R.M.K. COLLEGE OF ENGINEERING AND TECHNOLOGY
R.S.M. NAGAR, PUDUVOYAL-601 206

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PEDAGOGY CONTENT

Method: Roleplay Method
Subject and Topic: Artificial Intelligence (MISSIONARIES AND CANNIBALS PROBLEM)
Year: II Year

The **Missionaries and Cannibals Problem** is a well-known state-space search problem in Artificial Intelligence (AI) that helps students understand problem-solving techniques, constraints, and search algorithms. To make learning interactive and engaging, a role-play methodology was used, allowing students to actively participate in problem-solving rather than passively learning theory.

Fig:Role Play

6 students were assigned roles as three missionaries and three cannibals. 1 student acted as the boat navigator to facilitate movement. The group was instructed to solve the problem using **logical decision-making** while following the game rules.

Students experimented with different combinations of moves to transfer all six people to the other side. After multiple trials, the teacher introduced BFS and DFS algorithms to compare their approach with AI-based solutions.

Fig: Students engaged in role play

Outcomes:

- Students were able to translate theoretical AI concepts into real-world applications.
- Enhanced teamwork, communication, and critical thinking skills.
- The methodology sparked interest in AI algorithms among students, encouraging deeper learning

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PEDAGOGY CONTENT

Subject Name: Object-Oriented Analysis and Design
Activity: One Minute paper

The One-Minute Paper is an active learning strategy where students write a quick response to a question or concept covered in class. This method enhances critical thinking, engagement, and retention. In this session, the technique was used to teach design patterns in Object-Oriented Analysis and Design (OOAD), helping students reflect on key concepts and their practical applications.

The followings steps are done in the activity

Step 1: Introduction to Design Patterns

- Students were given an overview of design patterns in OOAD, including:
  - Definition and importance of design patterns
  - Creational Patterns (Singleton, Factory Method)
  - Structural Patterns (Adapter, Composite)
  - Behavioral Patterns (Observer, Strategy)
- Examples from real-world software systems were discussed.

Step 2: One-Minute Paper Activity

- At the end of the lecture, students were given one minute to brief on the types of patterns they have learnt.

The One-Minute Paper proved to be an effective and innovative method for teaching design patterns in OOAD. It encouraged student participation, provided quick feedback, and helped tailor future lessons to address learning gaps. This method can be integrated into regular teaching to enhance student engagement and understanding.

The next class began with a discussion of student responses.

NAME: Hirenja. DS

ONE MINUTE PAPER REG.NO: 111620104124

21CS933 - OBJECT ORIENTED ANALYSIS & DESIGN PATTERN

Object - oriented Analysis and design (OOAD)

*) OOAD is a methodology for analysing and designing a system based on objects.

It has 2 key phases.

1) Analysis

2) Design

Design Pattern

*) It is a proven, reusable solution to a common software problem. It provides a general template for solving problems that arise during software design.

*) It has 3 main types

⇒ Creational Patterns : Eg :(singleton, factory method) focus on object creations mechanisms

⇒ Structural Patterns : (Eg Adapter, Composite) deal with object composition and relationships

⇒ Behavioral Patterns : (Eg : observer, strategy) focus on Object communication and interaction

Fig:One Minute Paper

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PEDAGOGY CONTENT

Method: Roleplay Method
Subject and Topic: Computer Architecture - Data Path
Year: II
Section: B and C section

Taught students through the Roleplay method which made the class interesting. It helped me to interact with the students, where students volunteered themselves and participated in the activity.

Fig:Faculty briefing on Data path

Fig:Faculty briefing on Data path

Fig:Role Play

Fig: Role Play

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PEDAGOGY CONTENT

Method: Roleplay Method
Subject and Topic: Software Development Practices - Animation(QUIZ)
Year: I
Section: B Section

Taught students through the Roleplay method which made students listen to the class interesting. It helped me to interact with the students, where students volunteer themselves and participated in the activity.

Fig:Students participating in the Quiz

Fig:Students formed into groups

R.M.K. COLLEGE OF ENGINEERING AND TECHNOLOGY
RSM NAGAR, PUDUVOYAL – 601 206
Department of Computer Science and Engineering

TEACHING PEDAGOGY

CS8601- MOBILE APPLICATION DEVELOPMENT
ACTIVITY NAME: ROLE PLAY

GSM ARCHITECTURE

Students were given an introduction on GSM architecture and are made to do role play

Fig: Setting the Scene

The key components of **GSM (Global System for Mobile Communications) Architecture** are explained with the help of role play

The evolution of the Home Location Register (HLR) in GSM is explained with the help of role play for better understanding of students

Fig: Roleplay Execution

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

TEACHING PEDAGOGY

Subject name:Object Oriented Analysis and Design
Faculty:Ms Saranya R

Object-Oriented Analysis and Design (OOAD) is a fundamental concept in computer science that helps in designing software systems using object-oriented principles. Teaching these concepts to beginners can be challenging due to the abstract nature of classes, objects, and relationships. This report presents an innovative approach using role play to make learning more interactive and engaging.

Students are assigned roles such as classes (e.g., Person, Student, Teacher), objects (instances of these classes), and relationships (like inheritance or association).

- The Person class is the base class.
- The Student and Teacher classes inherit from Person.
- Demonstrate polymorphism with methods like introduce() that behave differently for students and teachers.
- Each student played their role and interacted as their assigned object.
- Demonstrated message passing by making objects communicate

Fig:Role Play

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

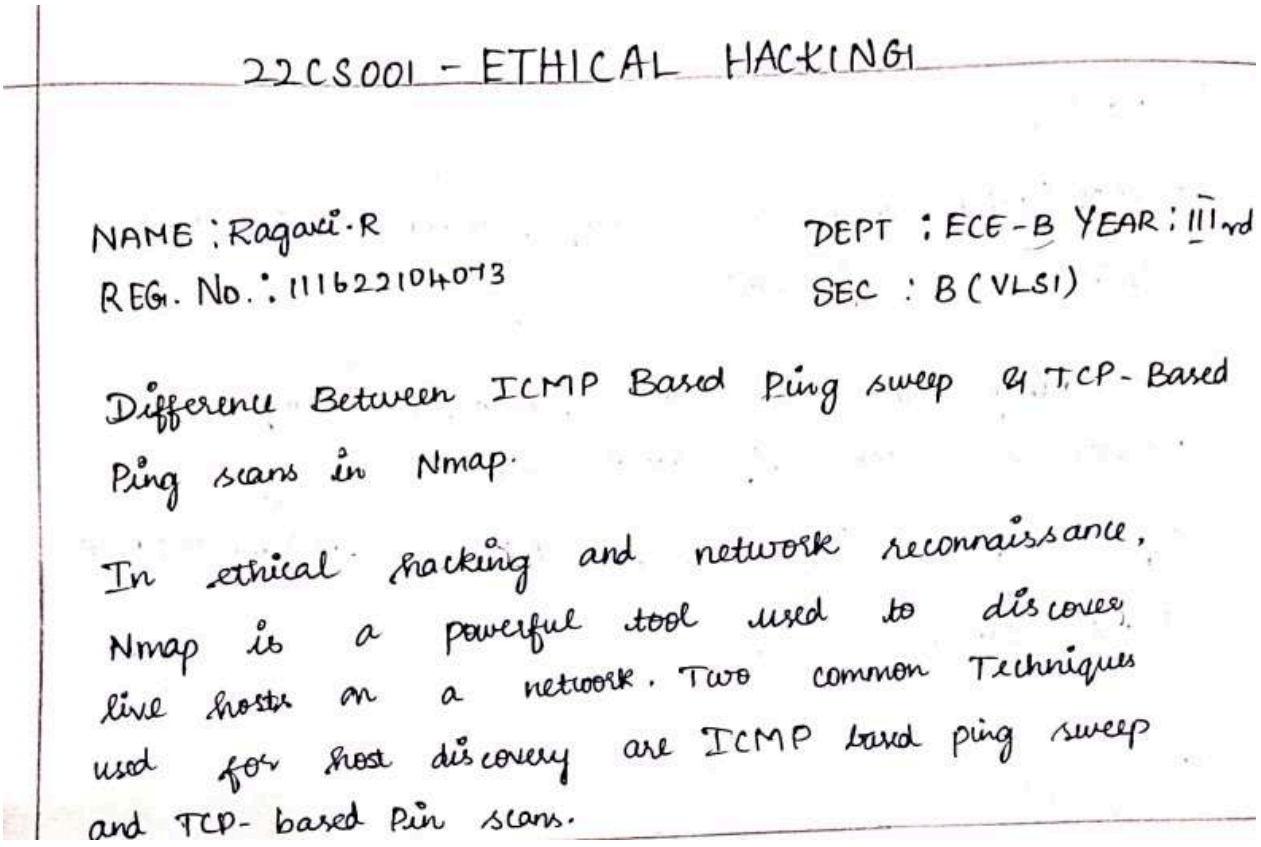
PEDAGOGY CONTENT

Subject name:Ethical Hacking
Activity name:One minute paper

A brief lecture was delivered on the topic ICMP-based ping sweeps and TCP-based ping scans.Students were given a prompt: *"What is the most important thing you learned today?"* and *"What concept is still unclear to you?"*

Students actively participated, showing interest in reflecting on their learning.

The activity demonstrated that the One-Minute Paper is a valuable strategy for enhancing classroom dynamics, promoting active learning, and providing timely feedback. Future iterations could incorporate digital tools for quicker analysis in larger classes.



22CS001 - ETHICAL HACKING

NAME : Ragavi.R
REG. No. : 111622104073

DEPT : ECE-B YEAR : IIIrd
SEC : B (VLSI)

Difference Between ICMP Based Ping sweep & TCP-Based Ping scans in Nmap.

In ethical hacking and network reconnaissance, Nmap is a powerful tool used to discover live hosts on a network. Two common Techniques used for host discovery are ICMP based ping sweep and TCP-based Pin scans.

Feature	ICMP-Based Ping Sweep	TCP-Based Ping Scan
Protocol used	ICMP (Internet control message protocol)	TCP (Transmission control protocol)
Packet Sent	Echo request (ping), Time stamp request, or Address mask request	SYN or ACK packets sent to specific ports
Response Expected	Echo reply or other ICMP responses	SYN-ack (if port is open) or RST (if closed)
Firewall Evasion	Easily Blocked by firewalls (many networks blocks ICMP)	More stealthy, as firewalls may allow TCP traffic
Best Used When	The target Network allows ICMP request	ICMP is [illegible] some TCP ports are open
Example Nmap command	nmap -sn -PE <target>	nmap -sn -PS80,443 <target>

Summary

ICMP ping sweep is straightforward but often blocked by firewalls

TCP ping scan is more stealthy, using TCP Packets to check if host are live

If ICMP is blocked, use TCP SYN (-PS) or TCP ACK (-PA) scans.

Fig:One Minute Paper

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

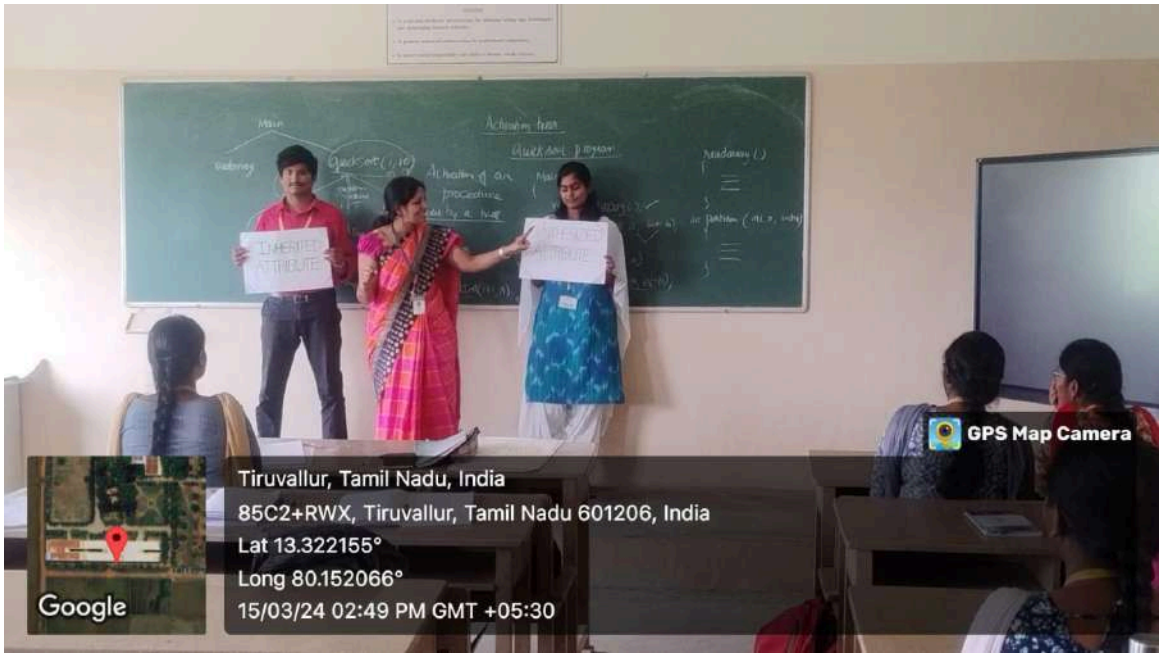
PEDAGOGY CONTENT

Method: Roleplay Method
Topic: Phases of Compiler
Year: III
Section: A Section

Taught students through the Roleplay method which made students listen to the class interesting. It helped me to interact with the students, where students volunteered themselves and participated in the activity.

A. Preparation & Planning

B. Setting the Scene



C. Roleplay Execution

D. Analysis & Discussion

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PEDAGOGY CONTENT

Method: Role-Play Method
Subject and Topic: Software Development Practices – CSS Gradient Year /
Sem : I / I Semester
Department-Section: ECE-A

Instructed through the role-playing method, which engaged learners and made the material entertaining. Engaging with the students proved beneficial as they willingly offered their time and took part in the activity.

A.Preparation & Planning

B.Roleplay Execution

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PEDAGOGY CONTENT

Department of Computer Science and Engineering
Academic Year 2023– 2024 (Even Semester)

Degree, Semester & Branch: II Semester B.E., CSE
Course Code & Title: 22CS202 Java Programming
Name of the Faculty member (s): Anto Gracious L A

Innovative Practice Description

- Unit / Topic: Unit: Unit III / IO Basics
- Course Outcome: CO3
- Activity Chosen: Mind Map
- Date of Implementation :25.03.2024

Justification:

A mind map is a visual representation of ideas and concepts. It is a visual thinking tool that aids in the organization of data. Transmission media topic have more significant points, headings and subheadings which must be remembered by students and then it would become overwhelming. But with mind map, makes the student to remember the sequence and prioritizing key points.

Time Allotted for the Activity: 20

minutes Details of the Implementation:

- The faculty explained the concepts in class room within 30 minutes, based on the discussion and after clarifying the doubts by the students, teacher asked the students to draw a mind map related to the topic
- Each student draws a concept map based on their understanding level of the topic (IO Basics).
- The faculty member uses the written material of each student to assess their understanding on the topic.
- The faculty revises the topic based on the assessment.
- Students represent the concept taught in the class by visual representation.
- Instructor collected the sheets from the students.

Feedback:

- It made key note making easier for students, as it reduces pages of notes into one single side of paper.
- Mind Map made students remember the information more quickly.

- Make connections between facts and ideas visually keeping all of IO Basics thoughts together on one sheet
- Benefit of the practice: (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

Challenges faced in implementation:

- Some of the students represent fewer key points in the mind map.
- Below average students took more time to create the mind map, so the activity took more time than planned.

Photographs of the activity

Fig: Identify the Main Idea

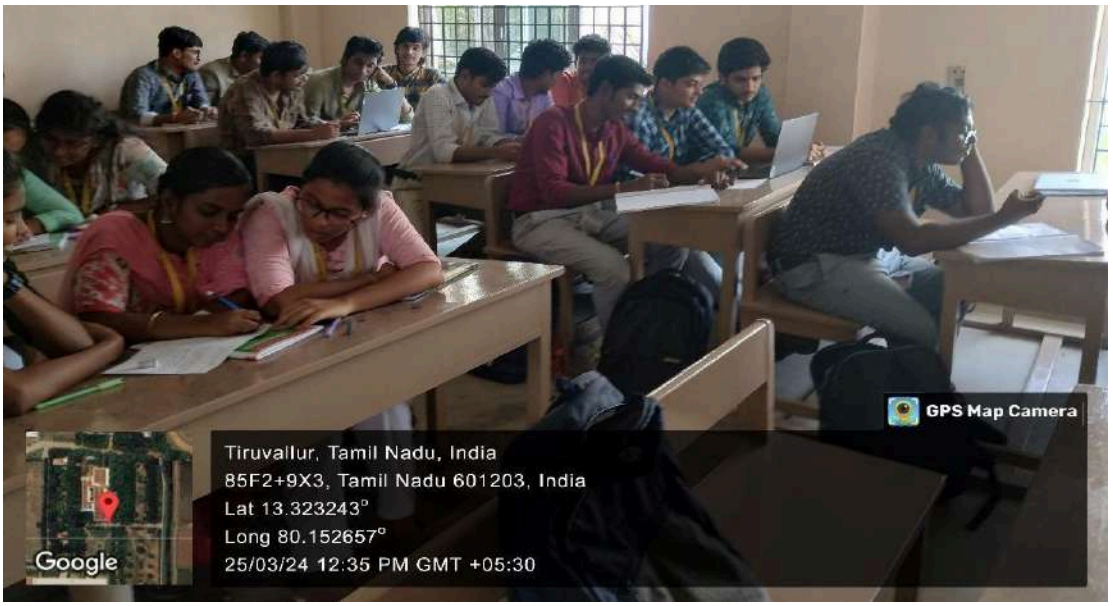
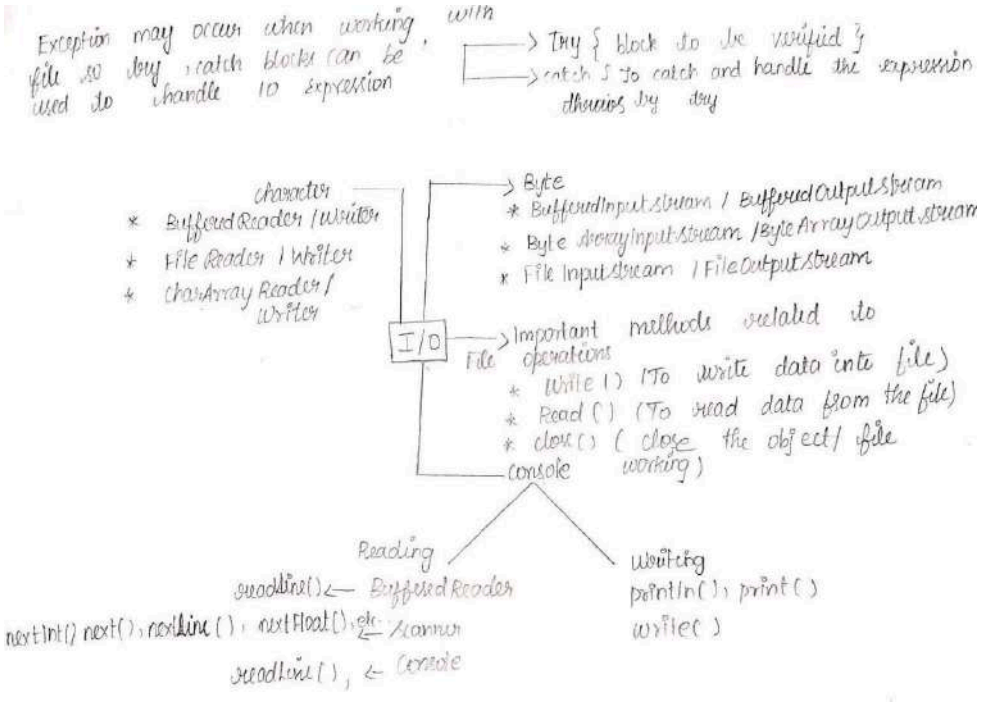
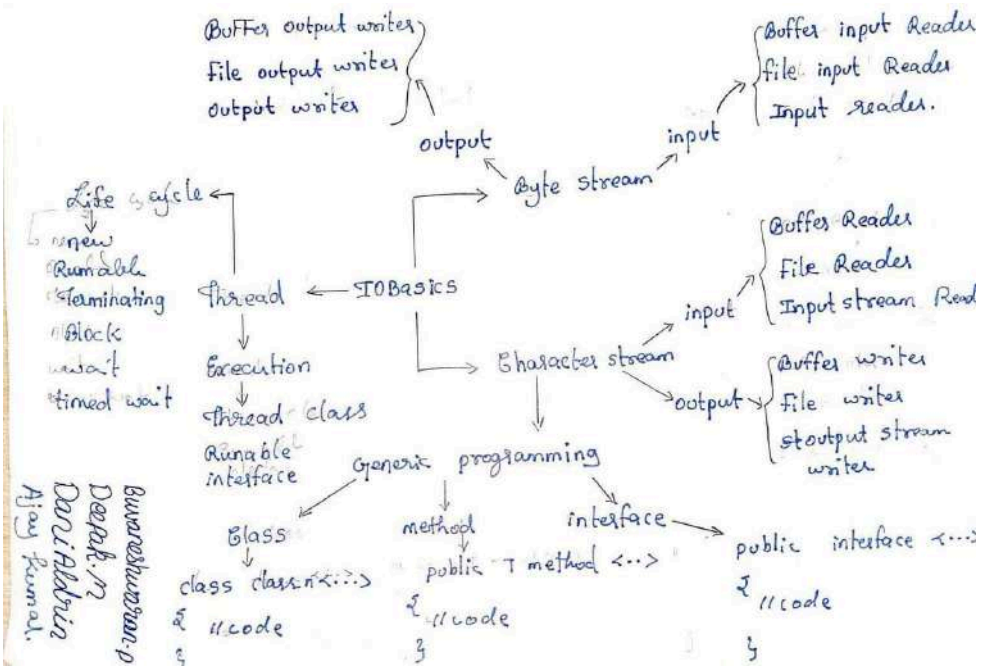


Fig.Connect Related Ideas

C.Review & Refine

Screenshots of the concept map:

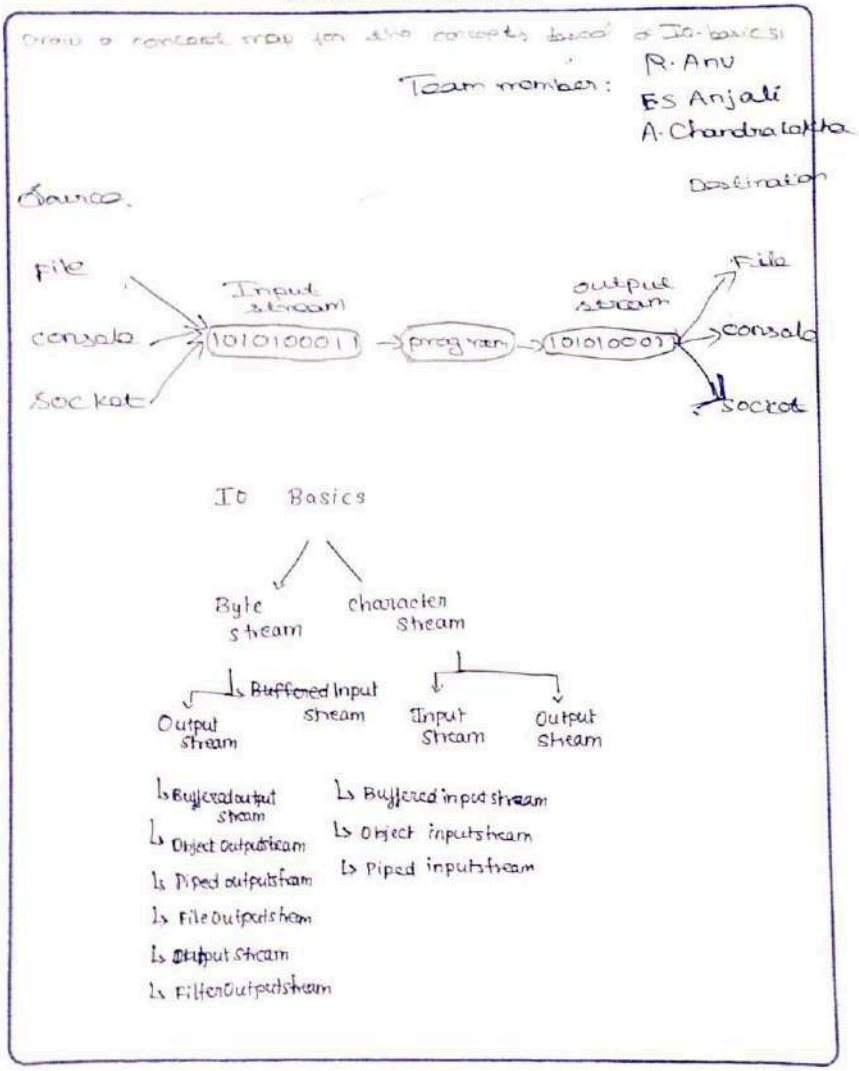



Buffer output writer
File output writer
output writer
output
Byte stream
input
Buffer input Reader
file input Reader
Input reader.
Life cycle
new
Runnable
Terminating
Block
wait
timed wait
Thread
IOBasics
Execution
Thread class
Runable interface
Character stream
input
Buffer Reader
File Reader
Input stream Read
output
Buffer writer
File writer
stoutput stream writer
Generic programming
Class
class class<:..>
{ //code
}
method
public T method <..>
{ //code
}
interface
public interface <...>
{ //code
}
Buvaneshwaran.d
Deepak.M
Darialdrin
Ajay kumar.

R.M.K. COLLEGE OF ENGINEERING AND TECHNOLOGY, PUDUVOYAL
(An Autonomous Institution)

Draw a concept map for the concepts used in IO-BASICS

Team member: R. Anu
BS Anjali
A. Chandralekha



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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PEDAGOGY CONTENT
Academic Year 2023– 2024 (Odd Semester)

Degree, Semester & Branch: V Semester B.E., CSE Course Code &
Title: 21CS501 Computer Networks
Name of the Faculty member (s): Anto Gracious L A

Innovative Practice Description

- Unit / Topic: Unit: Unit V / Transmission media
- Course Outcome: CO5
- Activity Chosen: Mind Map
- Date of Implementation :18.08.2023

Justification:

A mind map is a visual representation of ideas and concepts. It is a visual thinking tool that aids in the organization of data. Transmission media topic have more significant points, headings and subheadings which must be remembered by students and then it would become overwhelming. But with mind map, makes the student to remember the sequence and prioritizing key points.

Time Allotted for the Activity: 20

minutes Details of the Implementation:

- The faculty explained the concepts in class room within 30 minutes, based on the discussion and after clarifying the doubts by the students, teacher asked the students to draw a mind map related to the topic
- Each student draws a concept map based on their understanding level of the topic (Transmission media).
- The faculty member uses the written material of each student to assess their understanding on the topic.
- The faculty revises the topic based on the assessment.
- Students represent the concept taught in the class by visual representation.
- Instructor collected the sheets from the students.

Feedback:

- It made key note making easier for students, as it reduces pages of notes into one single side of paper.
- Mind Map made students remember the information more quickly.

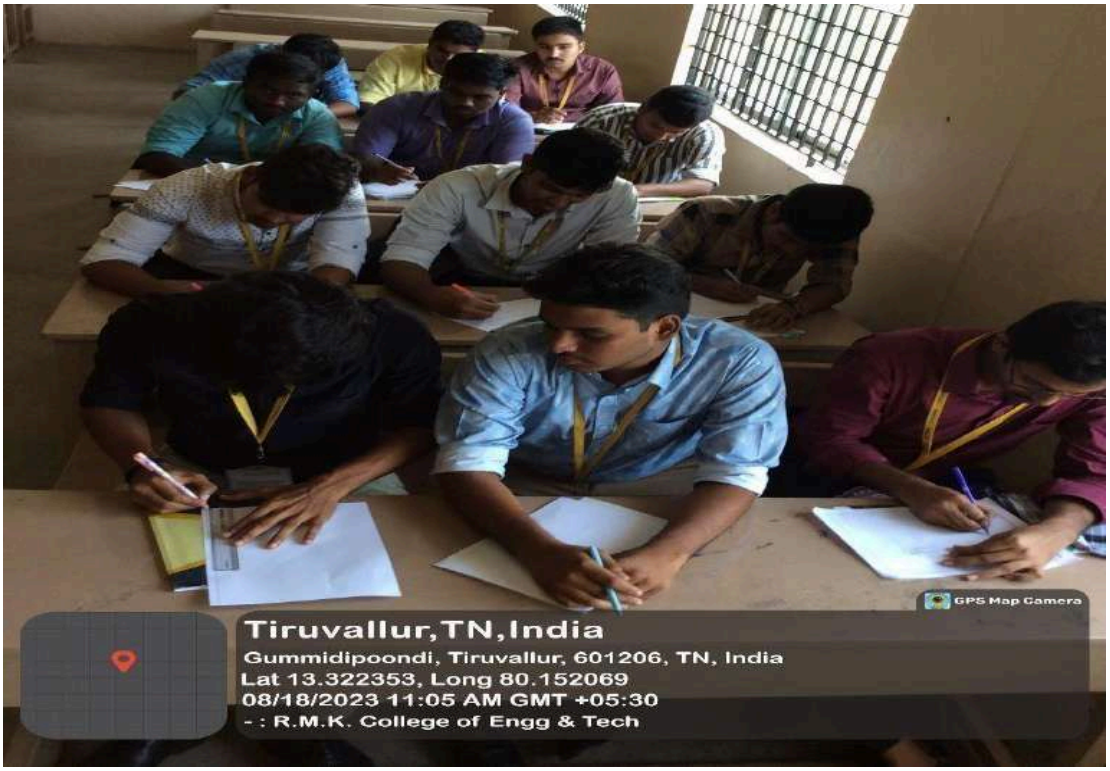
- Make connections between facts and ideas visually keeping all of transmission media thoughts together on one sheet
- Benefit of the practice: (E.g.: Outcome attainment would have increased due to innovative practice over conventional practice)

Challenges faced in implementation:

- Some of the students represent fewer key points in the mind map.
- Below average students took more time to create the mind map, so the activity took more time than planned.

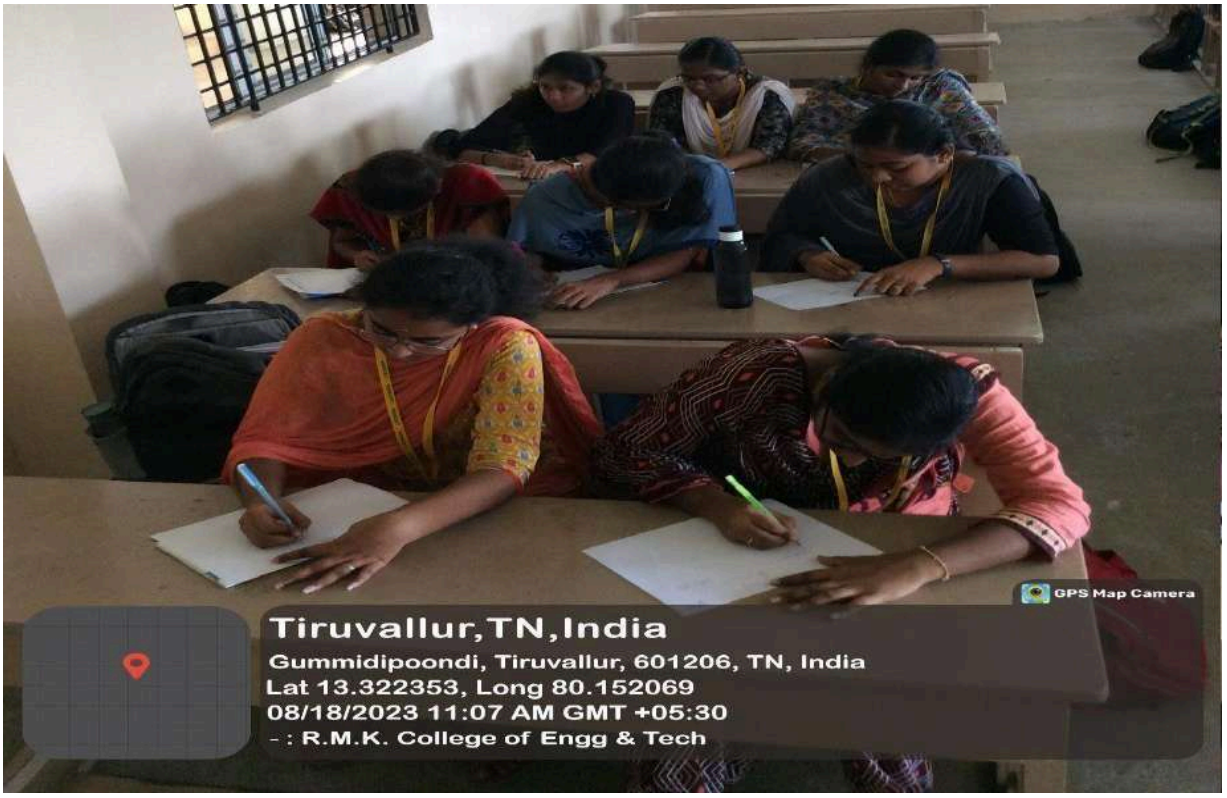
Photographs of the activity

A.Identify the Main Idea



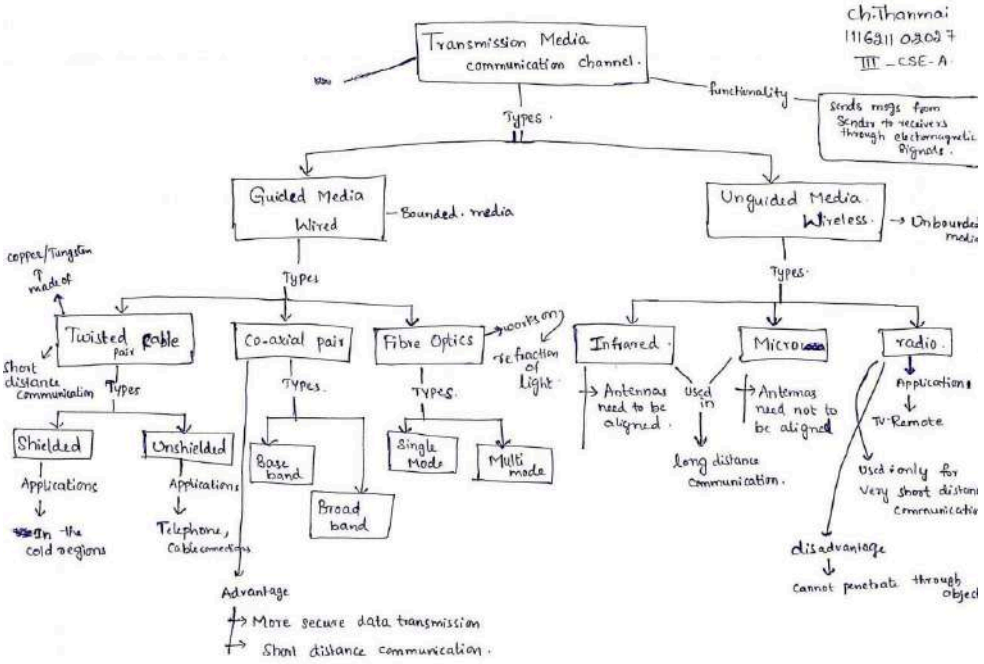
B.Expand with Subtopics

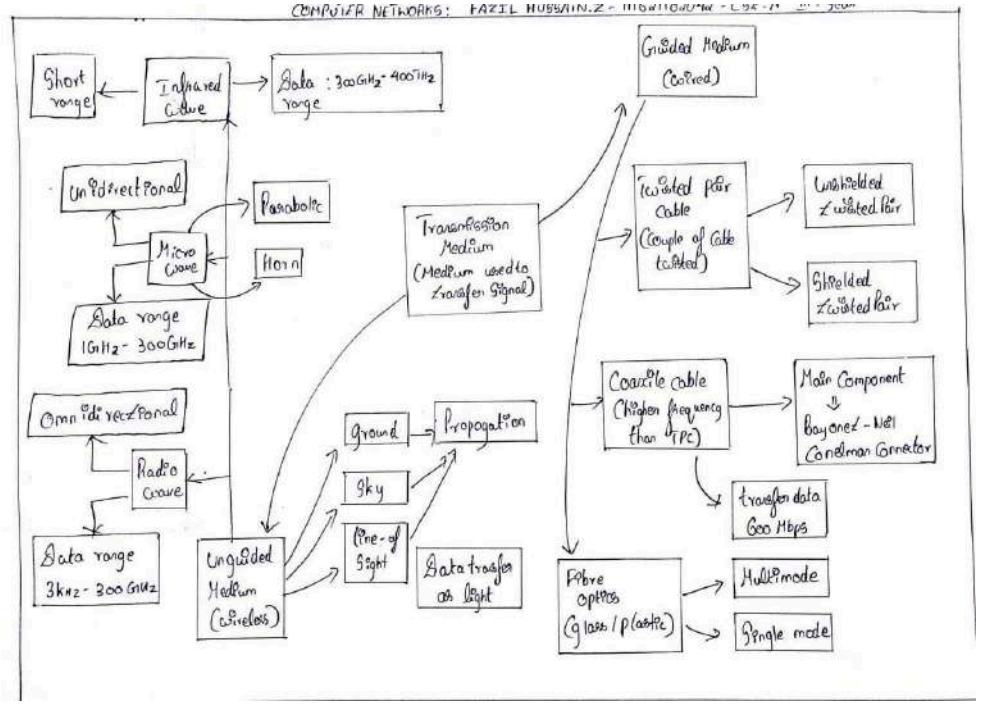
C.Connect Related Ideas

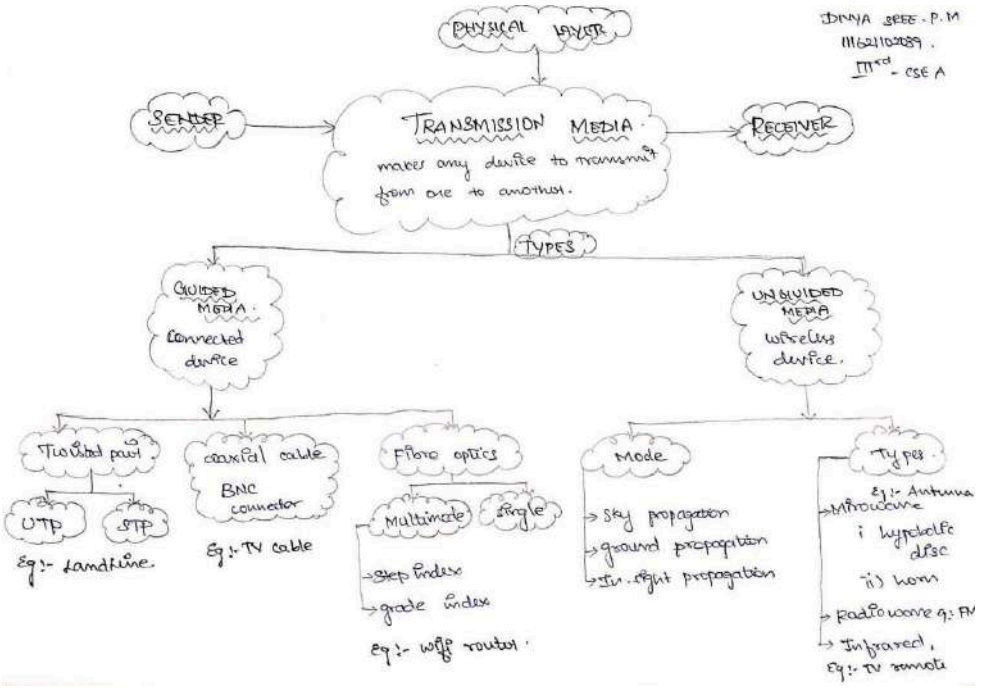


D.Review & Refine

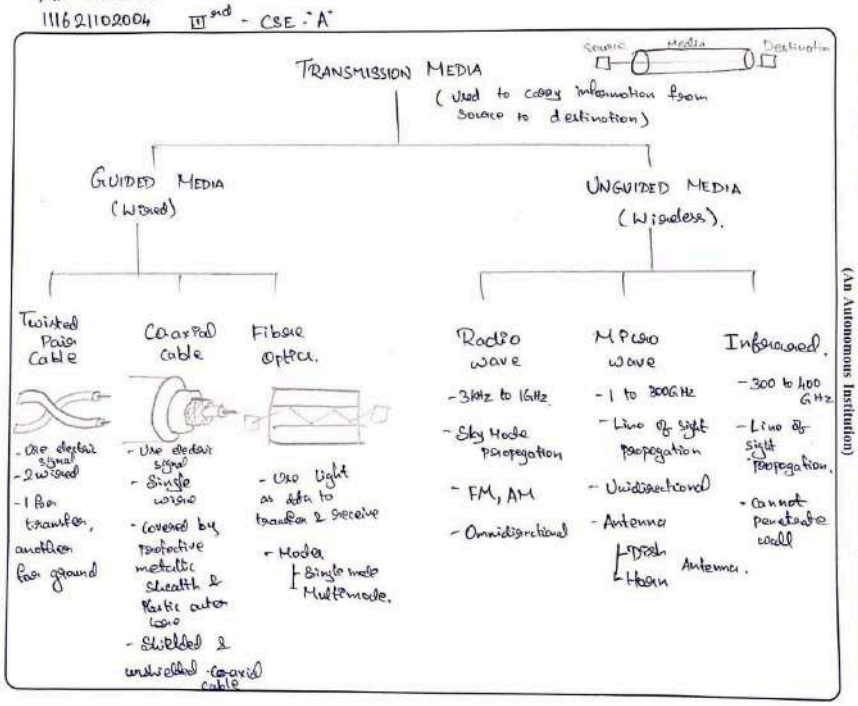
Screenshot of the Concept map:




COMPUTER NETWORKS: FAZIL HUSSAIN.Z
Short range
Infrared Wave
Data : 300GHz - 400THz range
Guided Medium (Copper)
Unidirectional
Parabolic
Micro wave
Horn
Transmission Medium (Medium used to transfer signal)
Twisted pair Cable (Couple of Cable twisted)
Unshielded Twisted pair
Shielded Twisted pair
Data range 1GHz - 300GHz
Coaxial Cable (Higher frequency than TPC)
Main Component
Bayonet - Neil Concelman Connector
Omnidirectional
Ground
Propagation
Radio Wave
Sky
Transfer data 600 Mbps
Data range 3kHz - 300GHz
Unguided Medium (Wireless)
Line-of Sight
Data transfer as light
Fibre optics (Glass / Plastic)
Multimode
Single mode


PHYSICAL LAYER
DIVYA SREE - P.M
111621102089.
III rd - CSE A
SENDER
TRANSMISSION MEDIA
makes any device to transmit from one to another.
RECEIVER
TYPES
GUIDED MEDIA
Connected device
UNGUIDED MEDIA
Wireless device.
Twisted pair
UTP
STP
Eg:- landline.
coaxial cable
BNC connector
Eg:- TV cable
Fibre optics
Multimode
Single
Step index
grade index
Eg:- wifi router.
Mode
sky propagation
ground propagation
line of sight propagation
Types
Eg:- Antenna
Miniature
i) hyperbolic disc
ii) horn
Radio wave eg:- FM
Infrared,
Eg:- TV remote

AATHAVAN.G
111621102004 II nd - CSE - "A"



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R.S.M. NAGAR, PUDUVOYAL-601 206

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

PEDAGOGY CONTENT

Name of faculty: Sreelekha P
Course Code:22CS101
Course Title: Problem Solving using C++
AY:23-24(ODD)

Activity chosen: Quiz
Topic: Basics in C++ Programming

Objective:
- To encourage students to develop logical and analytical thinking skills.
- To assess their understanding of fundamental C++ programming concepts.
- To provide an engaging and interactive learning experience.
- To foster a competitive and collaborative coding environment.

The **C++ Problem-Solving Quiz** was designed as an **innovative teaching method** to reinforce students' programming skills. The quiz included a mix of **conceptual, analytical, and coding-based questions** to assess students' problem-solving abilities in C++.

Question Types:
- **Multiple Choice Questions (MCQs)** (Basic concepts)
- **Fill in the Blanks** (Syntax and logic)
- **Programming Questions** (Logical and problem-solving skills)

Sample Questions Covered:
1. Find the second largest number in an array.
2. Count the number of digits in an integer.
3. Check if a number is an Armstrong number.
4. Implement binary search on a sorted array.
5. Find the first non-repeating character in a string.

Benefit to students:
Increased engagement through interactive learning.
Confidence in writing efficient C++ programs.

Outcome:
Increased participation in competitive coding events.
Students expressed interest in regular coding challenges**.**

Fig: Students in Quiz

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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

TEACHING PEDAGOGY

Name of faculty: Sreelekha P
Course Code:22CS201

Course Title: Data Structures
AY:23-24(EVEN)

Innovative teaching methodologies enhance student engagement and promote deeper understanding of complex concepts. One such technique, the One-Minute Paper, is an active learning strategy that encourages students to reflect on key concepts in a concise manner. This report focuses on using the One-Minute Paper to introduce Lists in Data Structures effectively**.**

The main objective of this activity is:

- To assess students' understanding of List ADT in a short time.
- To encourage critical thinking and quick recall of important concepts.
- To identify areas where students need further clarification.

Students are explained with the concepts of list ADT highlighting What is a List ADT?, Difference between Array-Based and Linked List-Based Lists.

Student wrote a brief response in one minute.

Using the One-Minute Paper in teaching Lists in Data Structures is an effective way to enhance learning. This method helps students quickly grasp core concepts, while instructors can adapt their teaching based on real-time feedback. Implementing such innovative techniques fosters an interactive and student-centered learning environment.

ONE MINUTE PAPER

NAME : Varnika . N

22CS201 - DATA STRUCTURE

REG.NO: 111623102214

LIST ADT

LIST ADT :

(i) Definition :

A List is an abstract datatype that represents a collection of elements, where each element is identified by a unique index or position.

(ii) Operations :

1. Insert : To Add new element to a list at specific position.
2. Delete : Remove an element from the list at a specified position
3. Search : Finds the index of specified element in the list
4. Update : Replaces the element at a specified index with a new element.
5. IsEmpty : Checks if the list is Empty.
6. Size : Returns the number of elements in the list

(iii) Types of Lists :-

1) Singly Linked List : Each elements points to the next element.

2) Doubly Linked List : Each element points to the next and previous element.

3) Array-Based List : Elements are stored in an array.

(iv) Applications :

1) Database query results: List allows for efficient insertion and deletion of elements.

2) File System: Lists are used to manage files and directories

3) Web browsers: Lists are used to manage browser history and bookmarks.

Fig:One Minute Paper

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Department of Computer Science and Engineering
TEACHING PEDAGOGY

22CS304 – OPERATING SYSTEMS

ACTIVITY NAME: ROLE PLAY

TOPIC: CPU SCHEDULING ALGORITHMS

Role Play:

- Role-play is a learning or interactive technique where participants take on specific roles and act out real-life or hypothetical scenarios. It encourages active engagement, problem-solving, and critical thinking by simulating situations that help individuals practice skills, explore perspectives, or reinforce knowledge in a dynamic way.
- Students form a group to CPU scheduling algorithm. Group consists of 7 members each denotes a process.
- Each member will have a burst time and waiting time.
- Based on type of scheduling algorithm the processes are executed in CPU.
- Turn around time and waiting time for each process will be calculated.

Fig:Role Play

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Department of Computer Science and Engineering

TEACHING PEDAGOGY

Subject name: Operating Systems
Name of Faculty: Dr.Vigilson Prem M

Video lectures are an effective digital learning method that combines visuals, audio, and text to enhance understanding and engagement. They are widely used in online courses, flipped classrooms, corporate training, and self-paced learning.

It enables

✔ Flexible Learning – Students can watch at their own pace, pause, rewind, or revisit concepts.
✔ Visual & Audio Engagement – Helps in better understanding through demonstrations, examples, and storytelling.
✔ Access to Global Knowledge – Learn from experts worldwide without geographical limits.
✔ Cost-Effective – Reduces the need for physical classrooms and travel expenses.
✔ Supports Different Learning Styles – Combines text, visuals, and spoken words for auditory and visual learners

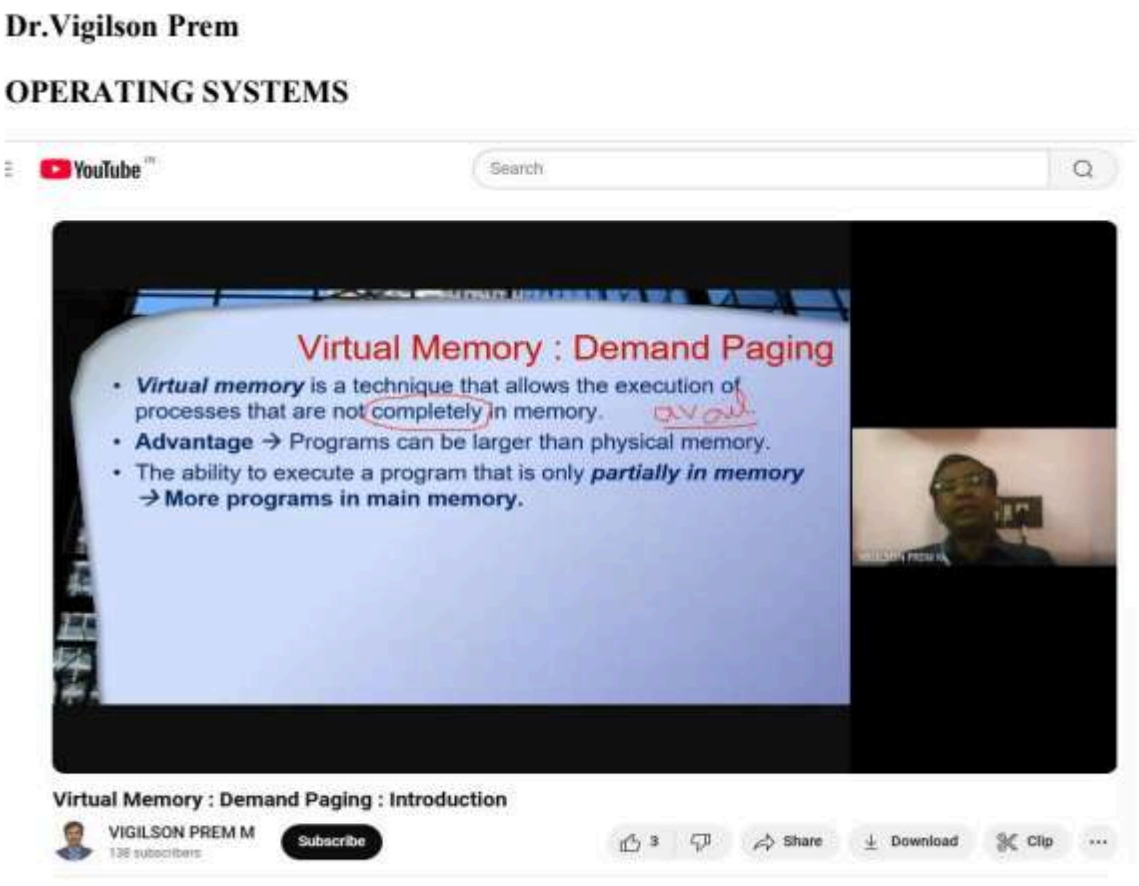

Fig:Youtube Video screenshot

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Department of Computer Science and Engineering

TEACHING PEDAGOGY

Activity: Role play
Class: III
Topic: Cryptographic hashing
Course Name: Block Chain Technology

Introduction: Cryptographic hashing is a foundational concept in Blockchain Technology, ensuring data integrity, security, and immutability. For beginners, understanding hashing can be challenging due to its abstract nature. Adopting a role play methodology can simplify this concept by enabling experiential learning. So, role play has been conducted for my students to make them understand the basics in cryptographic hashing

Objective: The primary aim is to help beginners understand the mechanism of cryptographic hashing, its role in Blockchain, and its importance in securing transactions. By enacting a hashing process, students can visualize the concept and comprehend its significance.

Implementation Plan:

1. **Topic Focus:**
   - Basics of cryptographic hashing
   - Properties of hash functions: Deterministic, Fast Computation, Pre-image Resistance, Small Changes in Input Drastically Change Output (Avalanche Effect)
   - Role of hashing in ensuring data integrity in Blockchain
2. **Role Assignment:**
   - Data sender and receiver simulating transaction data.
   - A 'hash function' person transforming input data into a fixed hash.
   - A 'validator' checking the integrity of data by comparing hash values.
3. **Scenario Design:**
   - The data sender creates a message (data) and hands it to the hash function person.
   - The hash function person generates a unique hash and provides it to the data receiver.
   - The data receiver verifies the message by re-hashing it and comparing the values.
   - Introduce minor changes to the data to showcase the avalanche effect and illustrate data integrity loss.
   - Conduct a reflection session where students discussed their experience and challenges.

Outcomes:

- Improved understanding of cryptographic hashing and its properties.
- Awareness of the significance of data integrity and security in Blockchain.
- Increased interest in exploring advanced cryptographic concepts.

Post-activity discussion to assess the learning impact.

Conclusion: Using role play to teach cryptographic hashing made the abstract concept more tangible for beginners. It fostered active participation, collaboration, and deeper comprehension, laying a strong foundation for advanced Blockchain learning.

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Department of Computer Science and Engineering
TEACHING PEDAGOGY

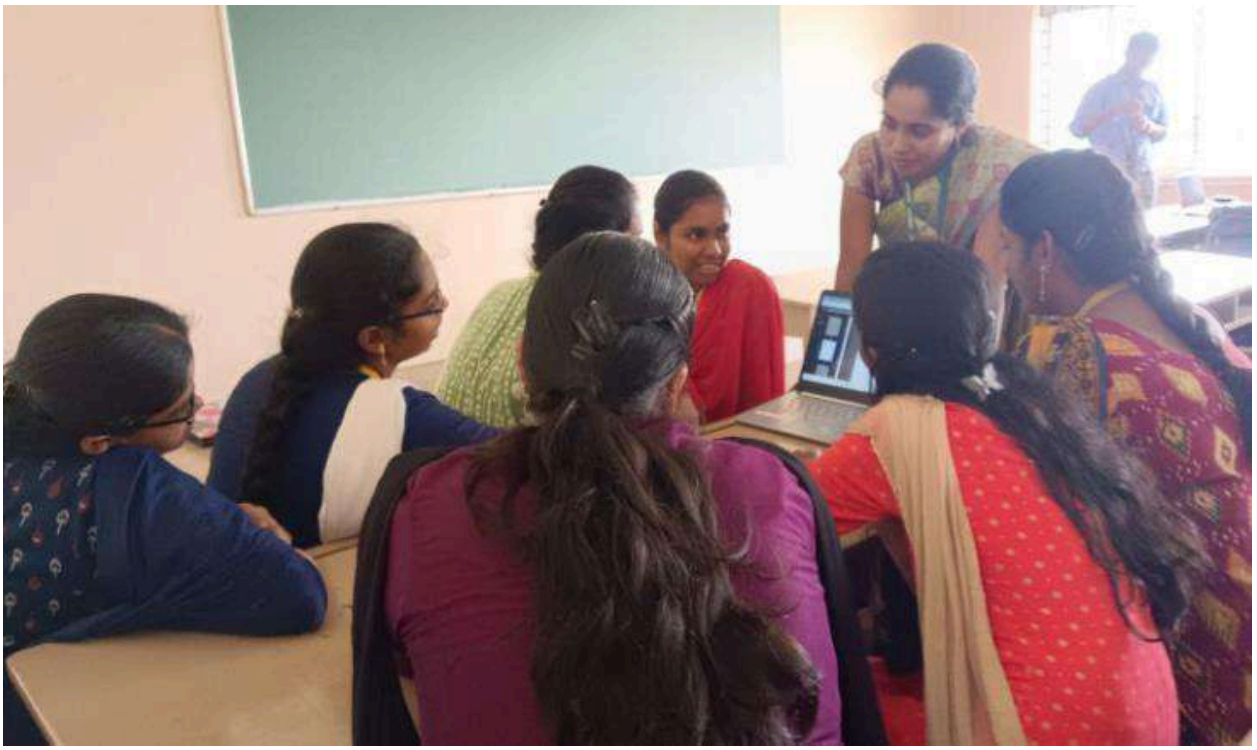
Internet of Things

ACTIVITY NAME: Simulation

Simulation-based learning is an innovative teaching methodology that utilizes virtual environments to replicate real-world scenarios. In the context of the Internet of Things (IoT), this approach offers students a hands-on experience to understand fundamental concepts without needing physical devices, thereby reducing cost and complexity.

Objective:

- Enhancing IoT Learning through Software-Based Simulation Techniques
- To introduce students to the fundamentals of IoT using software simulations.
- To provide a hands-on, interactive learning experience without requiring physical hardware.
- To enable students to design, simulate, and analyze IoT networks in a cost-effective and risk-free environment.



A. Group activity to design IOT Solution for given scenario

1. **Topic Focus:**
    - Basics of IoT: Sensors, actuators, microcontrollers, and networking protocols.
    - IoT architecture and communication models.
    - Data collection, processing, and analysis in IoT.
    - Application areas like smart homes, healthcare, and industrial IoT.
2. **Simulation Tools:**
    - Used platforms like Cisco Packet Tracer, MATLAB Simulink, and Tinkercad for IoT simulations.
    - Virtual environments to simulate IoT networks and data communication.
3. **Scenario Design:**
    - Simulating a smart home setup to understand interconnected devices.
    - Building a virtual weather monitoring system using sensors.
    - Creating a simulated IoT-based health monitoring system for patient data tracking.
4. **Execution:**
    - Given a detailed guide on setting up and navigating simulation software.
    - Conducted group activities to design IoT solutions for real-world problems.
    - Organize reflection sessions for students to discuss their learning experience.

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Artificial Intelligence- Missionaries & Cannibals Problem

Activity name: Role Play

Students were given an introduction to state-space exploration and constraint satisfaction. The Missionaries and Cannibals Problem is a well-known puzzle in artificial intelligence that explores logical reasoning, strategic planning, and problem-solving. Using a role play methodology to teach this concept makes learning dynamic, promotes teamwork, and enhances analytical abilities.

Students take on the roles of missionaries, cannibals, and the boat operator. I have guided the students about the rules and regulations of the problem.

Expected Learning Outcomes:

- Deeper understanding of problem-solving in AI and computational logic.
- Enhanced critical thinking, collaboration, and communication skills.
- Increased interest in exploring advanced AI problems and algorithms.

Fig: Students doing Role play

Fig: Students doing Role play

Role play as an experiential learning strategy for the Missionaries and Cannibals Problem transformed abstract logical puzzles into interactive, real-world scenarios. This approach not only strengthened analytical skills but also fosters teamwork, communication, and creative problem-solving.

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TEACHING PEDAGOGY

Branch:CSE

Activity: Role Play

Subject: Design and Analysis of Algorithms

Topic: Branch and Bound

Faculty: Dr RajaSuguna M

Branch and Bound (B&B) is a critical problem-solving strategy in algorithm design, particularly for optimization problems like the **Knapsack Problem**, **Traveling Salesperson Problem (TSP)**, and others. Beginners often find B&B complex due to its use of state space trees, bounding functions, and pruning techniques. Role play as an instructional approach can simplify these concepts, making learning more interactive and accessible.

Objective: To provide an engaging experience for beginners to understand the foundational concepts of the Branch and Bound method, focusing on problem-solving, decision-making, and optimization techniques.

Activity Design:

1. **Focus Topics:**
    - Introduction to optimization problems and the concept of solution space.
    - Basics of state space trees and bounding techniques.
    - Exploring real-world problems like the 0/1 Knapsack Problem and TSP.
2. **Role Allocation:**
    - **Problem Setter:** Describes the optimization problem scenario.
    - **State Space Explorer:** Simulates the branching process by exploring solution nodes.
    - **Bounding Evaluator:** Applies bounding techniques to prune non-promising branches.
    - **Optimal Solution Seeker:** Identifies and records the best feasible solutions.

3. **Scenario Example:**
    - Problem: Solving a simplified **0/1 Knapsack Problem**.

Figure 1: Students Engaged in a Role Play Activity for Understanding Branch and Bound Algorithms

Figure 2: Students Engaged in a Role Play Activity for Understanding Branch and Bound Algorithms

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Department of Computer Science and Engineering
TEACHING PEDAGOGY

Subject: Operating System
Topic: Pagging
Class: II

Topic: Paging in Operating Systems

Objective: To quickly assess students' understanding of the concept of paging, its purpose in memory management, and the distinction between logical and physical memory.

Brief Explanation: Paging is a memory management scheme that eliminates the need for contiguous memory allocation. It divides the process's logical memory into fixed-size pages and maps them to physical memory frames. This technique minimizes fragmentation and optimizes memory utilization.

Student Reflections:

1. **Key Takeaway:** Most students understood the basic concept of how paging translates logical addresses to physical addresses and its role in preventing fragmentation.
2. **Confusion Point:** Some students found the concept of page tables and the difference between page size and frame size challenging.
3. **Application Insight:** Students recognized the relevance of paging in handling large processes and supporting multitasking in modern operating systems.

The One Minute Paper proved to be an effective method to gauge students' understanding and identify areas needing further clarification, especially in terms of detailed page table operations and handling page faults.

ONE MINUTE PAPER

Name: Sakthival.S
Reg.No: 111623102176

22CS304 – OPERATING SYSTEMS

PAGING

* Paging in Operating Systems:

Paging is memory management scheme that eliminates the need for continuous memory allocation reducing fragmentation, and efficiency managing physical memory. It allows a process of dividing into smaller fixed size units called pages, which are mapped onto frames in physical memory.

* Advantages of paging:

→ Since all the pages are equal in size, there is no gap in memory.

→ pages can be stored in secondary storage and loaded on demand.

* Disadvantages:

→ Maintaining page table requires extra memory.

→ Each memory access requires a page table lookup, which can slow down the performance. (This is mitigated using a Translation Lookaside Buffer TLB)

Fig:One Minute Paper

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Department of Computer Science and Engineering
TEACHING PEDAGOGY

Subject Name : **Theory of Computation**

Class : **III YEAR**

Topic : **Parse Tree**

ACTIVITY NAME: Role play & One minute Paper

The "One-Minute Paper" (OMP) is an innovative and effective teaching method that encourages quick reflection and helps assess the students' understanding of complex concepts, such as parser trees, in a short period.

What is a Parser Tree? A parser tree, or syntax tree, is a hierarchical structure that represents the syntactic structure of a source code based on a formal grammar. It illustrates how a program's source code can be derived from its grammar rules.

- Root Node: Represents the start symbol of the grammar.
- Internal Nodes: Represent non-terminal symbols.
- Leaves: Represent terminal symbols or tokens, which are the actual code elements.

The parser tree helps visualize how each part of a programming language's syntax fits together and follows grammar rules.

Innovation Teaching Method: One-Minute Paper (OMP)

The One-Minute Paper on parser trees is a highly innovative and effective teaching strategy that promotes active learning, quick reflection, and assessment. It is especially useful in subjects like compiler design where complex concepts such as syntax trees require immediate understanding and application. This method not only helps students clarify their thoughts but also aids instructors in tailoring their teaching methods to improve student comprehension.

Students were made to understand the parser tree by simple role play and they were asked to present a one minute paper on the topic

Fig: Role Play

ONE MINUTE PAPER

Name : J. Muthu Ganesh

21CS502 - THEORY OF COMPUTATION

Reg.No : 111620104103

PARSE TREE

PARSE TREE

A parse tree (also known as a syntax tree) is a hierarchical tree structure that represents the syntactic structure of a string according to a formal grammer. It is used in complier design and formal language theory to show how a given input string can be generated from the starts symbol of a grammar using production rules.

IN PARSE TREE

- The root represents the start symbol of grammar.
- The internal nodes represent non-terminal symbols, which are expaned using grammer rules.
- the leaf nodes represent terminal symbols, which are the actual characters or token of the input string.

The parse tree is crucial for understanding how an input string adheres to the grammer of a language and is used to check the correctness of the syntax. In context-free grammars (CFGs), parse trees are especially useful for illustrating how derivations occur step-by-step, making them fundamental for both parsing algorithms and language recognition.

Fig:One Minute Paper

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Activity Name: Video Lecture

Faculty name: Dr VIGILSON PREM M

Fig: Youtube Video Lecture

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TEACHING PEDAGOGY

Faculty: Ms Sangeetha A
Activity : Video Lecture

Distributed Systems

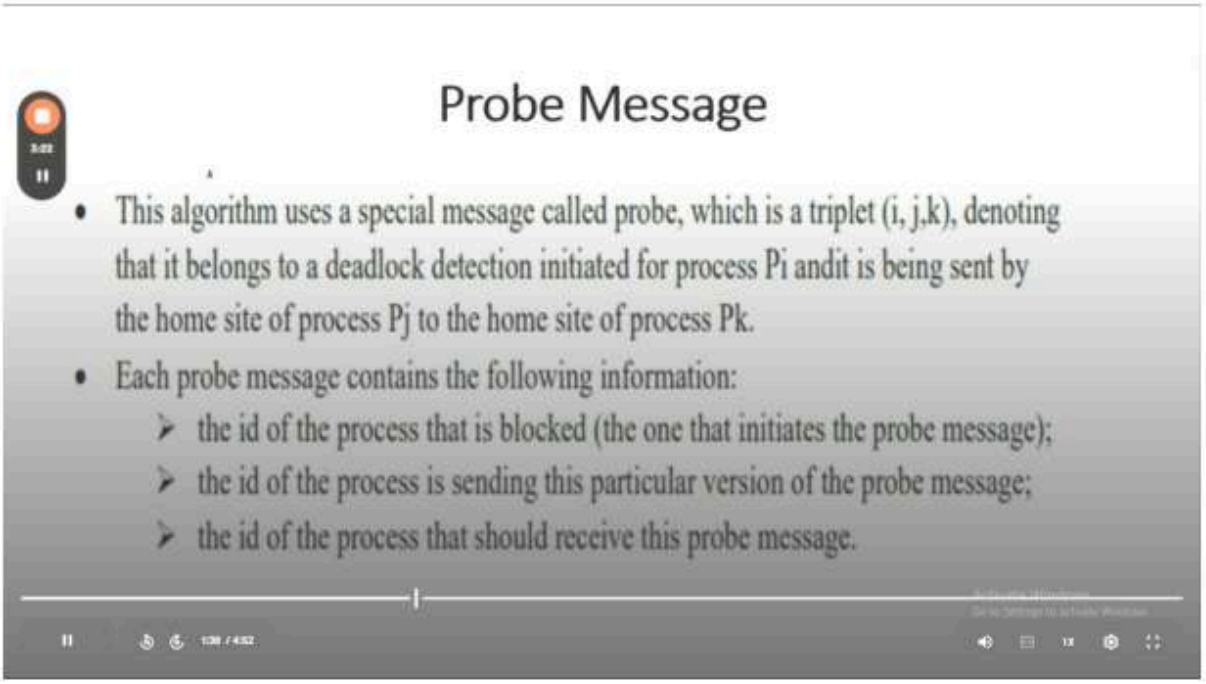

Fig: Video Lecture

video lecture on the Probe Message Algorithm for distributed systems aims to provide a comprehensive understanding of how probe messages are used for deadlock detection in distributed environments.

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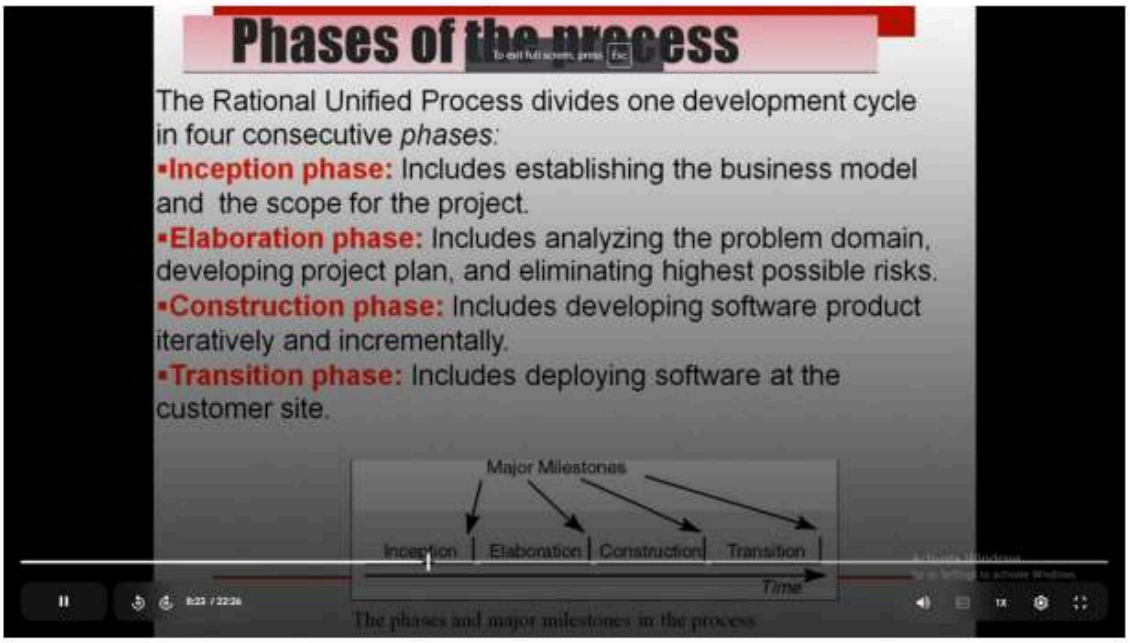
TEACHING PEDAGOGY

Faculty: Ms Sangeetha A
Activity : Video Lecture

Ms.Sangeetha A

Object Oriented Analysis and Design



Distributed Systems

Fig:Video Clipping