisfy
   a. Equilibrium
   b. Compatibility
   c. Constitutive law
   d. Boundary conditions

Above conditions are used to generate a system of equations representing system behavior.

B. Approach
   a. Force (flexibility) method: internal forces as unknowns.
   b. Displacement (stiffness) method: nodal disp. As unknowns.

For computational purpose, the displacement method is more desirable because its formulation is simple. A vast majority of general purpose FE softwares have incorporated the displacement method for solving structural problems.

(2) Analysis procedures of linear static structural analysis



1D problem ?
2D problem ?
3D problem ?

A. Build up geometric model

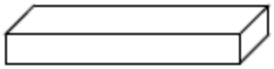
a. 1D problem

line

b. 2D problem

surface 

c. 3D problem

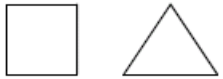
solid 

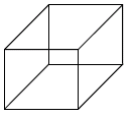
B. Construct the finite element model

a. Discretize and select the element types

(a) element type

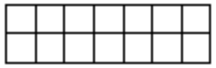
1D line element

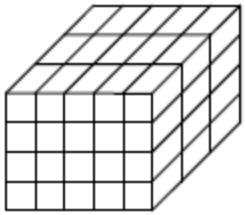
2D element 

3D brick element 

(b) total number of element (mesh)

1D:

2D: 

3D: 

b. Select a shape function

1D line element: u=ax+b

c. Define the compatibility and constitutive law

$$1D: \varepsilon x = \frac{du}{dx} \qquad \sigma = E\varepsilon$$

d. Form the element stiffness matrix and equations

(a) Direct equilibrium method

(b) Work or energy method

(c) Method of weight Residuals

$$[K]^e \{d\}^e = \{F\}^e$$

e. Form the system equation

Assemble the element equations to obtain global system equation and introduce boundary conditions

$$[K]\{d\} = \{F\}$$

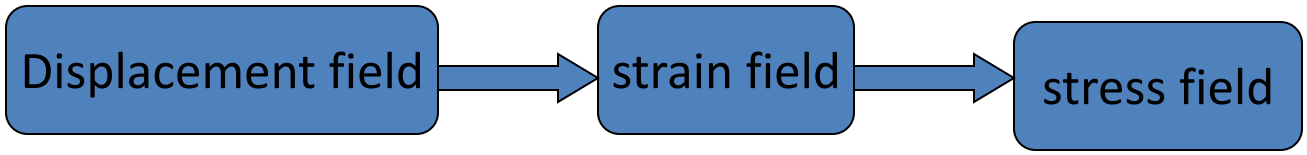
C. Solve the system equations

a. elimination method

Gauss's method (Nastran)

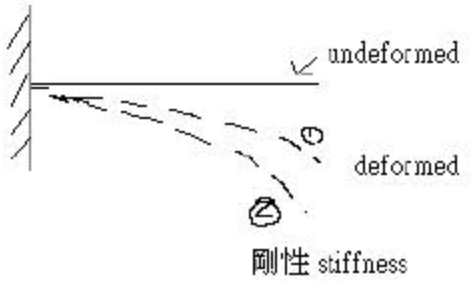
b. iteration method

Gauss Seidel's method

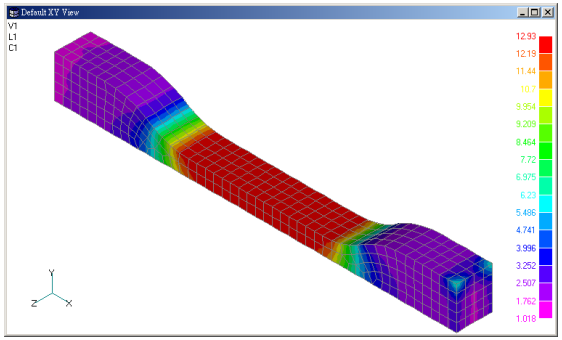


D. Interpret the results (postprocessing)

a. deformation plot



b. stress contour

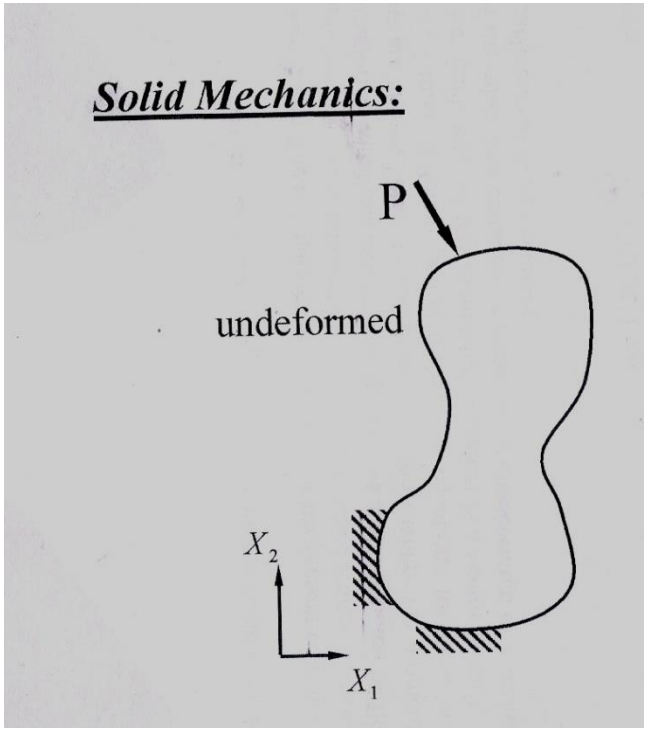


5. Applications of Finite Element Method

Structural Problem	Non-structural Problem
Stress Analysis - truss & frame analysis - stress concentrated problem Buckling problem Vibration Analysis Impact Problem	Heat Transfer Fluid Mechanics Electric or Magnetic Potential

What is Finite Element Analysis (FEA)?

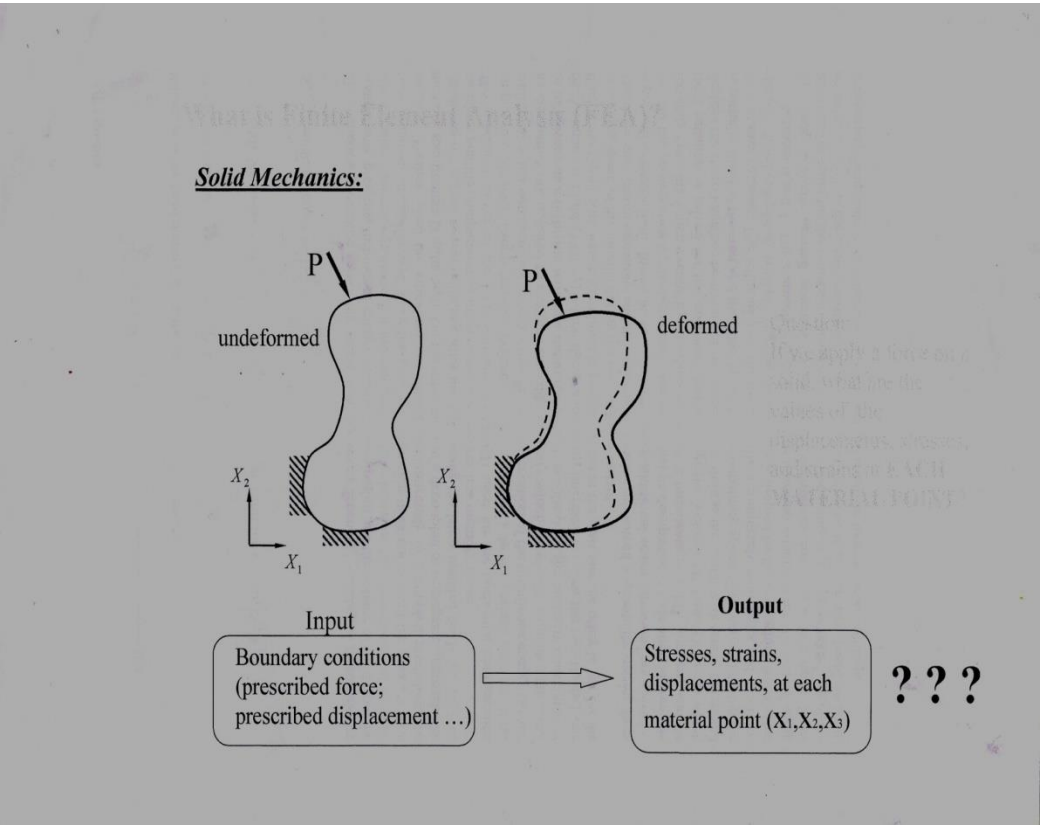
- ***FEA is originally developed for solving solid mechanics problem.***
- **Object: A Solid with known mechanical properties.**



Concepts:

- **Boundary: The surface enclosing the geometry**
- **Solid: Interior + Boundary**
- **Boundary conditions: Any prescribed quantities, such as prescribed displacements and prescribed tractions on the boundary**

What is Finite Element Analysis (FEA)?



Question:

If we apply a force on a solid, what are the values of the displacements, stresses, and strains at **EACH MATERIAL POINT?**

What is Finite Element Analysis (FEA)?

- We need to solve a problem consisting of total 15 equations, among which 9 equations are partial differential equations!!

- Finding an exact solution: **MISSION IMPOSSIBLE !!!**

- Then: Mission changes to find a solution that **APPROXIMATES** the exact solution

- FEA is a numerical method that offers a means to find this **Approximate Solution.**

Finite Element Analysis

FEA requires three steps

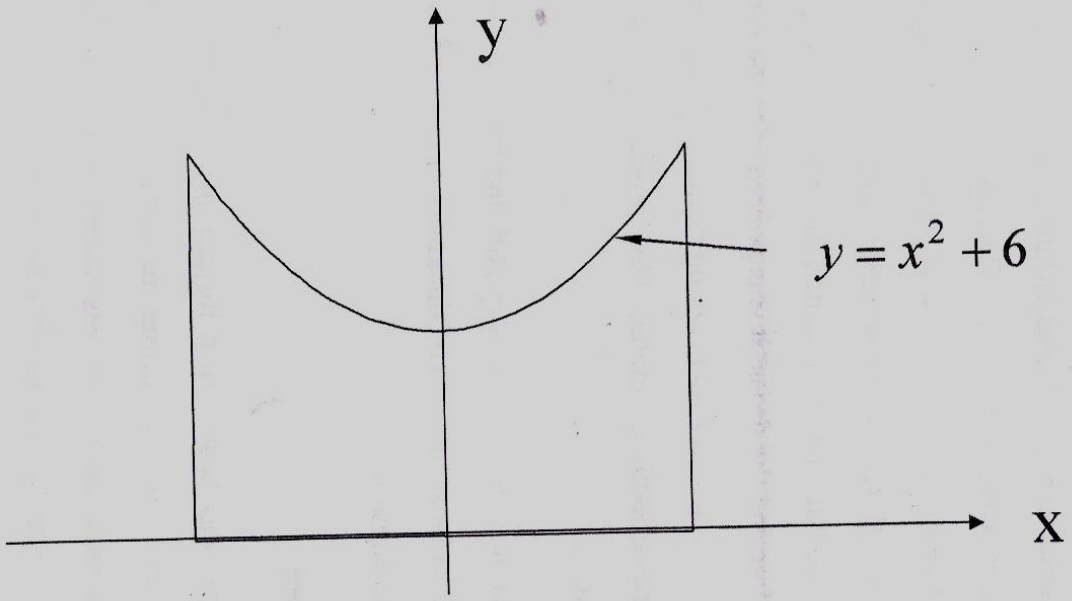
- Pre-Processing
- Solving Matrix (solver)
- Post-Processing

How does FEA work?

Integration using numerical methods:

Example: $F = \int_{-1}^{1} \left(x^2 + 6\right) dx$

Exact solution: $F = \int_{-1}^{1} \left(x^2 + 6\right) dx = \left(\frac{1}{3}x^3 + 6x\right)\Big|_{-1}^{1} = \frac{38}{3} \approx 12.667$



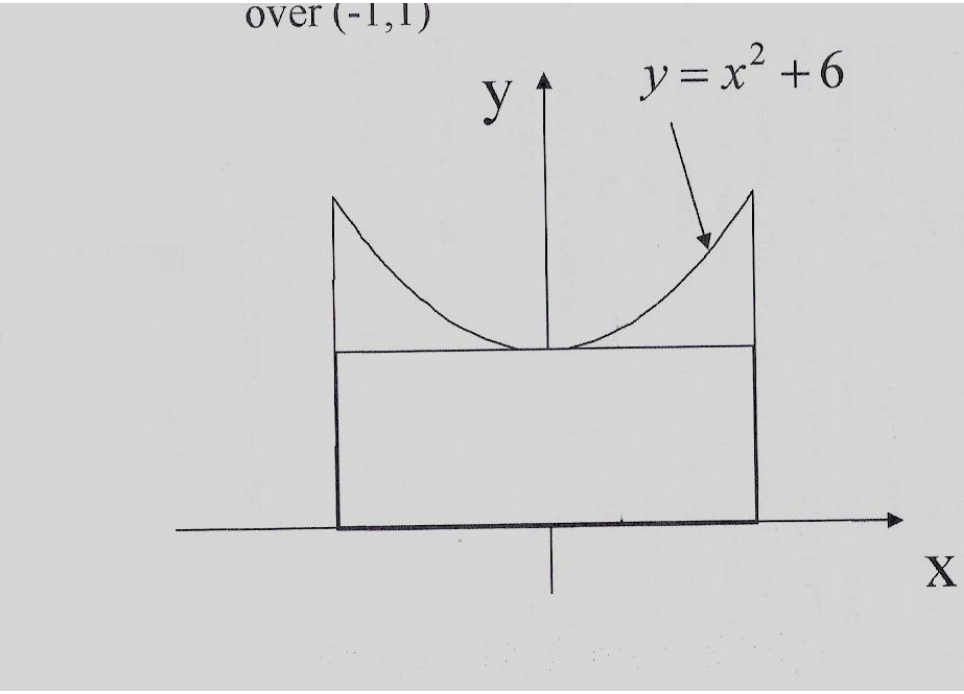
The integration represents the area under the curve

How does FEA work?

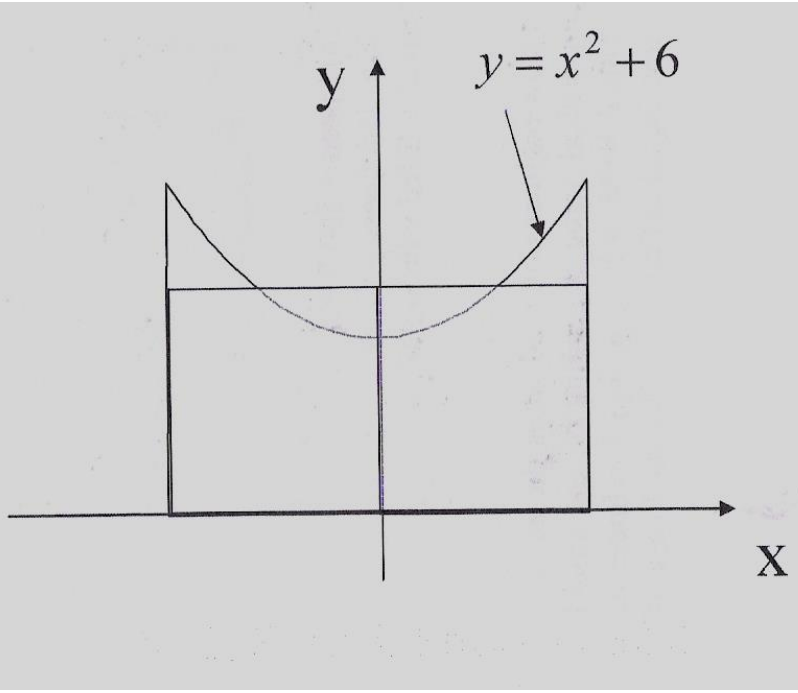
- *Numerical integration*

1. Divide the interval of integration into N section;
2. Choose a function to approximate the variation of *f (x) in each section; the simplest such* function is a constant function that equals to the value of *f (x) at the mid-point of each section.*
3. The product of this constant function and the length of the section approximates the integration of *f (x) over this section.*
4. Summing the products for all sections gives an approximate answer to the integration of *f (x)* over (-1,1)

How does FEA work?



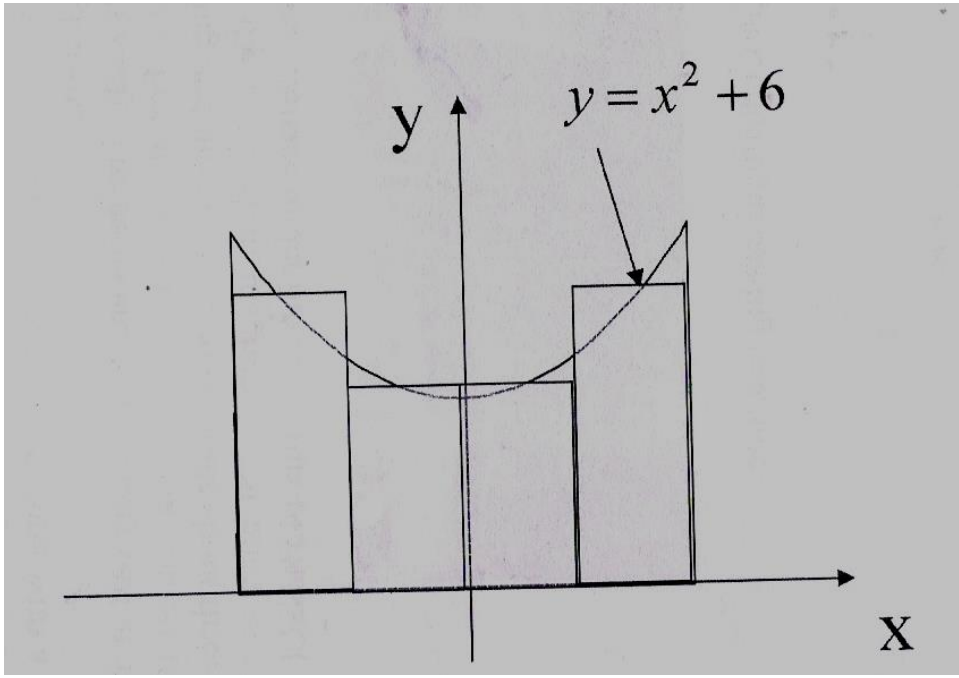
N=1, F=12, Error= -5.26%



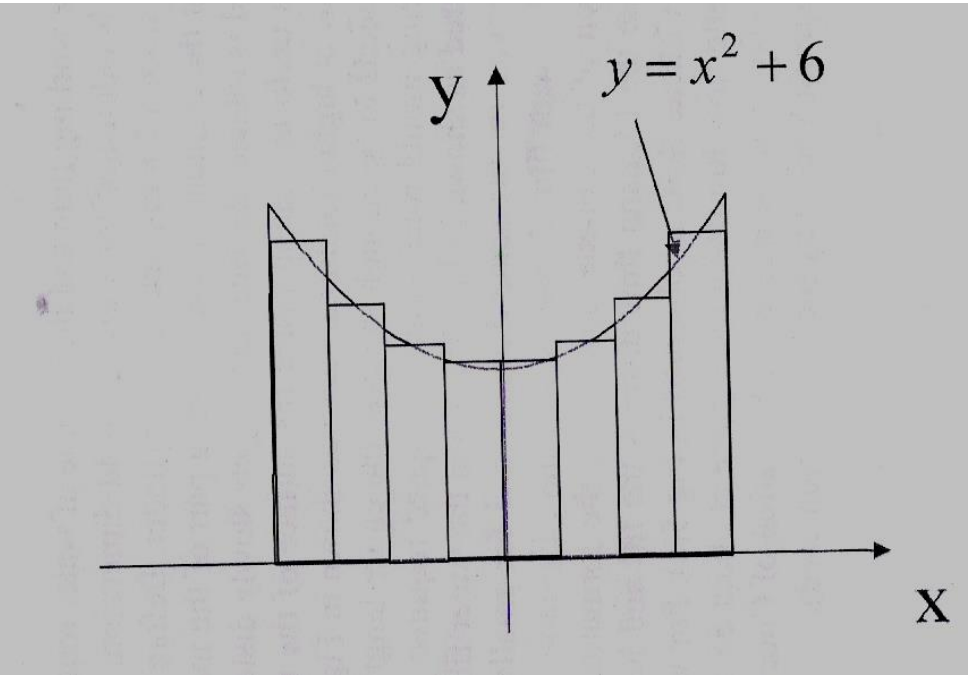
N=2, F=12.5, Error= -1.32%

How does FEA work?

Integration using numerical methods:



N=4, F=12.625, Error=-0.33%



N=8, F=12.656, Error=-0.08%

How does FEA work?

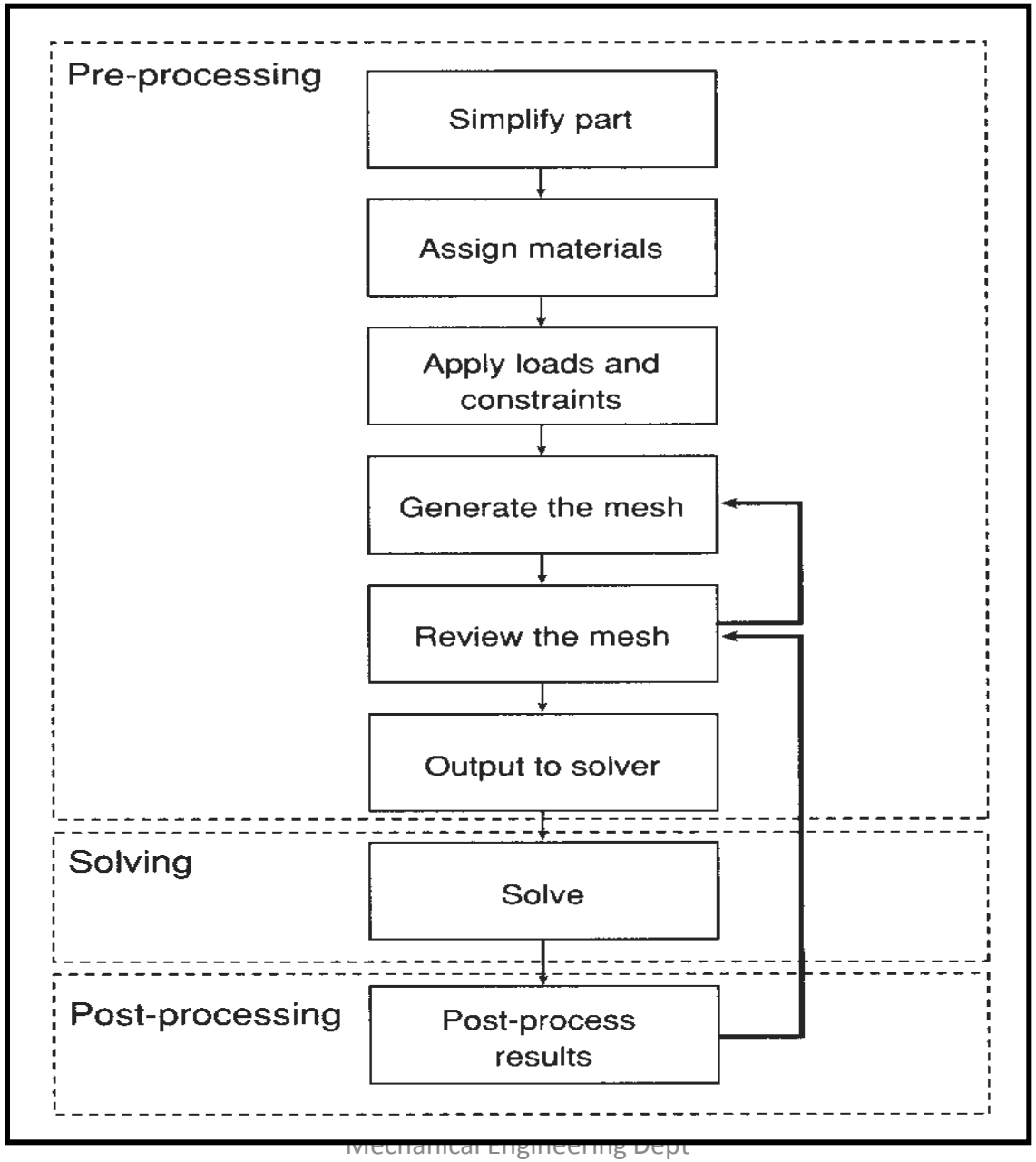
- Two key steps:

1. Divide the interval of integration.
2. In each sub-interval, choose proper simple functions to approximate the true function

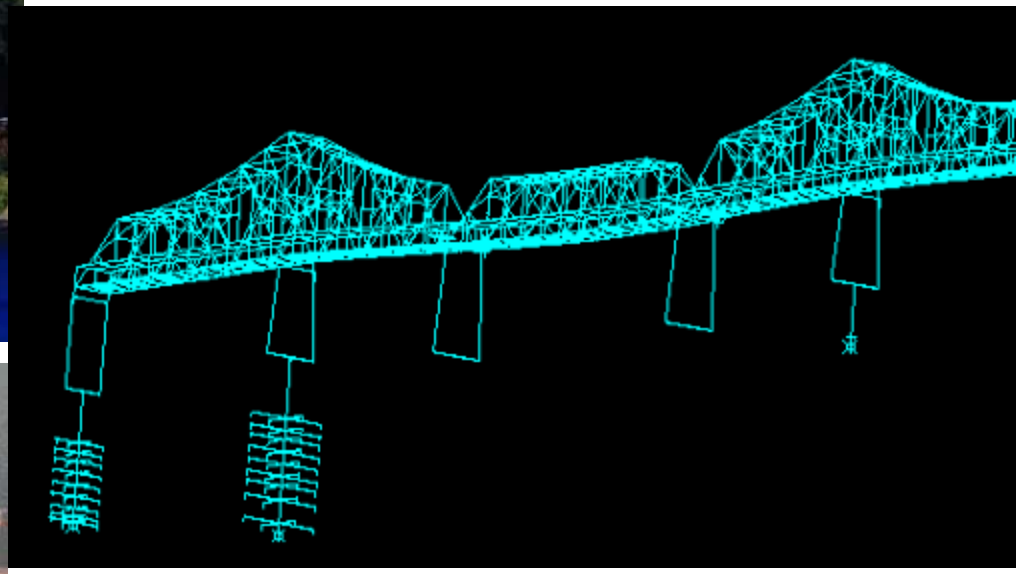
- Two key features:

1. The numerical result is an **approximation to exact** solution.
2. The accuracy of numerical result depends on the number of sub-interval and approximate function.

FEA - Flow Chart

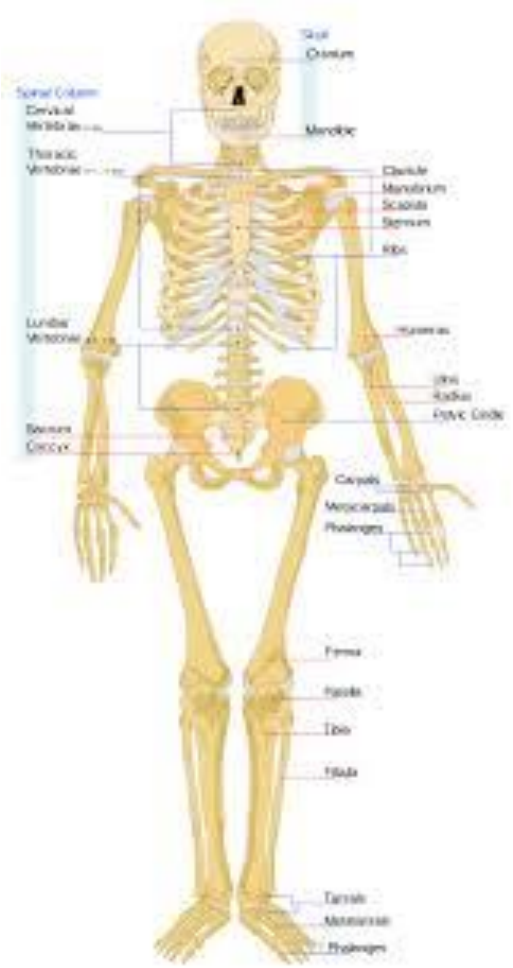


FEM simulation of the damage of San Francisco Oakland Bay Bridge caused by the 1989 Loma Prieta earthquake. (*From Adina R & D, Inc.)*



FEM V/S Human Body

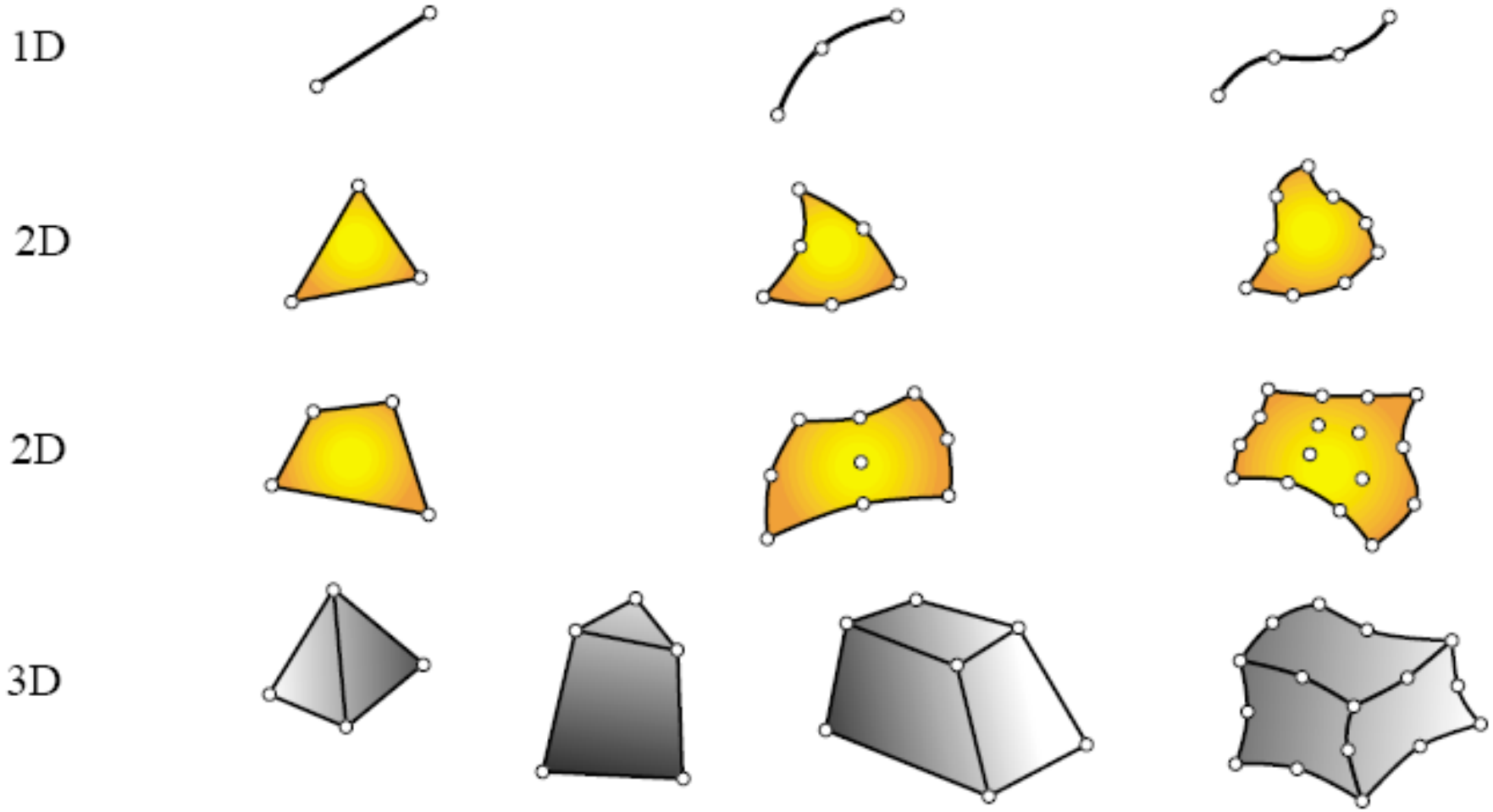
- Human body consists of hands, legs, fingers etc.
- All these components are connected at different places harmoniously so that when movement takes place, we do not fell pain.
- Nature as assembled in such a manner that every human being is able to sustain a certain amount of load without experiencing strain.
- The assemblage of various components constitutes the human system.
- In a like wise manner any structure such as an automobile, aeroplane, ship, machine etc. consists of many parts assembled together.



Element

- It is a small portion of a system.
- It has good definite shape
- Nodes are places where connection is made to another element.
- Loads are act only at the nodes or nodal points.

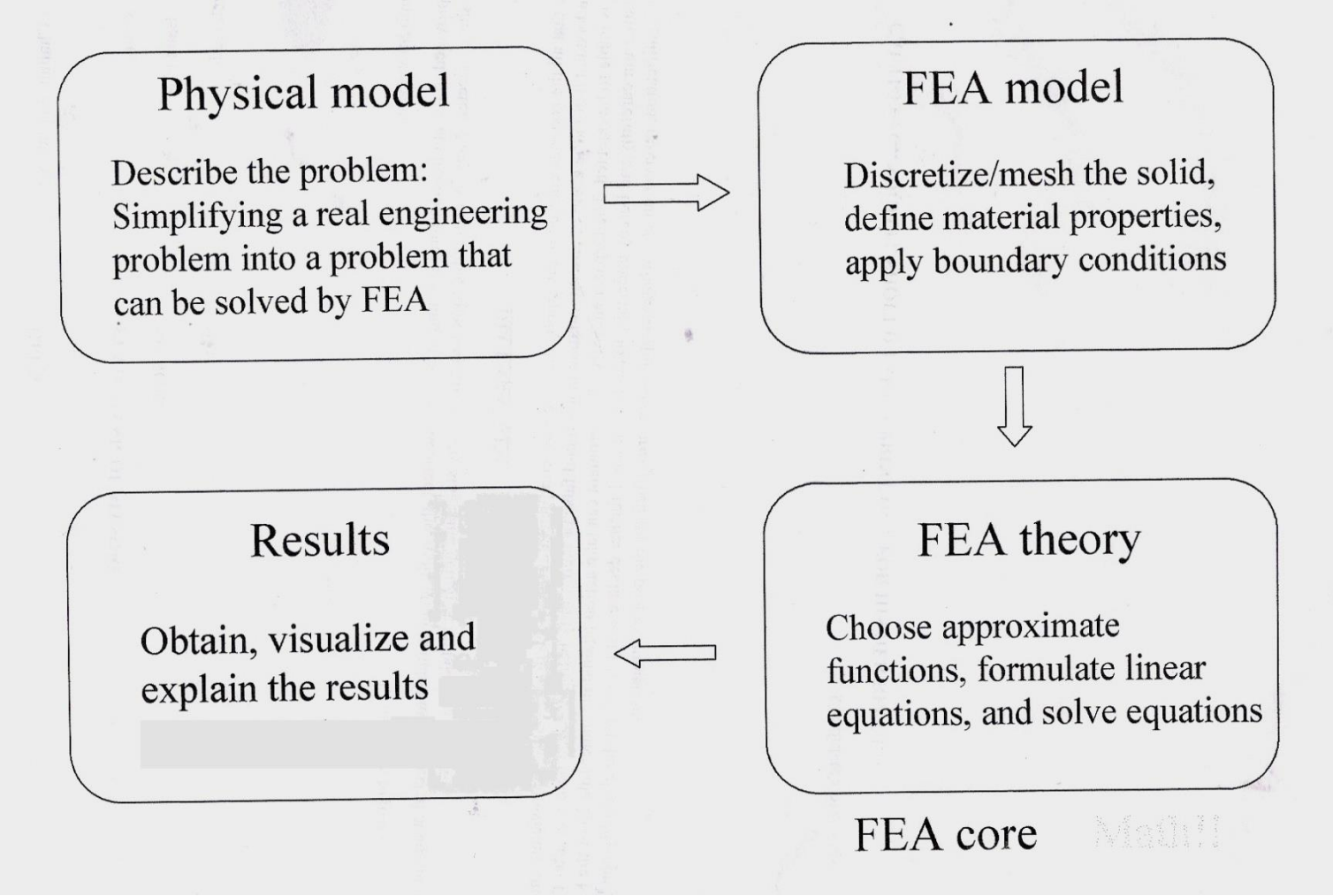
Types of elements



Node

- a generalized joint
- connection point at which equations are written
- there are at most 6 unknowns (degrees of freedom) at a node (3 displacements, 3 rotations)

General Procedure



Beam

Beam is one of commonly used structural elements.
Many engineering structures can be modeled as beams.

Airplane wing modeled as beam

Building An FEA Model
Ingredients in an FEA model

- Basic information that needs to be provided:

1. Geometry.
2. Material properties: Young's modulus, Poisson's ratio, bending stiffness…
3. Boundary conditions, prescribed forces or displacements.
4. Type of analysis: static, transient, modal, buckling, ….

Ingredients in an FEA model

Additional ingredients:

Elements or mesh:

- Strategy to create a good mesh
- Element types

Time functions:

- A time function defines how the prescribed boundary conditions change with time, such as ramp, or sinusoidal.
- In FEA, “Time” means a physical time that you count by a clock (such as in dynamics), or it means that one thing happens before another thing (such as in statics).
- In some FEA packages, the default time function for static analysis is a ramp function.

Ingredients in an FEA model

Six basic ingredients of an FEA software package

1. Type of analysis
2. Geometry (defined through nodes)
3. Elements
4. Material properties
5. Boundary conditions
6. Time functions

- As long as these six components are defined, an analysis can be conducted.
- It usually does not matter in what sequences these components are given.

Von-Misses Stress

FEA Software Packages

- ALGOR
- ANSYS
- COSMOS/M
- STARDYNE
- NASTRAN
- COMSOL
- SAP90
- ADINA
- ABAQUS
- MARC
- NISA
- DYTRAN
- …….

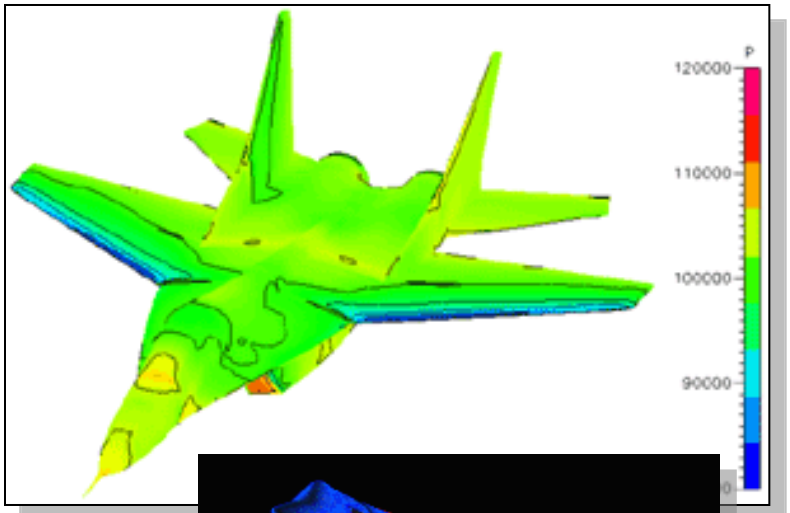
Applications of Finite Element Methods

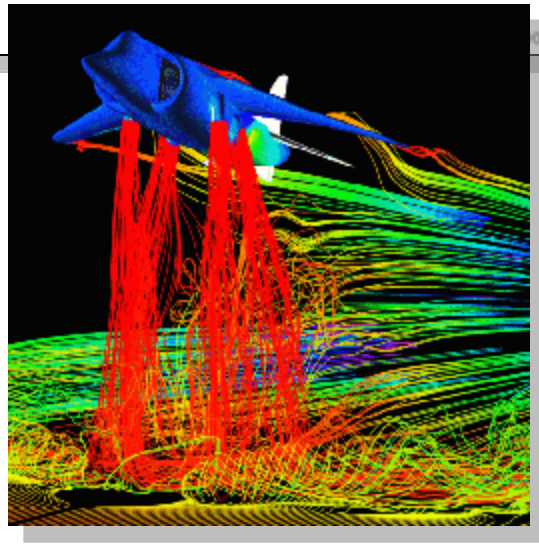
- *Structural & Stress Analysis*
- *Thermal Analysis*
- *Dynamic Analysis*
- *Acoustic Analysis*
- *Electro-Magnetic Analysis*
- *Manufacturing Processes*
- *Fluid Dynamics*
- *Financial Analysis*

COMSOL Multiphysics is a cross-platform finite element analysis, solver and multiphysics simulation software. It allows conventional physics-based user interfaces and coupled systems of partial differential equations (PDEs). COMSOL provides an IDE and unified workflow for electrical, mechanical, fluid, and chemical applications.

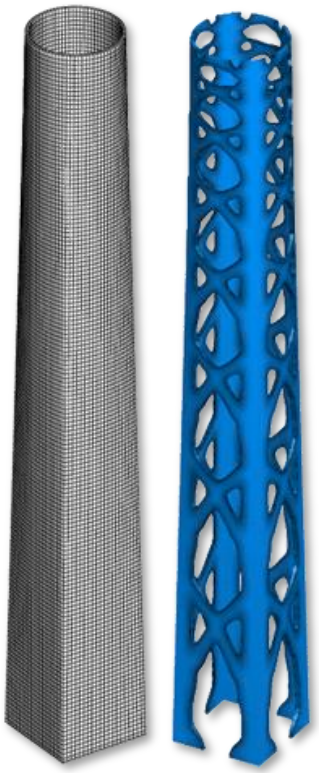
Several modules are available for COMSOL,categorized according to the applications areas, namely Electrical, Mechanical, Fluid, Chemical, Multipurpose

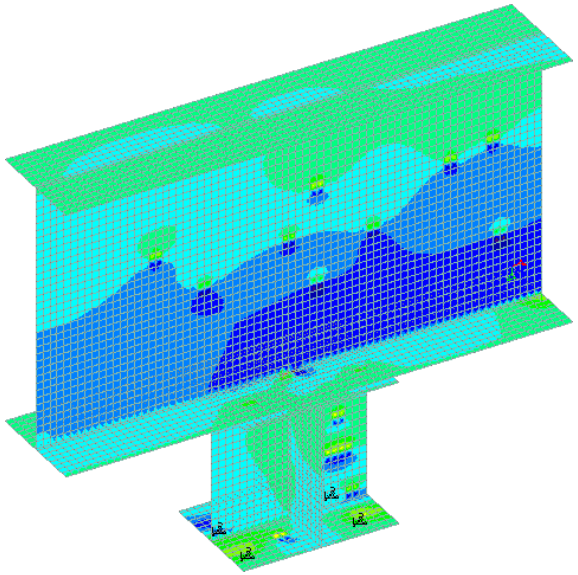
Applications: Aerospace Engineering (AE)

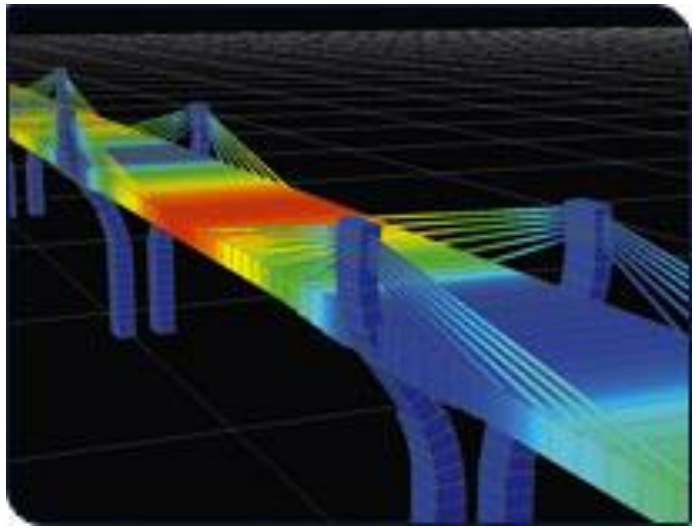




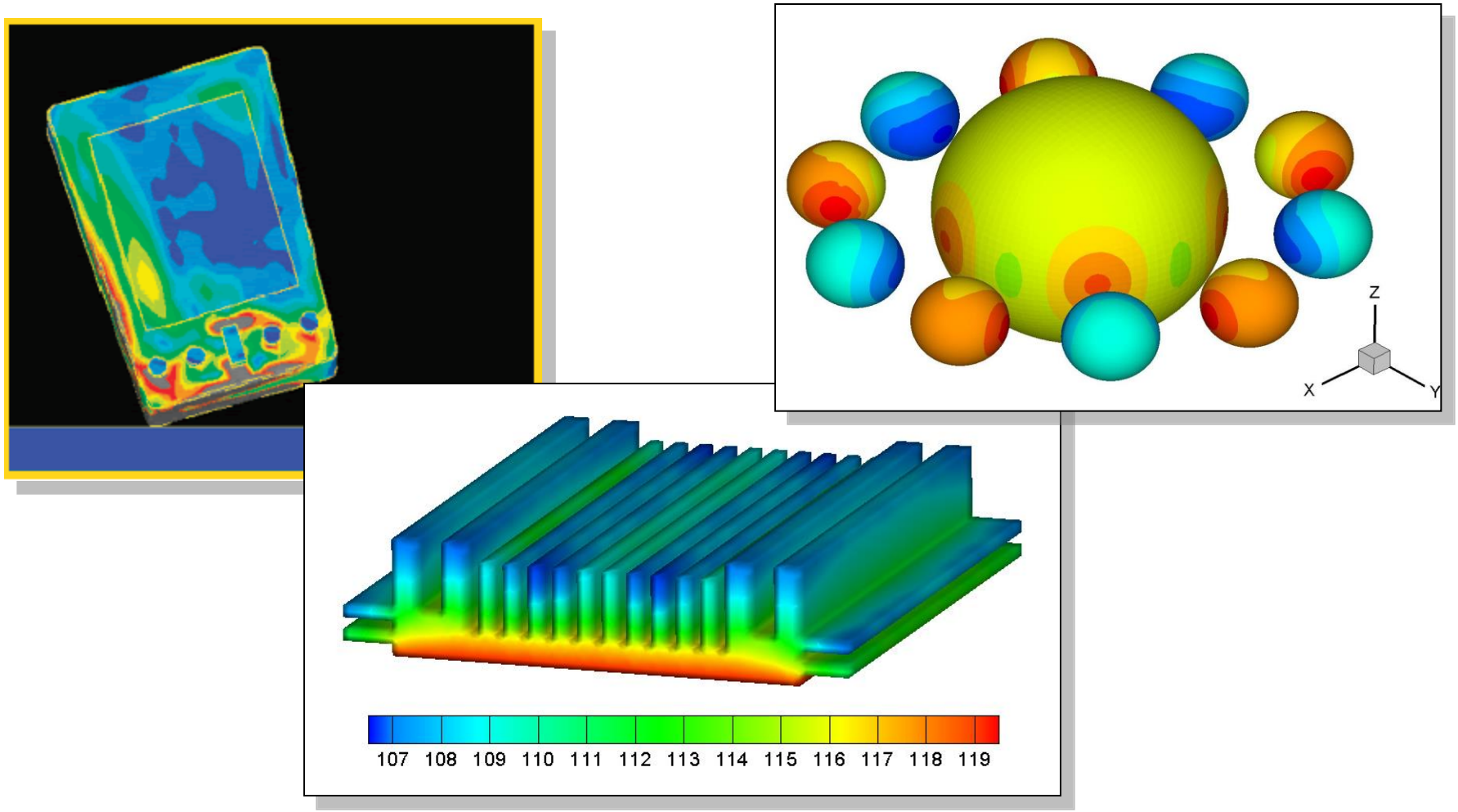
Applications: Civil Engineering (CE)



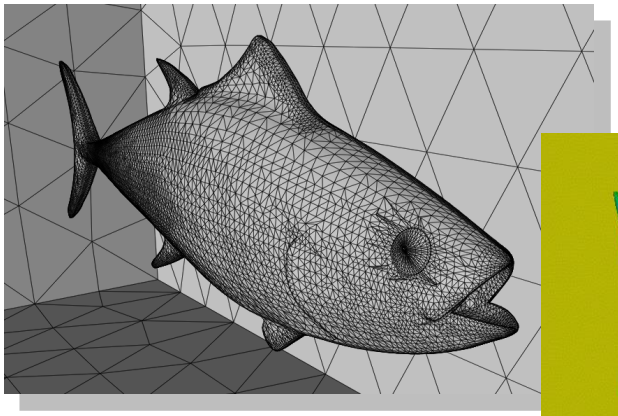


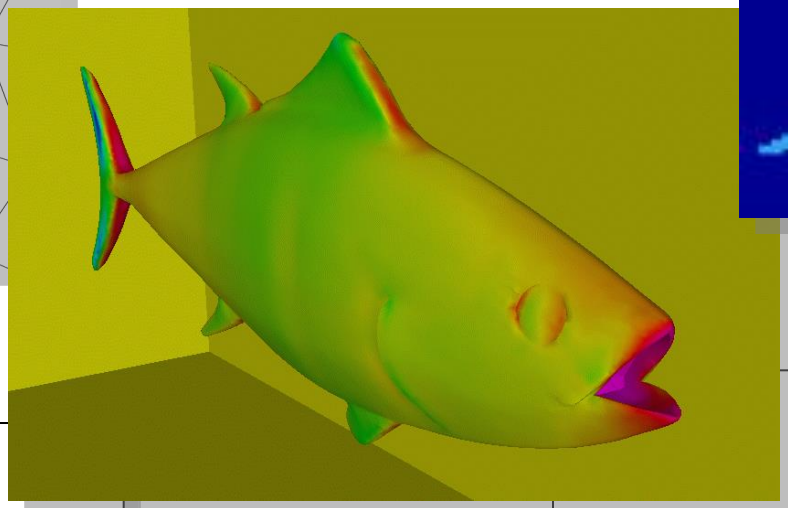


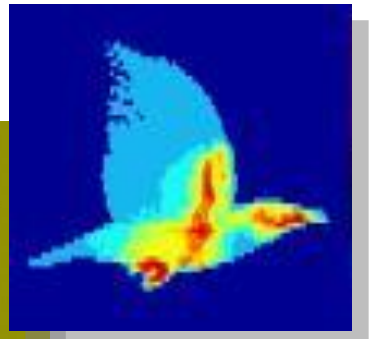
Applications: Electronics Engineering

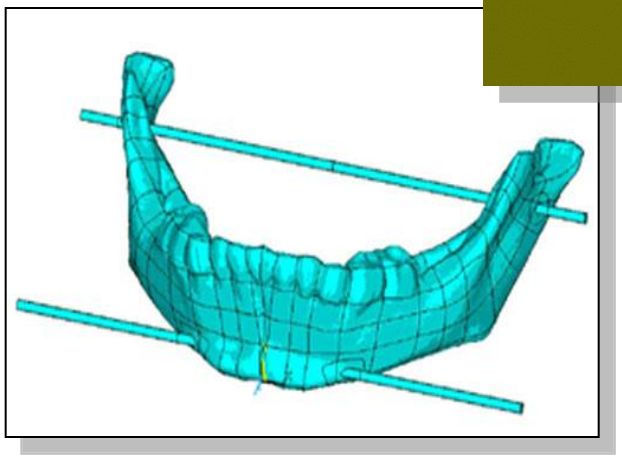


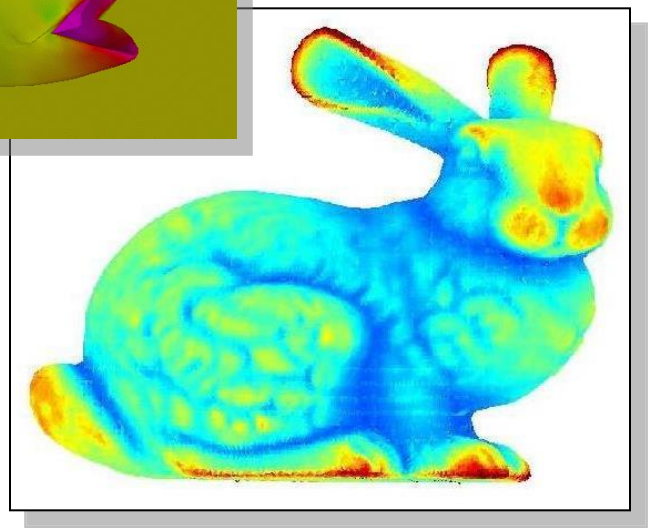
Applications: Biomedical Engineering (BE)





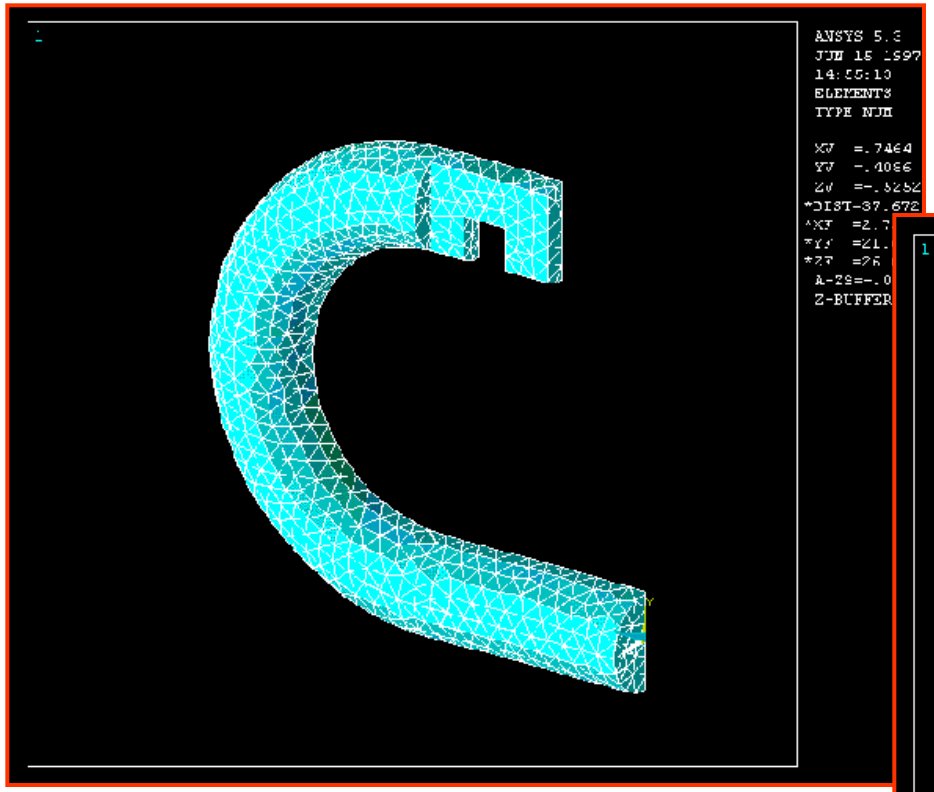


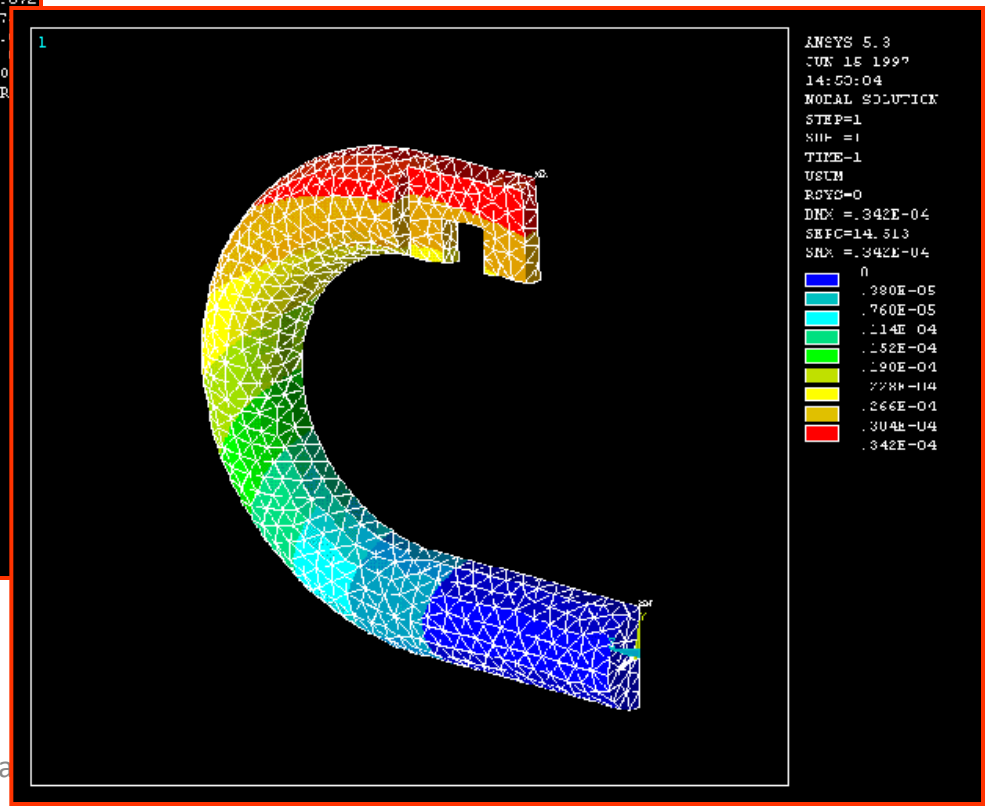




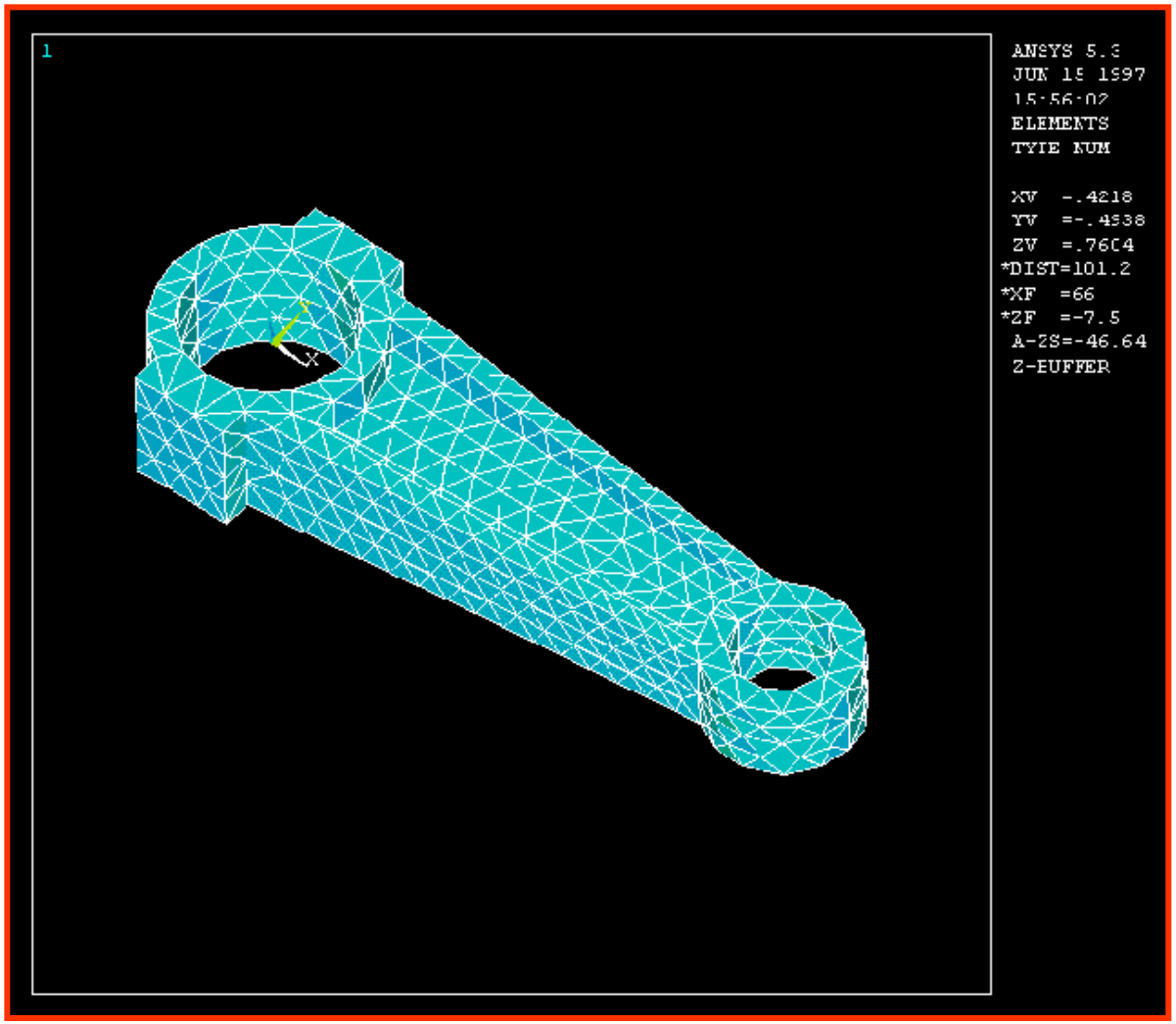
Post-Processing, Displacement Magnitude

Unexpectedly high or low displacements (by order of magnitude) could be caused by an improper definition of load and/or elemental properties.



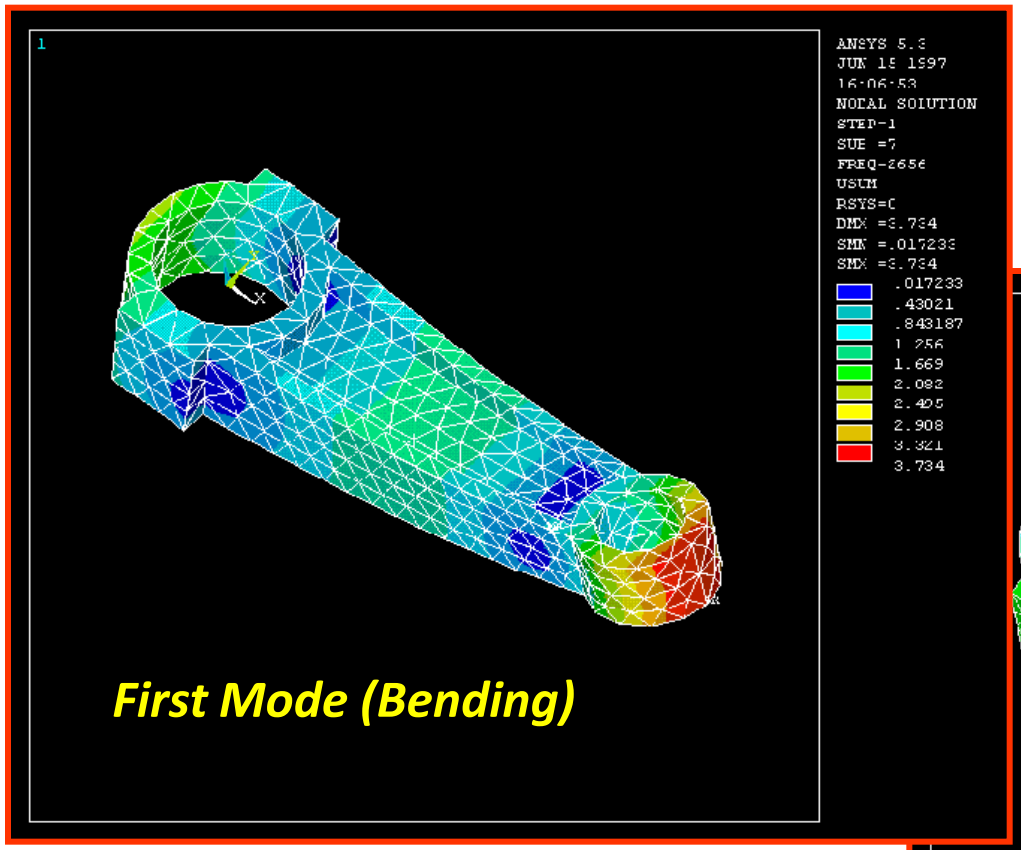


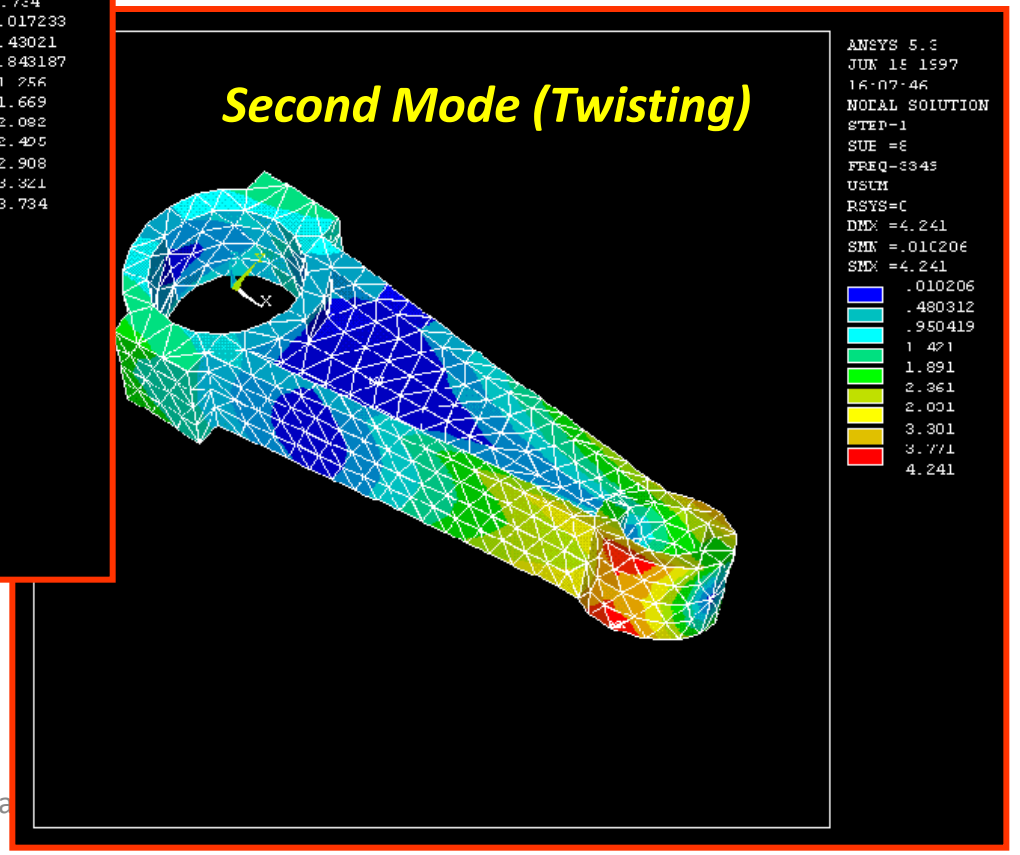
Post-Processing, FEA of a connecting rod



Post-Processing, Stress Results

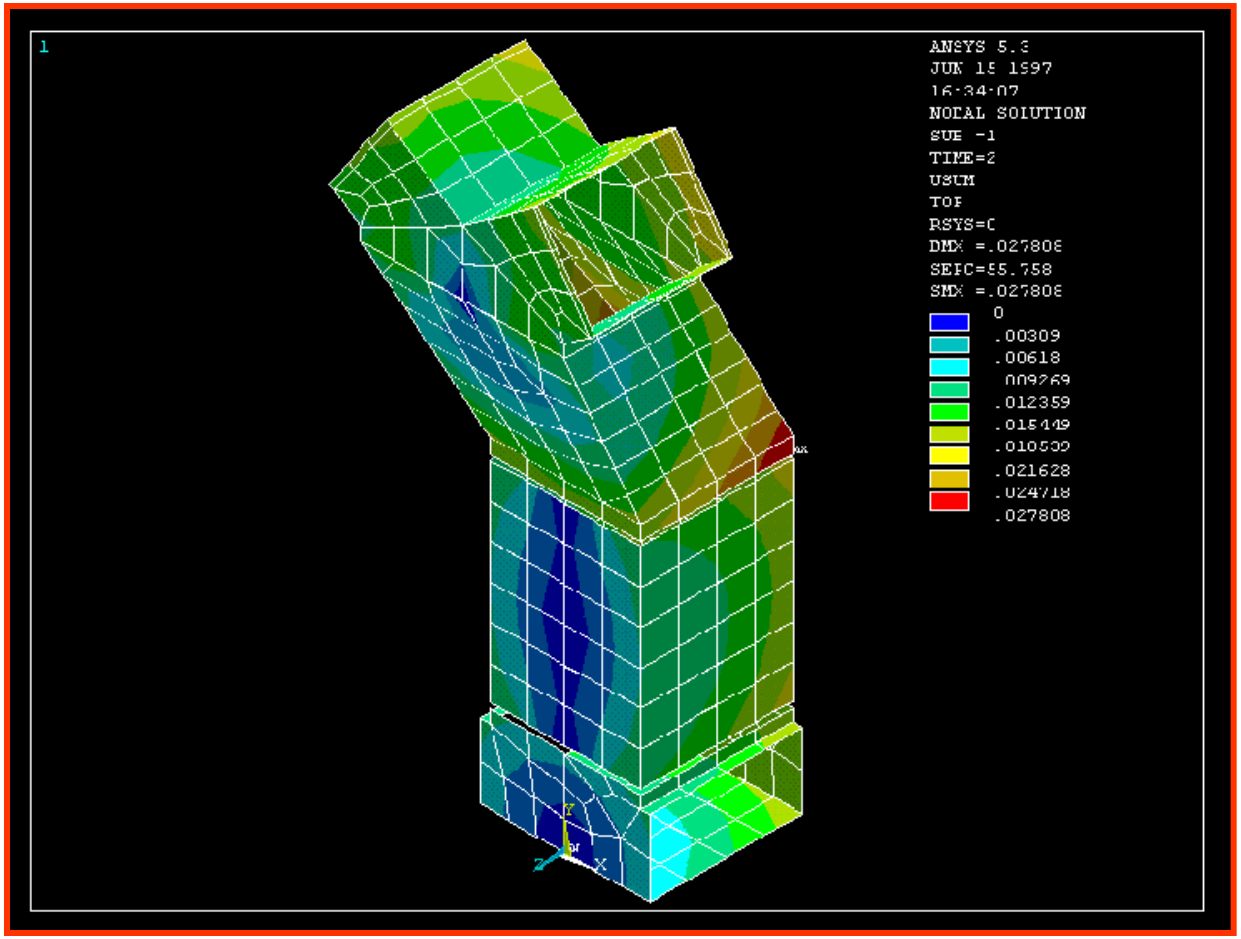
The magnitude of the stresses should not be entirely unexpected.





Post-Processing, thermal analysis

Deformation of a duct under thermal load



The Future – Virtual Engineering

THANK YOU

Any Questions

Visvesvaraya Technological University

Jnana Sangama, Belagavi, Karnataka 590018

A Project Demo on

“AUTOMATIC BOOK FINDER IN LIBRARY USING BEACON”

Department of Information Science & Engineering

Vidya Vikas Institute of Engineering and Technology

Bannur Road, Alanahally, Mysuru - 570 028

AUTOMATIC BOOK FINDER USING BEACON

Guide :

Mrs.Drakshayini K B

Team Members:

Bhavani S

Pooja G D

Prakruthi J U

Varsha A B

overview

- Aim
- Introduction
- Objective
- Scope
- Requirement Specifications
- References

AIM

Automatic book finder in library using beacon that Beacon uses battery friendly low energy bluetooth connections to transmit messages or prompts directly to a Smartphone.

INTRODUCTION

- Well a library is a vast collection of books. This requires a proper arrangement and placement of books in an order that makes it easy for the user to find a particular book.
- But in very large libraries having a huge collection, locating a particular book becomes quite a task.
- Here we propose a server based system using an android application to achieve this task using Beacon technology.

OBJECTIVE

- The main objective of this application is to help the user to easily track the required book and reduce the Search time of finding a book in the library.

Beacon

A **beacon** is an intentionally conspicuous device designed to attract attention to a specific location. Beacons are tiny and inexpensive, micro-location-based technology devices that can send radio frequency signals and notify nearby Bluetooth .Bluetooth based beacon concept , which allows Bluetooth devices to broadcast or receive tiny and static pieces of data within short distance. In simplistic words it consists of 2 parts :a broadcaster(Beacon device(inbuilt)) and a receiver(smart phone app).

SYSTEM REQUIREMENTS

Hardware Interfaces:

- Processor : i3
- RAM : 8GB
- Hard Disk : 100GB
- Speed : 2.4 GHz+
- Android mobile
- Beacon (Inbuilt In Android Phone)
- App Version : IceCream Sandwich to Nogut
- API level : 15 to 25

Software interfaces:

- Operating System : Windows XP or Higher
- Coding Language : J2EE and Android
- Back End : MYSQL
- Java Software : JDK 1.7 or above
- Android software : SDK
- Tool : Eclipse, Android Studio

Reference

https://ieeexplore.iee.org

www.mdpi.com

https://ijarcce.com

ವಿಶ್ವೇಶ್ವರಯ್ಯ ತಾಂತ್ರಿಕ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಬೆಳಗಾವಿ

VISVESVARAYA TECHNOLOGICAL UNIVERSITY - BELAGAVI

DEPARTMENT OF INFORMATION SCIENCE & ENGINEERING

Project proposal presentation on
IOT BASED SMART IRRIGATION SYSTEM WITH THREAT AVOIDANCE

Presented by

- Lavanya C.M(4vm14is019)
- Aishwarya P.K(4vm14is002)
- Vijay Kumar M.C(4vm15is404)
- Shri Priya A.M(4vm11is042)

Under the guidance of

Prof. Drakshayini K.B

OVERVIEW

- Objective
- Problem statement
- Proposed block diagram
- Project description
- Software and Hardware requirements
- Application and advantages
- References

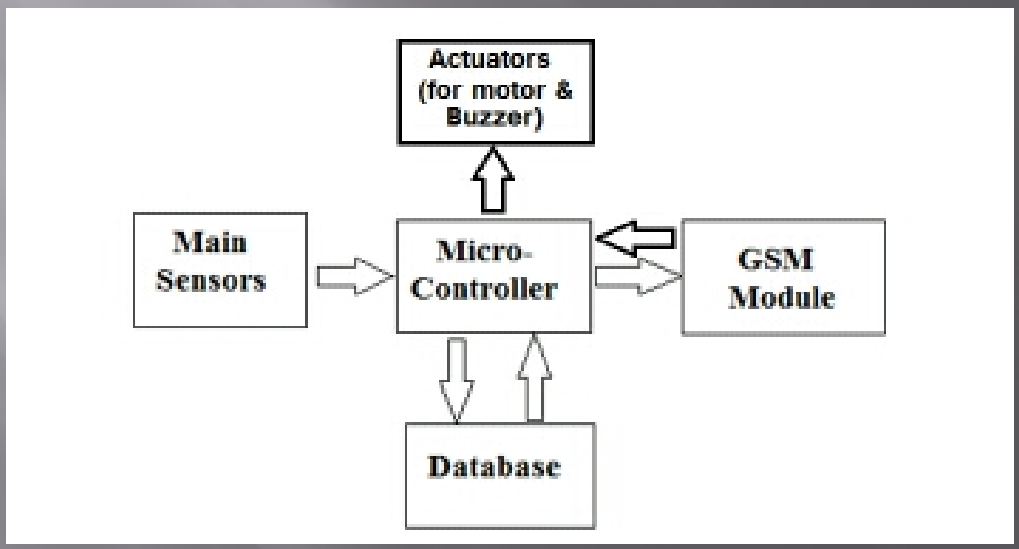
OBJECTIVE

- To develop an automated irrigation system for assisting the farmers which helps them in irrigation depending on the soil condition and weather conditions
- It helps in avoiding the severe problems by the trespassers/animals sending an early warning SMS to the farmers

PROBLEM

- Nowadays farmers are facing problems on loss of crops due to soil erosion, weather conditions and problems caused by the trespassers/animals.
- Since labours are not available when it is needed the money been invested on labours are wasted.
- To overcome to this problem we have come up with the solution of "IOT BASED SMART IRRIGATION SYSTEM WITH THREAT AVOIDANCE".

PROPOSED BLOCK DIAGRAM:



- The block diagram consists of a main sensor block which measures the soil condition and weather condition and also sensing the trespasser data.
- The sensed data is compared with the threshold data in the database and the data is sent to the farmer using the GSM module.
- The farmers can send the commands from their mobile for switching on/off the motor or for alarming a safety buzzer.

Project Description

- The main intention of this project is assist the farmer in proper irrigation by sensing the soil data, weather condition, and maintaining the soil moisture at an optimum level.
- And also this project assist the farmers in avoiding loss of crops due to the theft by the trespassers and loss due to loss animals attack by sensing the trespassing either by any person or by an animal and sending a warning signal to the farmer for taking any preventing actions.

Software and Hardware tools

The following tools are needed for developing this proposed system.

- Moisture/Humidity Sensors.
- Temperature Sensors.
- IR Sensors.
- Microcontroller.
- GSM module.
- A basic Mobile handset.
- Embedded system IDE.
- Embedded JAVA programming language.

Application and Advantages

- This system will be a very effective tool for aiding the farmers in getting a very good crop.
- The early warning system which ends the threat alarm to the farmer avoids the major consequences.
- It will be a great boon to the farmers.

References

- www.engineersgarage.com/articles/gsm-gprs-modules
- www.edgefx.in/gsm-interfacing-8051-microcontroller/
- www.stevenswater.com/catalog/Stevens-Hydra-probe.aspx
- www.ijert.org/.../smart-irrigation-system-using-wireless-sensor-network.

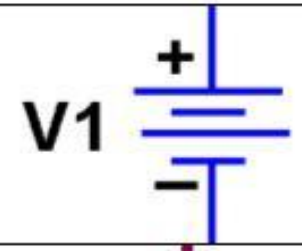
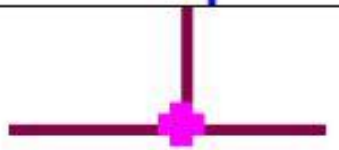
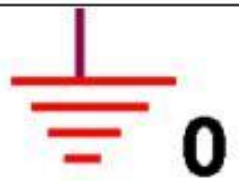
THANK YOU

Vidya Vikas Institute of Engineering and Technology, Mysuru

Department of Electronics and Communication Engineering

LIC and Communication Lab -15ECL48

Basic Symbols

	symbol	*units*	*analogy*	*icon*
voltage	V	volts	pressure	
current	I	amps	flow of water	
resistance	R	ohms (Ω)	pebbles in pipe	
ground	GND		ocean	

Sinusoid Units

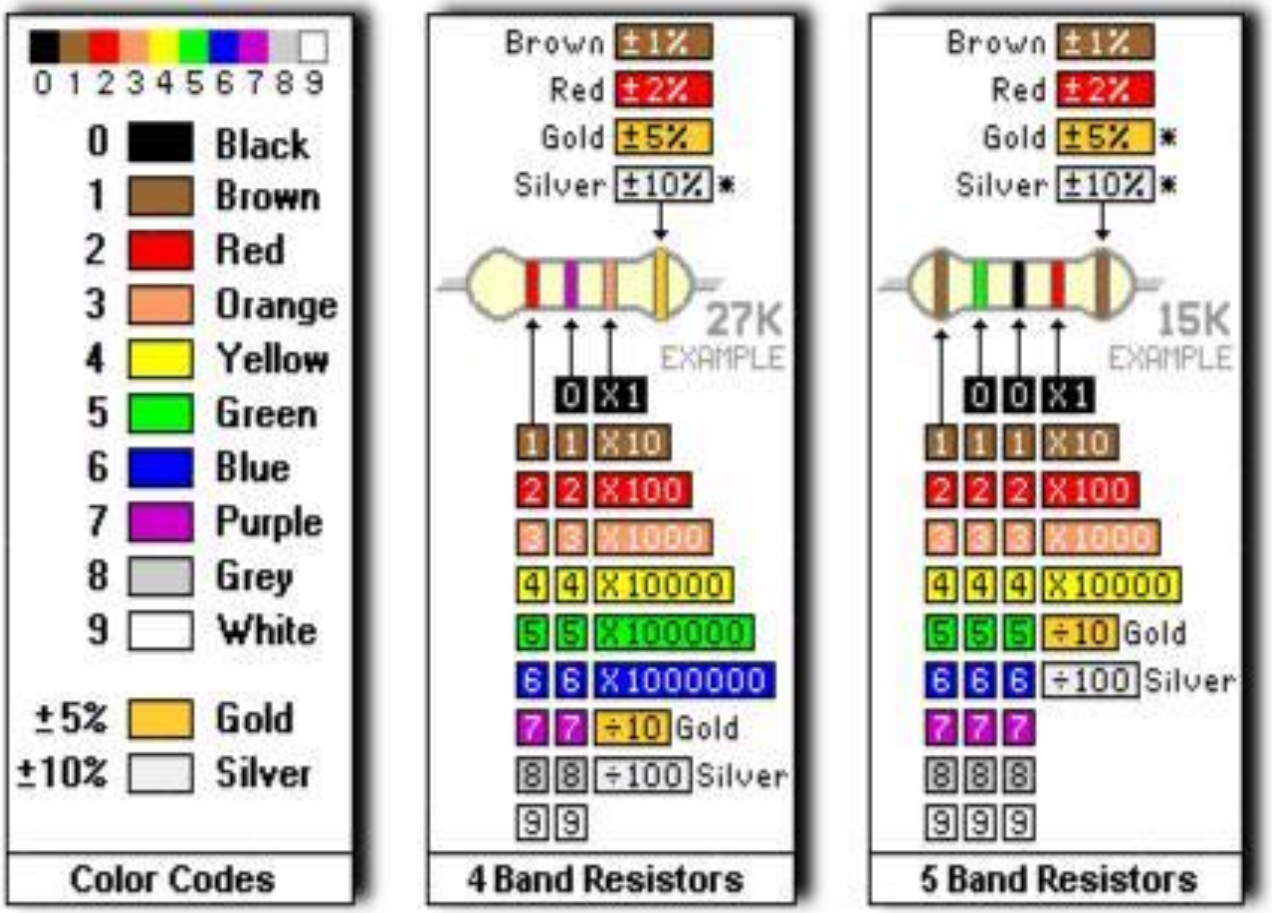
	symbol	units
amplitude	A	volts (V) or amps (A)
frequency	f	1/sec = Hertz (Hz)
period	T	seconds (s)
phase	ϕ	radians (rad)
angular frequency	ω	rad/s

Note: In physics, ω is called angular velocity.

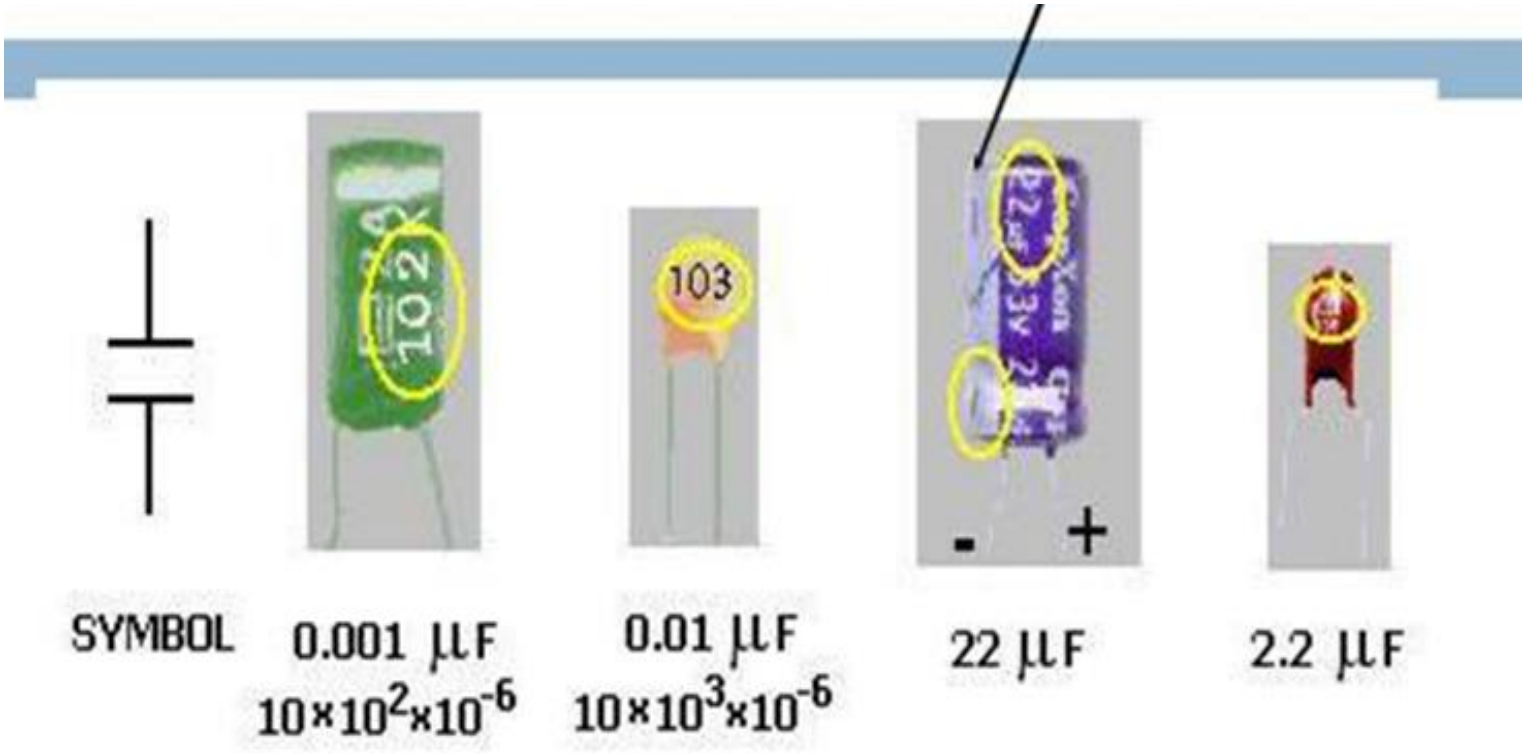
Suffix

pico	p	10^{-12}
nano	n	10^{-9}
micro	μ (u)	10^{-6}
milli	m	10^{-3}
Kilo	k	10^{3}
Mega	M (Meg)	10^{6}
Giga	G	10^{9}
Tera	T	10^{12}

Resistors


0 1 2 3 4 5 6 7 8 9
0 Black
1 Brown
2 Red
3 Orange
4 Yellow
5 Green
6 Blue
7 Purple
8 Grey
9 White
±5% Gold
±10% Silver
Color Codes
Brown ±1%
Red ±2%
Gold ±5%
Silver ±10% *
27K
EXAMPLE
0 X1
1 1 X10
2 2 X100
3 3 X1000
4 4 X10000
5 5 X100000
6 6 X1000000
7 7 ÷10 Gold
8 8 ÷100 Silver
9 9
4 Band Resistors
Brown ±1%
Red ±2%
Gold ±5% *
Silver ±10% *
15K
EXAMPLE
0 0 X1
1 1 1 X10
2 2 2 X100
3 3 3 X1000
4 4 4 X10000
5 5 5 ÷10 Gold
6 6 6 ÷100 Silver
7 7 7
8 8 8
9 9 9
5 Band Resistors

Capacitors


SYMBOL
0.001 µF
$10\times10^{2}\times10^{-6}$
0.01 µF
$10\times10^{3}\times10^{-6}$
22 µF
2.2 µF
103
-
+

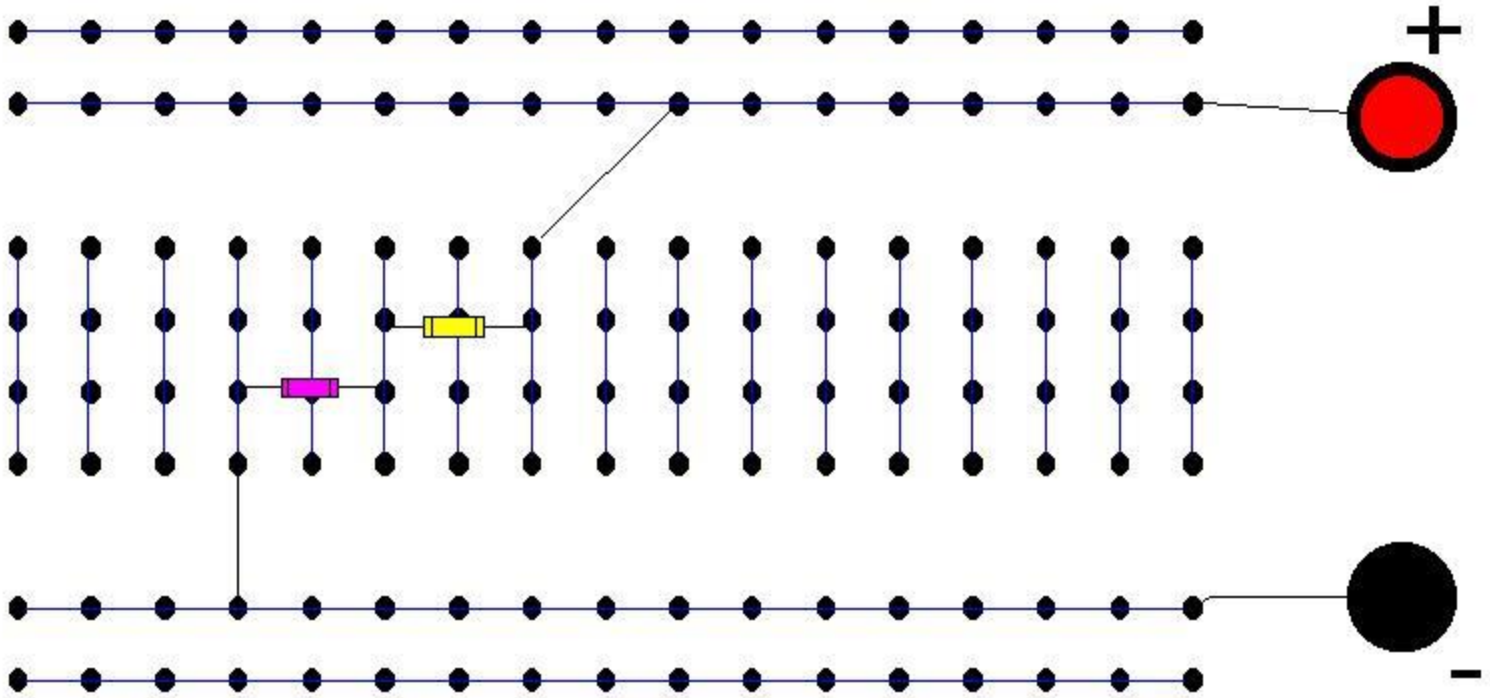
Comparison of Components

	resistor	capacitor
symbol	R	**C**
equation	$V_R = I_R R$	$I_C = C \frac{dV_C}{dt}$
icon		
series	$R = R + R$	$C_T^{-1} = C_1^{-1} + C_2^{-1}$
parallel	$R_T^{-1} = R_1^{-1} + R_2^{-1}$	$C = C + C$
low freq	**R**	*Open circuit*
high freq	**R**	*Short circuit*

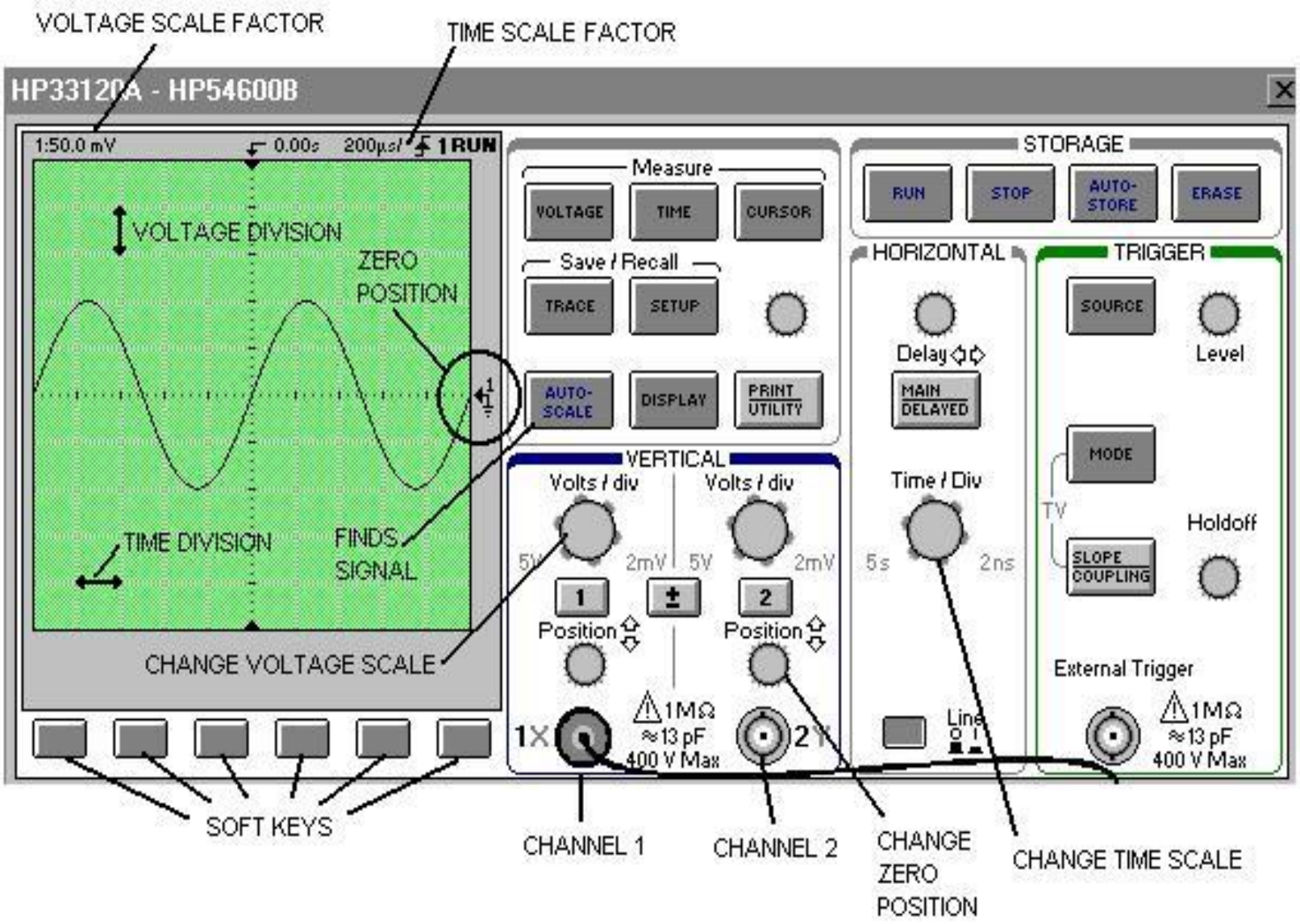
DC Source and Function Generator

- DC Dual power supply
- DC Single power supply
  - Regulated
  - Unregulated

Bread Board Connection



CRO


VOLTAGE SCALE FACTOR
TIME SCALE FACTOR
HP33120A - HP54600B
1:50.0 mV
0.00s
200µs/
1 RUN
VOLTAGE DIVISION
ZERO POSITION
TIME DIVISION
FINDS SIGNAL
CHANGE VOLTAGE SCALE
Measure
VOLTAGE
TIME
CURSOR
Save / Recall
TRACE
SETUP
AUTO-SCALE
DISPLAY
PRINT UTILITY
STORAGE
RUN
STOP
AUTO-STORE
ERASE
HORIZONTAL
Delay
MAIN DELAYED
Time / Div
5s
2ns
TRIGGER
SOURCE
Level
MODE
TV
SLOPE COUPLING
Holdoff
External Trigger
1MΩ ≈13 pF 400 V Max
VERTICAL
Volts / div
Volts / div
5V
2mV
5V
2mV
1
±
2
Position
Position
1X
2X
1MΩ ≈13 pF 400 V Max
Line
SOFT KEYS
CHANNEL 1
CHANNEL 2
CHANGE ZERO POSITION
CHANGE TIME SCALE

Syllabus

1. Design Adder, Integrator and Differentiator using Op-Amp.
2. Design of Monostable and Astable Multivibrator using 555 Timer.
3. Design active second order Butterworth low pass and high pass filters.
4. Design of RC Phase shift and Wein's bridge oscillators using Op-amp.

Syllabus

1. Design 4 bit R – 2R Op-Amp Digital to Analog Converter (i) using 4 bit binary input from toggle switches and (ii) by generating digital inputs using mod-16 counter.
2. Frequency modulation using IC 8038/2206 and demodulation.
3. Amplitude modulation using transistor/FET (Generation and detection).
4. Design an instrumentation amplifier of a differential mode gain of "A" using three amplifiers.

Syllabus

1. Design BJT/FET Mixer.
2. DSBSC generation using Balance Modulator IC 1496/1596.
3. Demonstrate Pulse sampling, flat top sampling and reconstruction.
4. Frequency synthesis using PLL.

Digital Switching System

Dr.Bindu A Thomas
Professor and Head, Dept. of ECE

Vidya Vikas Institute of Engineering and Technology,Mysuru
Department of Electronics and Communication and Engineering

May 10, 2017

UNIT 6:SWITCHING SYSTEM SOFTWARE

1. Introduction, Scope, Basic Software Architecture
2. Operating Systems, Database Management, Concept of generic Program
3. Software architecture for level 1 control, Software architecture for level 2 control, Software architecture for level 3 control
4. Digital switching system software classification
5. Call models ,connect sequence
6. Software linkages during call, call features
7. Feature flow Diagram, Feature interaction

TEXT BOOKS:

1. Telecommunication and Switching, Traffic and Networks - J E Flood: Pearson Education, 2002
2. Digital Switching Systems, Syed R. Ali, TMH Ed 2002

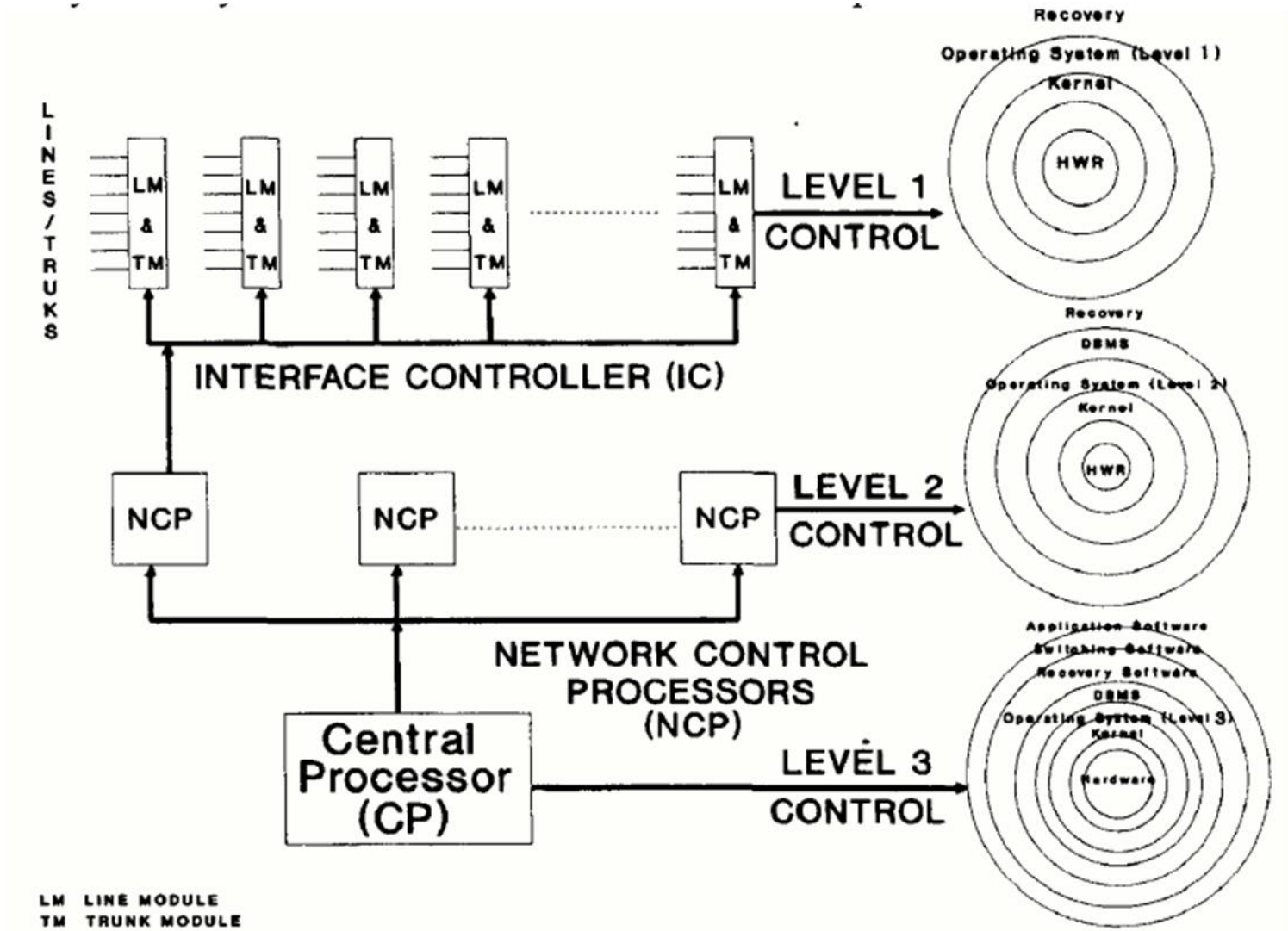
Introduction

- Tremendous growth in the field of software, the complexity of the DSS also increases.
- Modern switching system are quite complex, harder to manage than the hardware controls.

Scope

1. Chapter covers the basic software architecture of typical digital switch
2. Classifies various types of software, describes a basic call model and linkages
3. Describes some of the basic call features.

BASIC SOFTWARE ARCHITECTURE



Operating system

- An OS Basically performs resource management and controls the other programs.
- These programs are called as Control programs, supervisory programs and Monitor Programs.
- The OS employed by DSS are Real time OS.
- RTOS supports Telephony features and functions.

Kernel:(nucleus of the system)

The Kernel of an OS Basically performs

- Process control and process Scheduling.
- Memory management.
- Input and Output Control
- Read and Write operations
- Most DSS employs Kernels that reside in the main memory.

Database Management

In DSS there are two types of Database Management

1. Relational:Relational Database conforms to the relational model, and refers to a database data and scheme
2. Distributed:Distributed database is under the control of a central database management system(DBMS)

The grouping of related data elements are called as Tuple

Concept of Generic System

Contains all programs required for the switching system function

1. Switching software
2. Maintenance software
3. Configuration software

Software Architecture for Level 1 Control

- The lowest level of control in switching system.
- Level consists of lines, trunks and other low level functions and software associated at this level is related to switching.
- Microcontroller controls all the interfaces.
- Ability to recovery locally and easy the central processor to deliver better performance.

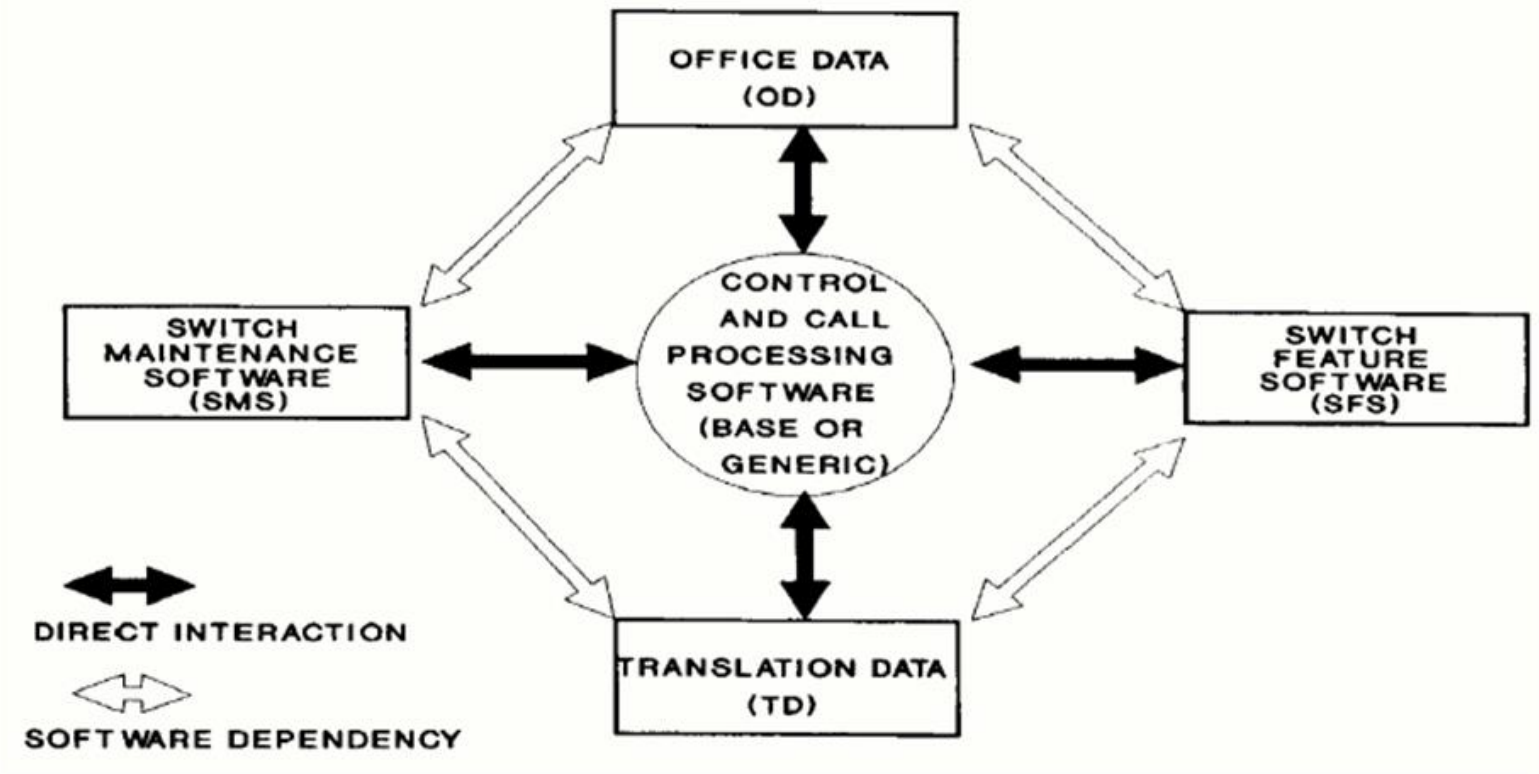
Software Architecture for Level 2 Control

- The level is associated with network controllers that may contain relational database or distributed database, customer database and service routines.
- This level the central processors are usually associated with the network control processors(NCP)

Software Architecture for Level 3 Control

- The top level of the switching architecture is usually associated with the central processor of a DSS.
- The CP are Mainframe type computers.
- The OS is real time OS and performs Multitasking

Digital Switching System Software Classification



Basic elements and other functions

- Switching Software
- Maintenance Software
- Office Data
- Translation Data
- Feature Software

Switching Software

- Call Processing Software
- Switching control software
- Network control software
- Peripheral devices control software

Maintenance Software

- Control the DSS and related hardware such as line test, remote diagnostics, system recovery and trunk tests.
- This method allows the system to recovery from faulty more efficiently.

Office Data

Defines the software parameter along with the hardware equipment, like some general hardware parameters are

- No of NCPs in central office.
- No of line controller in the central office.
- No of lines configured in the central office.
- Total number of trunks and types of trunks configured in central office.

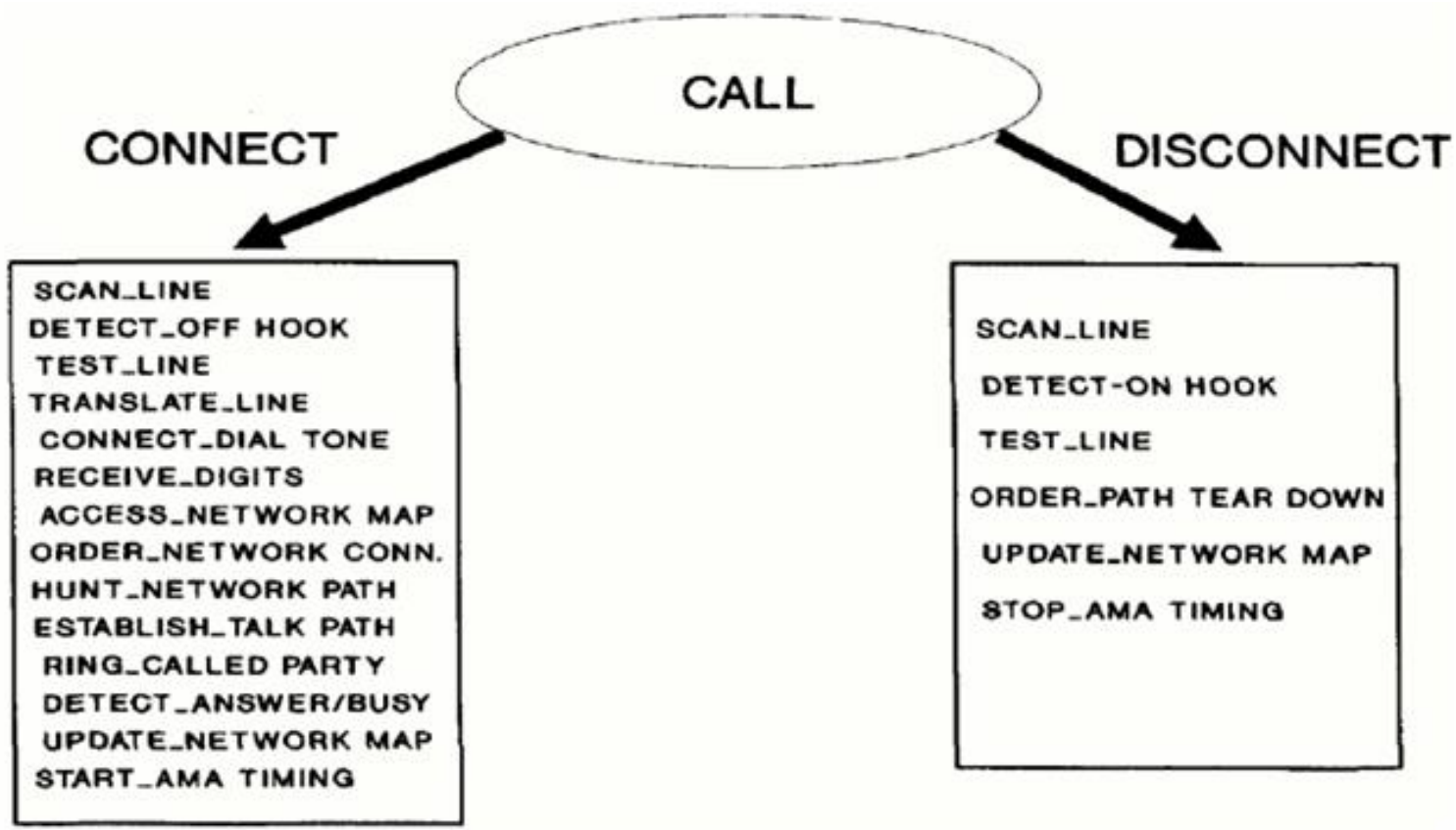
Translation Data

- Translation is the data given by the subscriber and is specific to each subscriber.
- It consists of
  1. Assigning the directory number to a line number.
  2. Enabling the feature subscribed by a particular customer, such as call waiting, conference call, call forward.
  3. Call restrictions, such as no outgoing calls, certain call blocked.
  4. Intercom and call announce.
  5. STD calls and International calls.

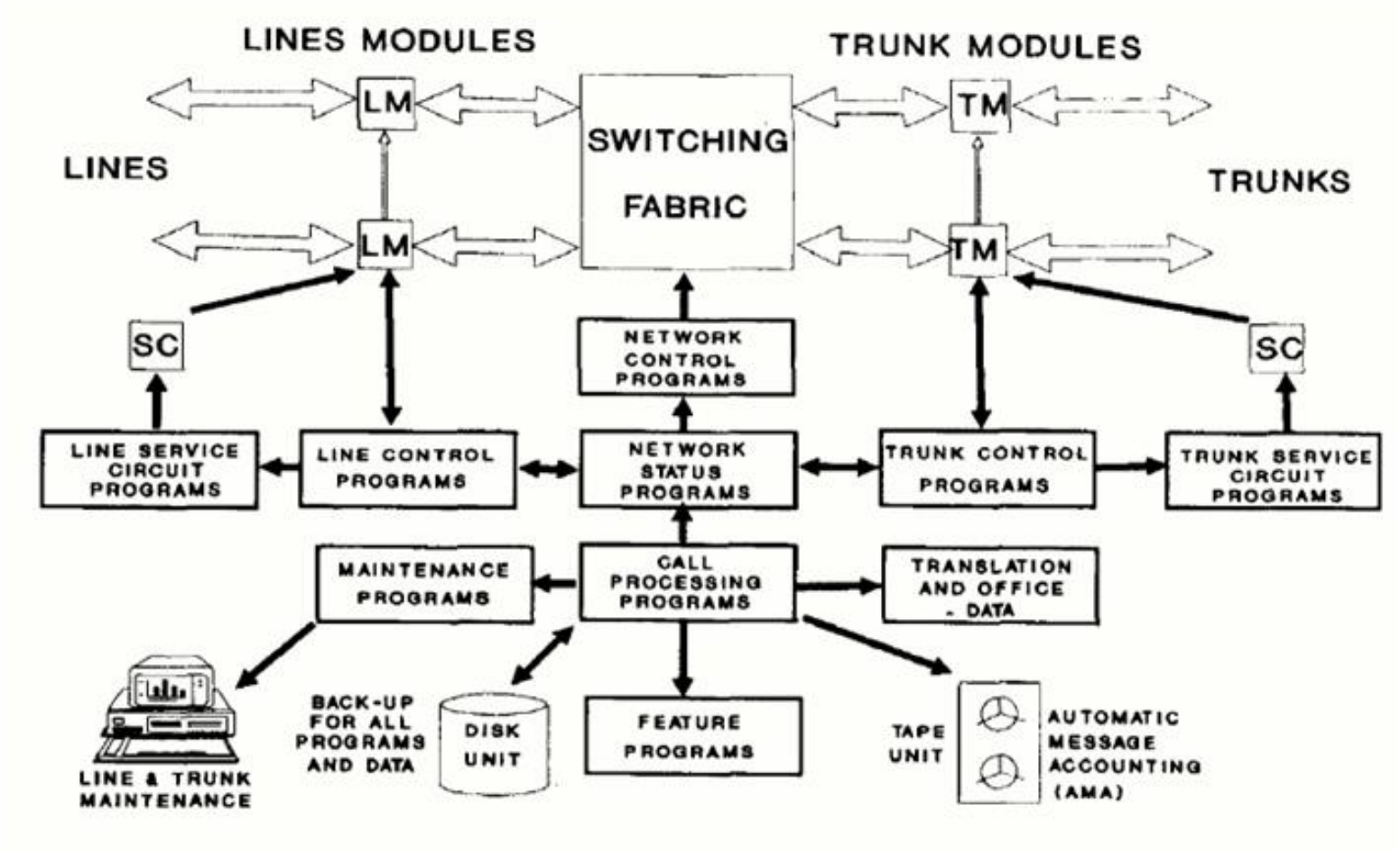
Feature software

- Most feature implemented in modern DSS are offered through feature packages.
- Examples are
    1) ISDN basic rate
    2) Operator services
    3) SCP database.

CALL MODELS


CALL
CONNECT
DISCONNECT
SCAN_LINE
DETECT_OFF HOOK
TEST_LINE
TRANSLATE_LINE
CONNECT_DIAL TONE
RECEIVE_DIGITS
ACCESS_NETWORK MAP
ORDER_NETWORK CONN.
HUNT_NETWORK PATH
ESTABLISH_TALK PATH
RING_CALLED PARTY
DETECT_ANSWER/BUSY
UPDATE_NETWORK MAP
START_AMA TIMING
SCAN_LINE
DETECT-ON HOOK
TEST_LINE
ORDER_PATH TEAR DOWN
UPDATE_NETWORK MAP
STOP_AMA TIMING

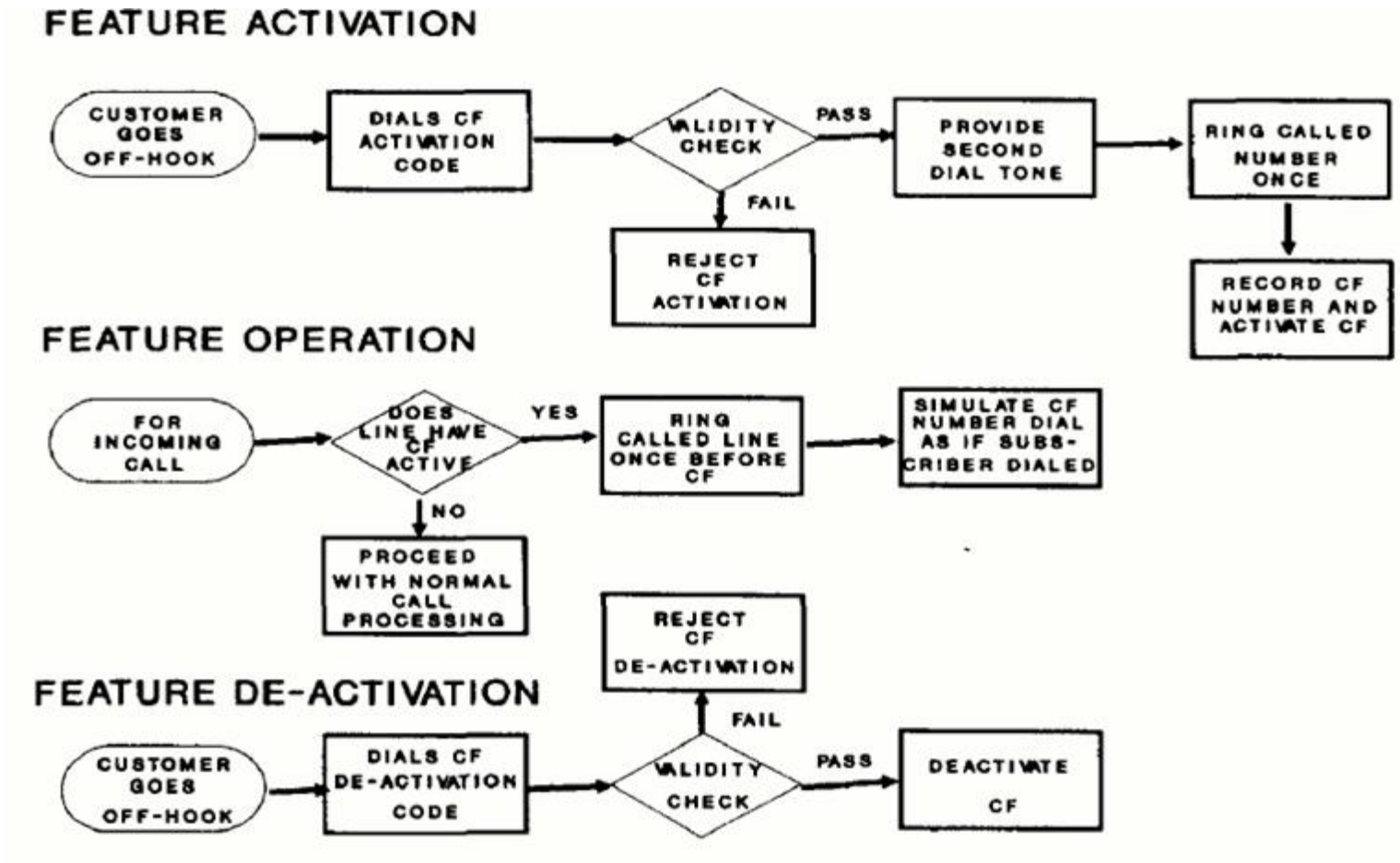
SOFTWARE LINKAGES DURING A CALL



CALL FEATURES

- Business purpose features
- Residence customer features
- Customer service features
- Coin and charge features
- Local system features
- Intercom features
- Call processing features
- Database service features
- System maintenance features
- Billing features

SIMPLIFIED FLOW DIAGRAM FOR CALL FORWARDING(CF)



Thank You