DEPARTMENT OF INFORMATION TECHNOLOGY

5.5 Innovations by the Faculty in Teaching and Learning

The institution has effectively implemented student centric learning strategies like experiential, participative and problem-solving methodologies. Our Institute encourages intensive use of ICT enabled tools including online resources for effective teaching and learning process. Professional development programs on LMS tools, Innovation and design Thinking, Effective class room management etc., are regularly being conducted by the Outcome Based Education coordinator for the faculty members to diversify their teaching strategies to cater the different learning styles. All these innovative methodologies adopted have made an impact in the academic performance of the students.Activities of the department towards improvement in teaching-learning are indicated in the office records as well as on college website.

The innovative teaching–learning techniques adopted by the department are presented in the table below.

S.No	Innovation Method	Mode of Teaching/Learning Process	Objective
1.	**GoogleClassroom**	OnlineTool/Blended learning	To simplify the creation, distribution, and grading of assignments, and to facilitate effective sharing of learning materials between faculty and students.
2.	**Mind Mapping**	Tools: GitMind, Draw.io	To help students visually organize concepts, improve understanding, and enhance memory retention.
3.	**Video Class**	Platforms: YouTube	To enhance student knowledge through visual learning and enable faculty to deliver content.
4.	**Skillrack**	Online Coding Platform	To improve students' problem-solving ability and programming skills through continuous practice.

5.	**Quiz**	Tools: Quizizz, Nearpod	To assess students' understanding at the end of each topic and provide immediate feedback.
6.	**Working Model**	Demonstration of Project Models	To enhance practical knowledge and understanding of hardware components and real-world applications.
7.	**Virtual Lab**	Online Simulation-Based Labs	To provide hands-on experience through remote access to experiments and simulations.
8.	**E-Learning Platforms**	NPTEL, Coursera, Udemy, Spoken Tutorial, L&T Edutech, and ICT Hackathon	To upgrade the quality of engineering education by utilizing resources beyond the prescribed curriculum.
9.	**e-Programs**	Training Programs	To expose students to industry-oriented skills and emerging technologies.
10.	**Project-Based Learning /Problem based Learing**	Practical Implementation	To encourage experiential learning by solving real-world problems through mini projects/ projects.
11.	**Tutorial Classes**	Interactive Sessions	To strengthen conceptual understanding through problem-solving and discussion.
12.	**Webinars / Industrial Training**	Expert Sessions	To bridge the gap between academia and industry by providing real-time exposure.
13.	**Role Play**	Activity-Based Learning	To improve communication skills, teamwork, and understanding of real-life scenarios.

14.	**Simulation Tools**	Tools: NS2,Star UML	To analyze and understand complex systems and processes through simulation.
15.	**Moodle -LMS**	Learning Management System	To facilitate course delivery, assignment management, assessments, and continuous interaction between faculty and students

1.Google Classroom

Google Classroom is a free blended learning platform for educational institutions that simplifies creating, distributing, and grading assignments. It enables seamless communication and resource sharing between faculty and students.

Utilization of Google Classroom for Students

1. Course materials such as PDFs, PPTs, and documents are uploaded for all courses.
2. Question banks, previous year question papers, and solutions are shared.
3. Assignments are given, evaluated, and graded through the platform.
4. Lecture videos are uploaded for better understanding of concepts.
5. Used for communication of academic and departmental information.

2. Mind Mapping

Mind Mapping is a visual learning technique used to organize information in a structured and interconnected manner using tools like GitMind and Draw.io.

Utilization of Mind Mapping for Students

1. Helps students visually represent concepts and relationships.
2. Used for summarizing topics and quick revision.
3. Enhances creativity and critical thinking skills.
4. Improves memory retention through diagrammatic representation.
5. Useful for planning projects and organizing ideas.

3. Video Class

Video classes use platforms like YouTube to deliver content in a visual and interactive format, making learning more engaging.

Utilization of Video Class for Students

1. Lecture videos are shared to explain complex topics.

2. Helps students learn at their own pace.
3. Visual demonstrations improve conceptual understanding.
4. Recorded sessions can be revisited anytime.
5. Supports blended learning along with classroom teaching.

4. Skillrack

Skillrack is an online coding platform used to enhance programming and problem-solving skills through continuous practice.

Utilization of Skillrack for Students

1. Students practice coding problems regularly.
2. Helps in improving logical thinking and programming skills.
3. Tracks student performance and progress.
4. Provides instant feedback on coding exercises.
5. Prepares students for technical interviews and placements.

5. Quiz

Quiz-based learning uses platforms like Quizizz to assess student understanding in an interactive way.

Utilization of Quiz for Students

1. Conducts quizzes after each topic for assessment.
2. Provides immediate feedback to students.
3. Makes learning interactive and engaging.
4. Helps in identifying learning gaps.
5. Encourages healthy competition among students.

6. Working Model

Working Model involves demonstration of functional project models to provide hands-on understanding of concepts.

Utilization of Working Model for Students

1. Students design and develop working prototypes.
2. Helps in understanding real-time applications.
3. Enhances practical and technical skills.
4. Encourages innovation and creativity.
5. Bridges the gap between theory and practice.

7. Virtual Lab

Virtual Labs provide simulation-based learning environments where students can perform experiments remotely.

Utilization of Virtual Lab for Students

1. Students perform experiments through online simulations.
2. Provides practical exposure without physical lab constraints.
3. Helps in understanding complex engineering concepts.
4. Enables repeated practice for better learning.
5. Accessible anytime and anywhere.

8. E-Learning Platforms

E-Learning platforms such as NPTEL, Coursera provide online courses beyond the curriculum.

Utilization of E-Learning Platforms for Students

1. Students enroll in certification courses.
2. Enhances knowledge in emerging technologies.
3. Provides industry-relevant skills.
4. Encourages self-paced learning.
5. Improves employability and career opportunities.

9. e-Programs

e-Programs include online training sessions, certification programs, conducted by institution.

Utilization of e-Programs for Students

1. Students can utilize the program of their choice in an extremely competitive learning environment with E-Program.
2. Students can easily access them through online round the clock, this practice inculcated to students to develop their knowledge on latest programming Languages.

10. Project-Based Learning

Project-Based Learning focuses on learning through real-world problem-solving and project implementation.

Utilization of Project-Based Learning for Students

1. Students work on real-time projects.
2. Encourages application of theoretical concepts.
3. Enhances problem-solving and analytical skills.

4. Promotes teamwork and collaboration.
5. Prepares students for industry requirements.

11. Tutorial Classes

Tutorial classes are interactive sessions conducted to strengthen understanding of concepts through discussion and problem-solving.

Utilization of Tutorial Classes for Students

1. Clarifies doubts and reinforces concepts.
2. Focuses on problem-solving and application.
3. Helps slow learners to improve understanding.
4. Provides additional support beyond regular classes.
5. Improves academic performance.

Group Learning

Group Learning is an effective instructional approach widely used in engineering education to promote collaborative learning and enhance problem-solving skills. It plays a key role in developing technical knowledge, communication abilities, and teamwork, which are essential for professional practice. In this method, students work in small groups to solve problems, develop programs, and generate innovative solutions. It encourages both individual understanding and collective knowledge building through active interaction, idea sharing, and collaboration, creating a meaningful and engaging learning experience.

- Group learning aims to help students understand concepts easily, actively participate in discussions and seminars, and develop communication and teamwork skills.
- Students are divided into small groups (3–4 members), assigned topics in emerging IT areas, and engage in discussions guided by a student coordinator and monitored by faculty.
- This approach promotes a democratic learning environment, builds confidence, enhances communication and leadership skills, and supports deeper understanding through peer learning.

Following group learning practices by the faculty members for improving teaching and learning experience.

S.No.	BestPractices	Goals	Description	Relevanceto Pos&PSOs
1	Mini and Major Projects	To enhance technical understanding through the development of software and hardware solutions for industrial and societal problems.	• Provides opportunities to explore theoretical concepts • Encourages research and analytical thinking • Facilitates design and development of solutions • Enables application of technical knowledge • Strengthens problem-solving and technical skills	PO1, PO3, PO5, PO9, PSO1, PSO2
2	Aptitude Training and Communication Skill Development (Employability Skills Training)	To improve verbal communication skills and prepare students for placements and competitive examinations.	• Enhances communication through regular practice • Builds vocabulary and speaking ability • Develops aptitude and problem-solving skills • Prepares students for real-time decision-making • Supports career readiness and opportunities	PO2, PO10
3	Group Discussion	To develop interpersonal communication skills and enable students to express their views clearly and concisely.	• Helps students gain diverse perspectives • Improves listening and interpersonal skills • Encourages learning from peers' experiences • Enables identification and resolution of communication barriers.	PO9, PO10
4	Student Seminars	To motivate students for self-learning and group learning.	• Improves oral communication and presentation skills • Encourages teamwork and a sense of responsibility • Develops time management abilities • Enhances confidence through seminar presentations	PO9, PO10, PO11

PPT PRESENTATIONS FOR TEACHING

Description	PowerPoint presentations are used as a primary teaching aid across IT department subjects. Faculty prepares structured slide decks that cover theory, diagrams, case studies, and examples to support classroom instruction. The visual format helps students follow complex technical concepts step by step.
Usage/ Application	Classroom instruction for all year levels in IT department, covering subjects such as Cloud Computing, Operating Systems, Data Structures, and more.

Usage of PPT's for Teaching

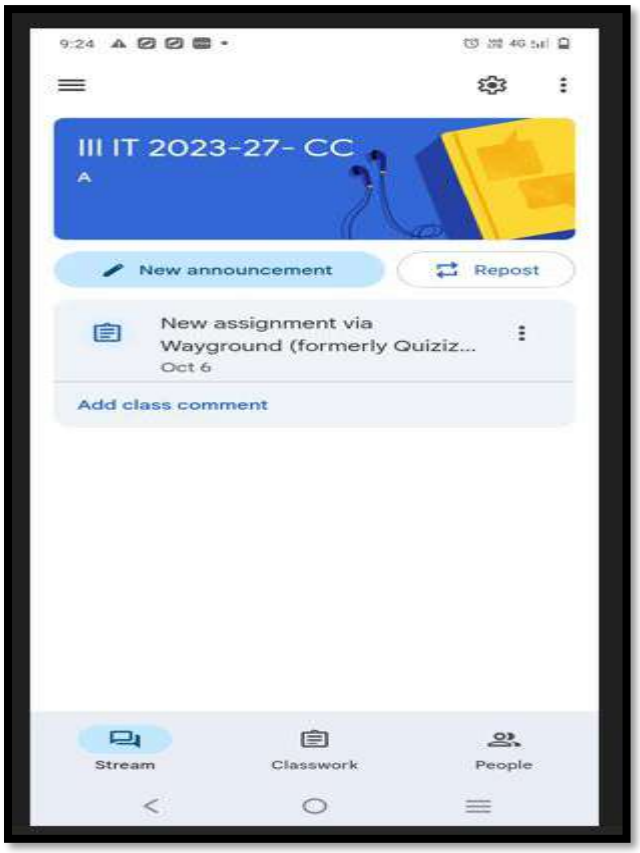
Outcomes

1. Students gain structured visual understanding of technical topics.
2. Improved attention and retention due to organized, visual delivery.
3. Faculty can integrate diagrams, code snippets, and multimedia for richer learning.
4. Consistent curriculum delivery across all batches.

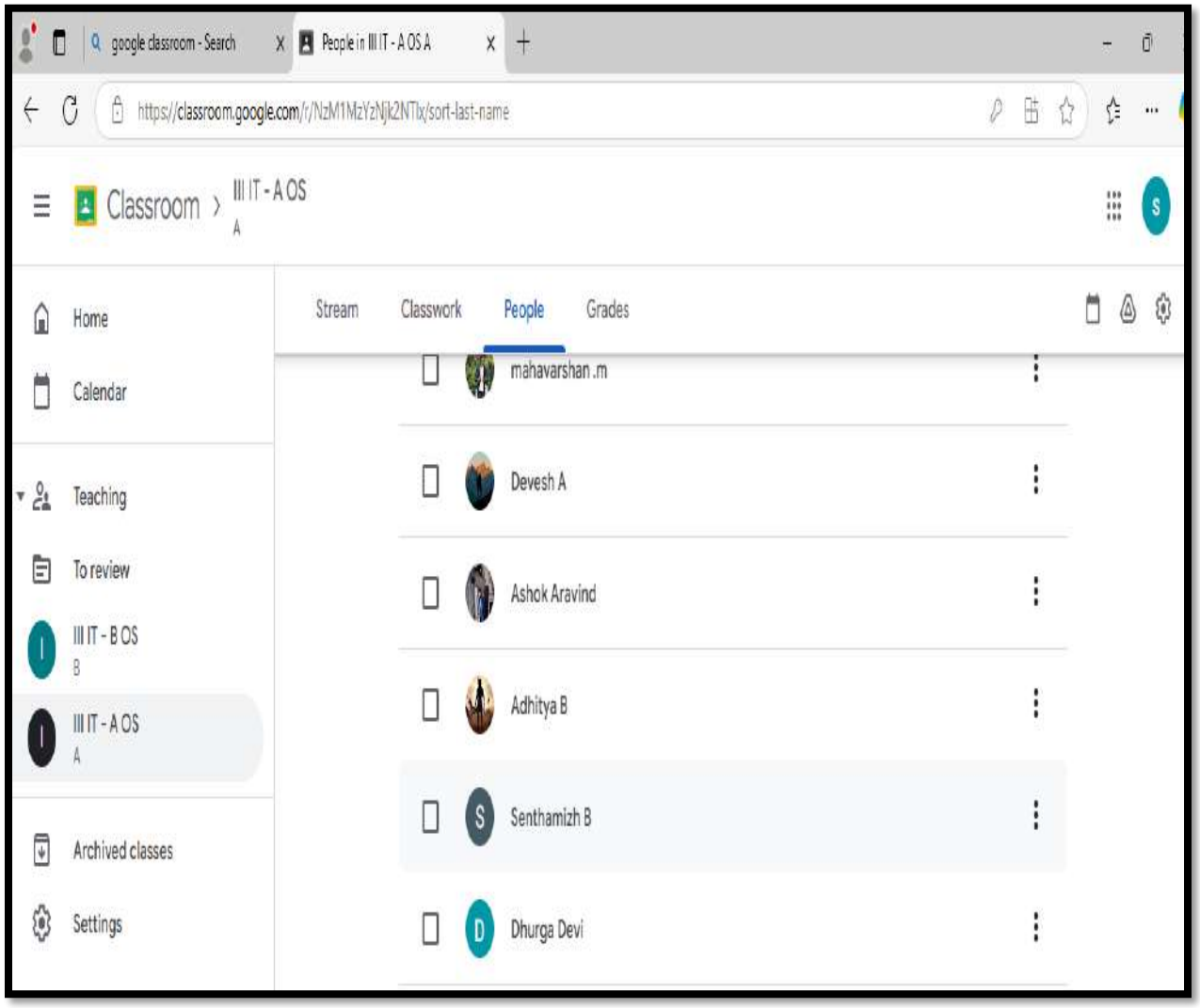
GOOGLE CLASSROOM

Category: *Learning Management & Assignment Tool*

Description	Google Classroom is used by IT faculty to post assignments, share learning materials, and manage student submissions digitally. It enables paperless assignment workflows and real-time communication between students and faculty. It is actively used for subjects like Cloud Computing and Operating Systems.
Usage / Application	Assignment posting, material distribution, and student submission tracking for III Year IT-A students in Cloud Computing (2025-26) and III Year IT-A students in Operating Systems (2023-24).



Usage of Google Classroom for posting assignment in subject Cloud Computing for third year IT-A Students handled by B.V.Saranya AP/IT in 2025-26



Usage of Google Classroom for posting assignment in subject Operating Systems for third year IT Students –A (2023-24) handled by Mrs C.Kavitha

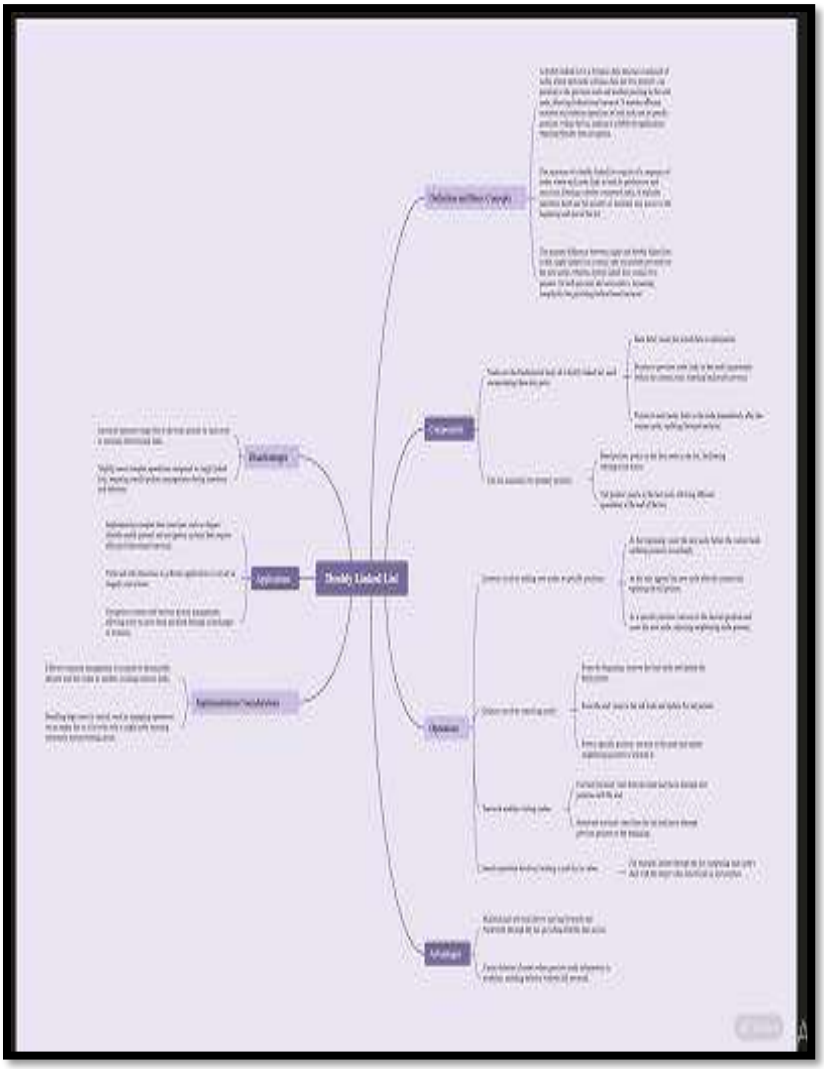
Outcomes

1. Students access materials anytime, supporting self-paced learning.
2. Improved faculty-student interaction through comments and notifications

MIND MAPPING

Category: *Concept Visualization Tool*

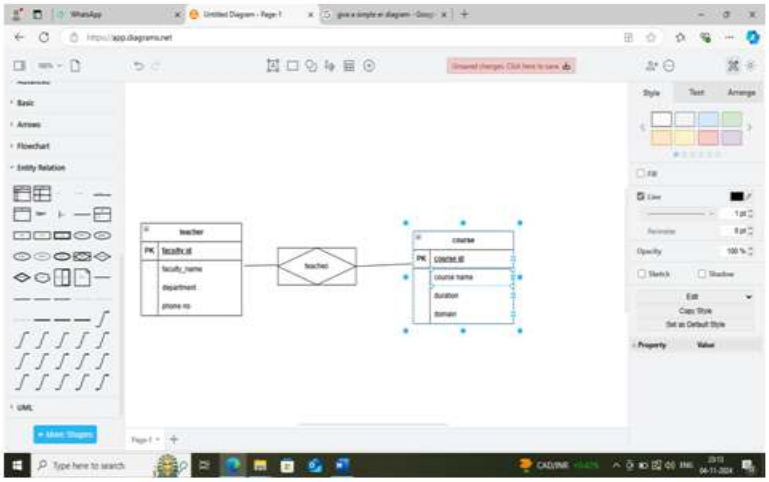
Description	Mind mapping is used as a pedagogical technique to help students visually organize and connect concepts. Faculty use tools to create and demonstrate mind maps during lectures, encouraging students to develop their own conceptual maps for subjects like Data Structures and OOAD.
Usage / Application	Used in Data Structures for II Year IT-A students (2023-24); Draw.io used for ER diagrams in OOAD for III Year IT students (2023-24).



Usage of Mind Map in subject Data Structures for second year IT –A students handled by Mrs V.Abirami 2023-24

DRAWIO

Draw.io tool is used to create entity relationship diagram. Students can understand the concept easily by using this platform. They can able to create new entity relationship diagram using this tool.



Usage of Drawio tool to ER diagrams in subject Object Oriented Analysis and Design for Third year IT Students by by Dr A.Meiappane (2023-24)

Outcomes

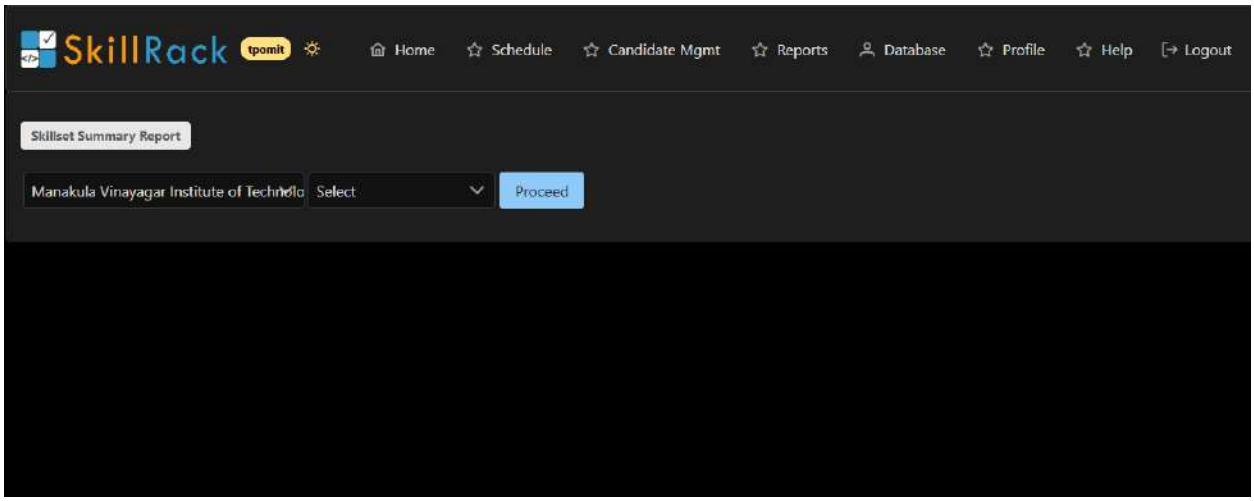
1. Students develop stronger conceptual linkages between topics.
2. Improved visual thinking and problem-solving skills.
3. Draw.io provides hands-on experience with industry-standard diagramming.
4. Facilitates better understanding of abstract data relationships through ER diagrams.

SKILLRACK

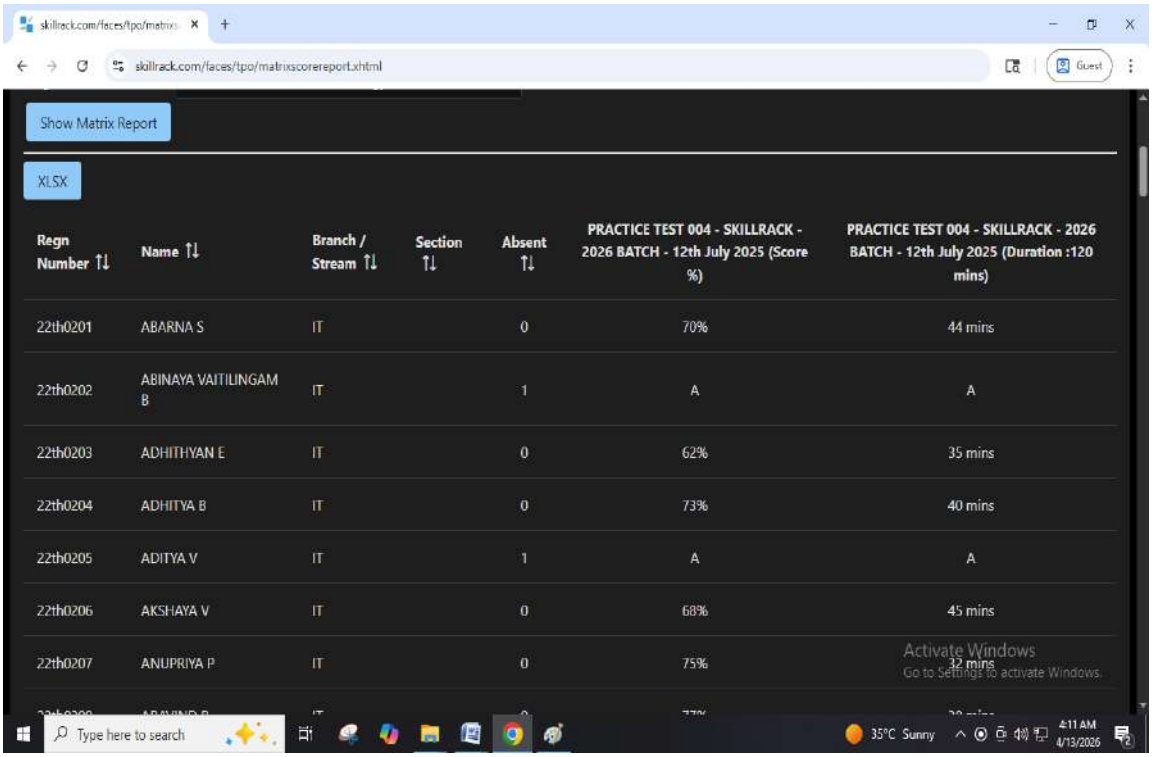
Category: *Online Coding Practice Platform*

Description	SkillRack is an online competitive programming and skill assessment portal used by IT students to practice coding problems, participate in tests, and track their performance. The platform provides a dashboard for students to monitor progress and a portal for faculty to evaluate participation and performance.
Usage / Application	All IT students enrolled in the SkillRack portal; used for coding practice, programming assessments, and skill evaluation.

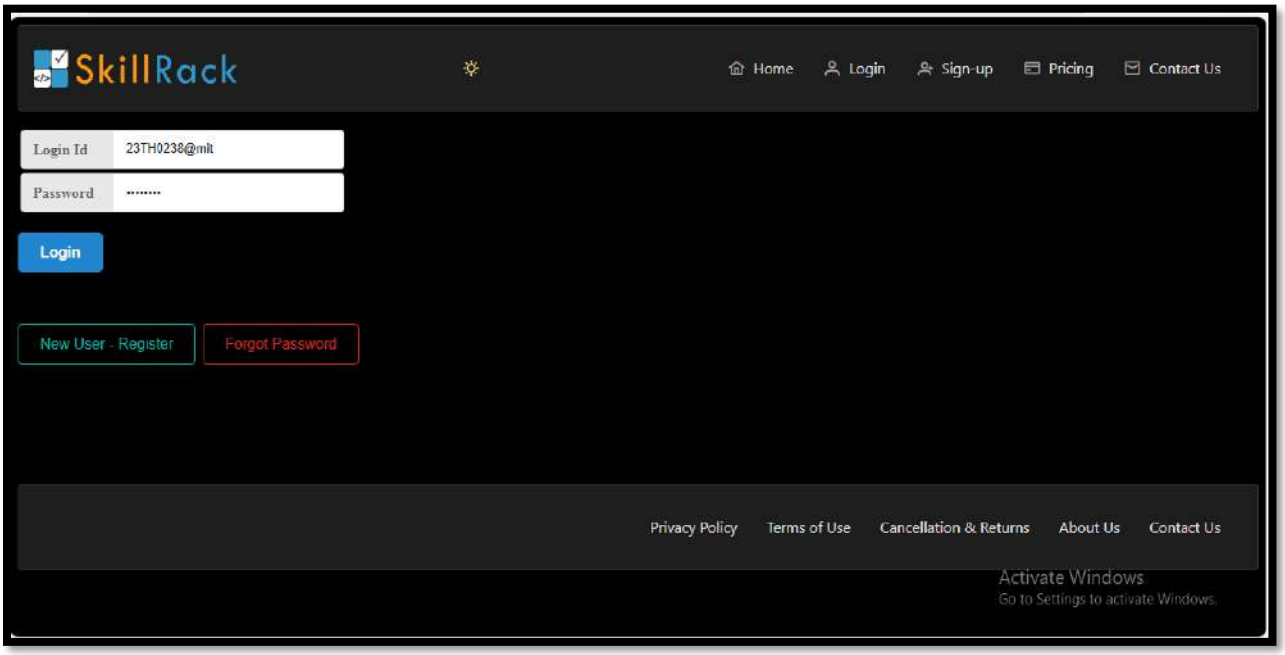
Skillrack



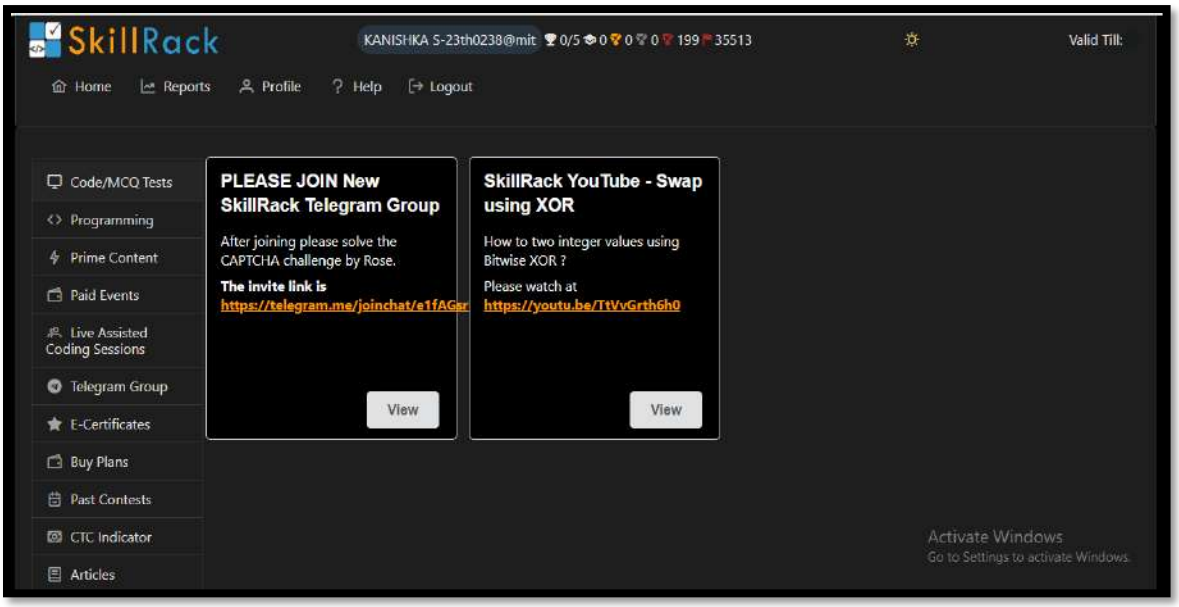
SkillRack Home Page



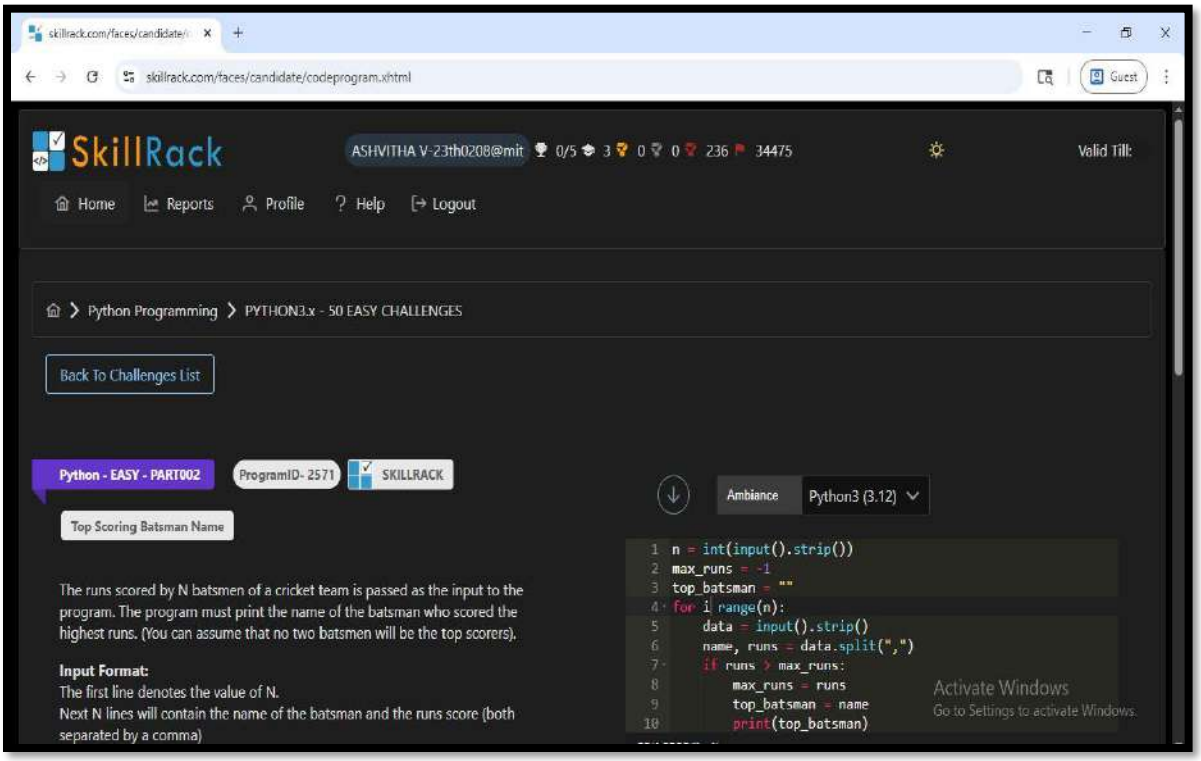
IT students name list in Skill Rack portal



Skill rack Student Login Page



Dash board of Student Skill rack Login page



Screenshot of students solving program in skill rack portal

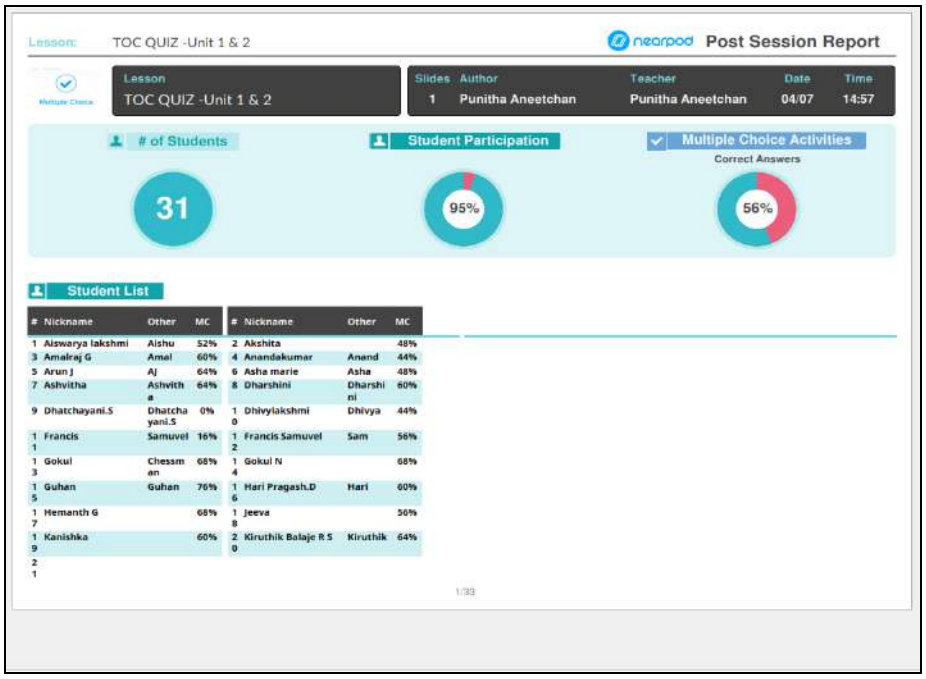
Outcomes

1. Students improve problem-solving and coding skills through consistent practice.
2. Competitive environment encourages continuous learning and self-improvement.
3. Faculty can monitor individual student progress through the dashboard.
4. Prepares students for campus placements and coding interviews

NEARPOD (QUIZ)

Category: *Interactive Assessment Tool*

Description	Nearpod is used for conducting interactive online quizzes and formative assessments within classroom sessions. Faculty integrates quizzes into live lessons, enabling real-time student responses and instant feedback, making evaluation more engaging and immediate.
Usage / Application	Online quiz conducted for Theory of Computation for II Year IT-A students in 2024-25 by Ms. A. Punitha AP/IT.



Usage Of Nearpod For Conducting Online Quiz in Subject Theory Of Computation for Second Year IT –A students in 2024-25 by Ms A.Punitha Ap/IT

Outcomes

1. Real-time assessment of student understanding during or after lessons.
2. Instant feedback enables faculty to address gaps immediately.
3. Increased student engagement through gamified quiz formats.
4. Data-driven insights into class performance help improve teaching strategies.

WORKING MODEL

Category: *Project-Based & Experiential Learning*

Description	Students build working IoT mini-projects and demonstrate them to evaluators as part of their lab and project curriculum. This hands-on approach bridges theoretical knowledge with practical application, developing students' ability to design, build, and present functional prototypes.
Usage / Application	III Year IT students demonstrated IoT mini-projects to evaluators in 2024-25.

Students demonstrating their IOT Mini project to the evaluator(2024-25)

Students demonstrating their IOT Mini project to the evaluator(2024-25)

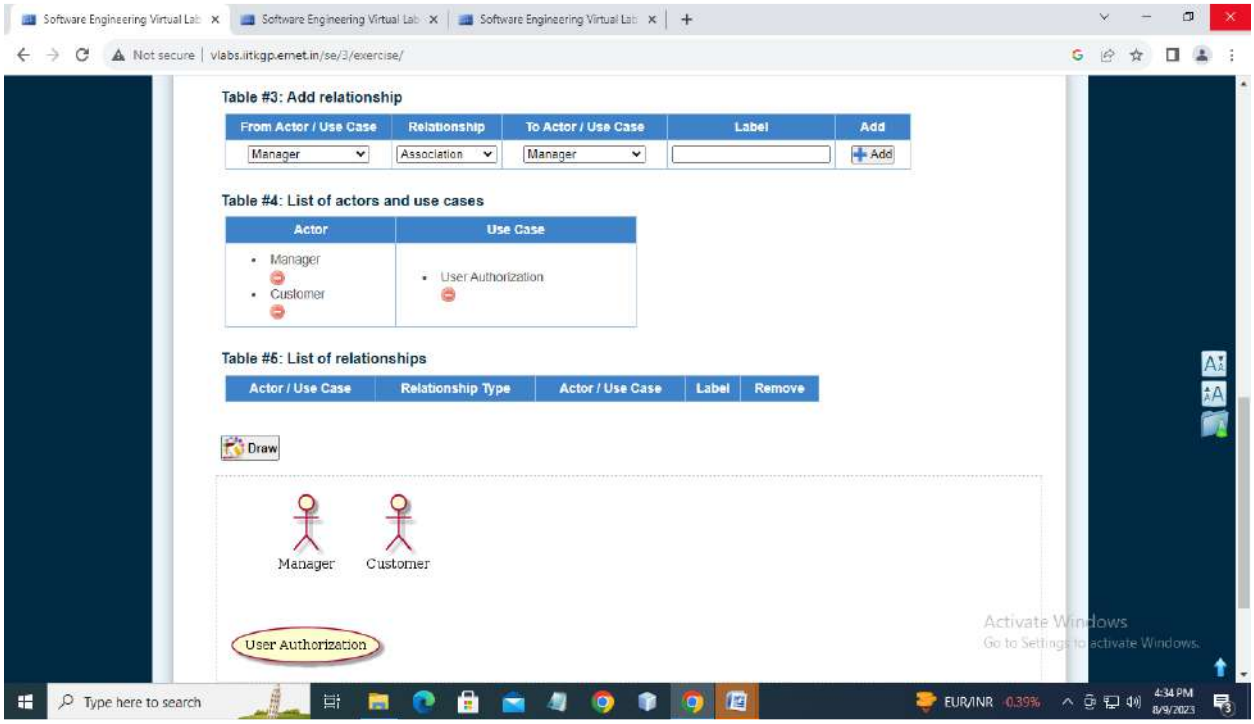
Outcomes

1. Students acquire practical skills in IoT hardware and software integration.
2. Develops critical thinking, teamwork, and project management abilities.
3. Enhances communication skills through project demonstration and Q&A.
4. Prepares students for industry expectations of applied technical competency

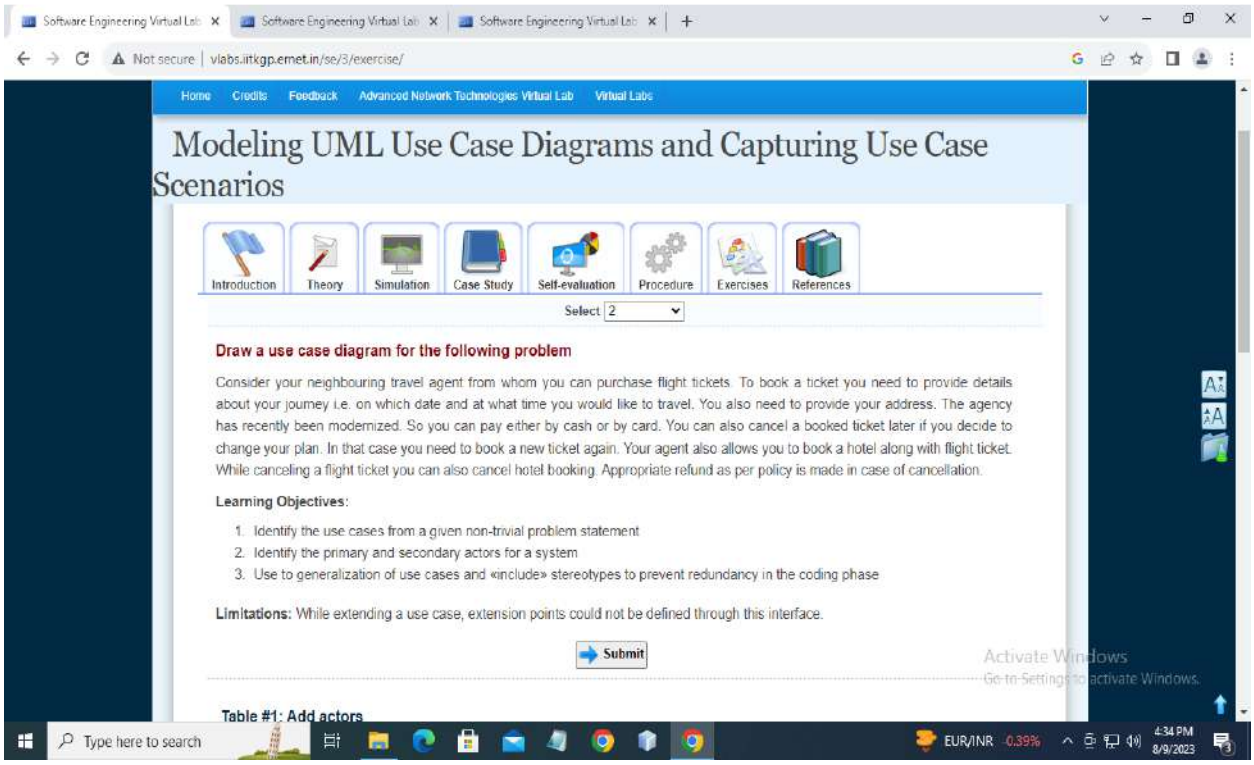
VIRTUAL LAB

Category: *Simulation & Digital Lab Tool*

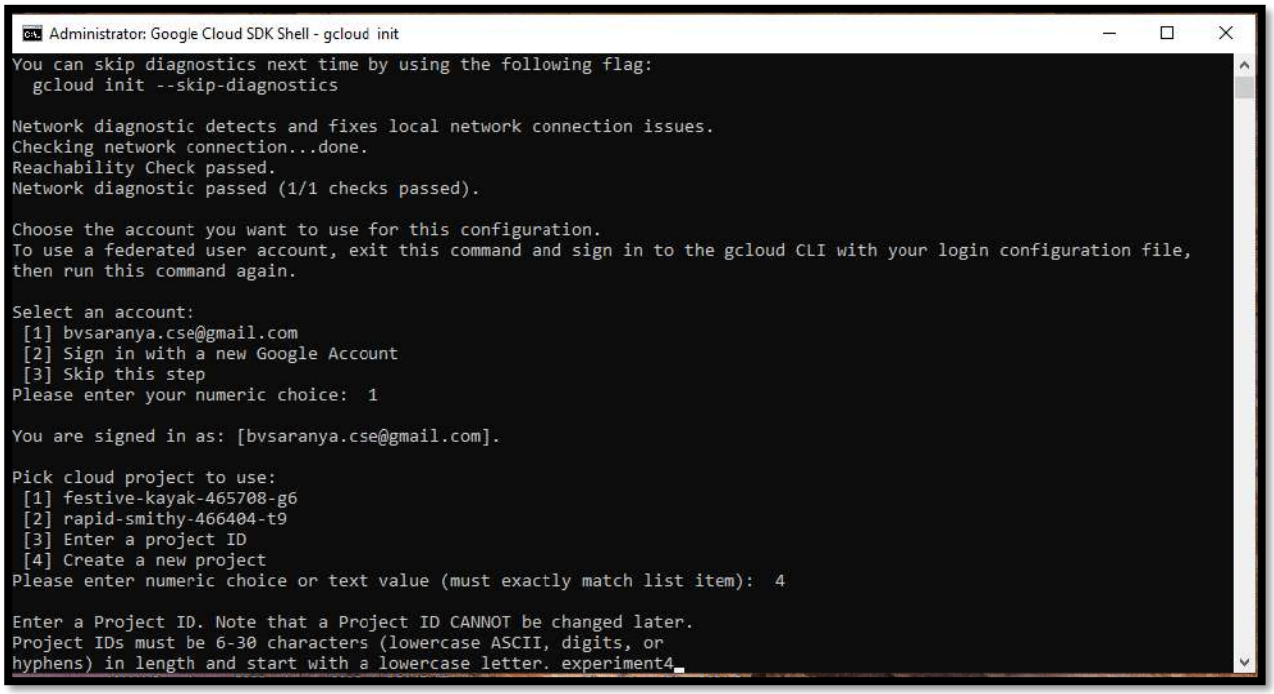
Description	Virtual labs allow students to perform experiments and draw diagrams in a simulated digital environment, supplementing physical lab sessions. Used for OOAD subjects where students draw Use Case Diagrams virtually, and for Google Cloud Platform activities.
Usage / Application	Use Case Diagram drawing for III Year IT students in OOAD (2023-24); Google Cloud Platform used for Cloud Computing Lab for III IT-A students (2025-26).



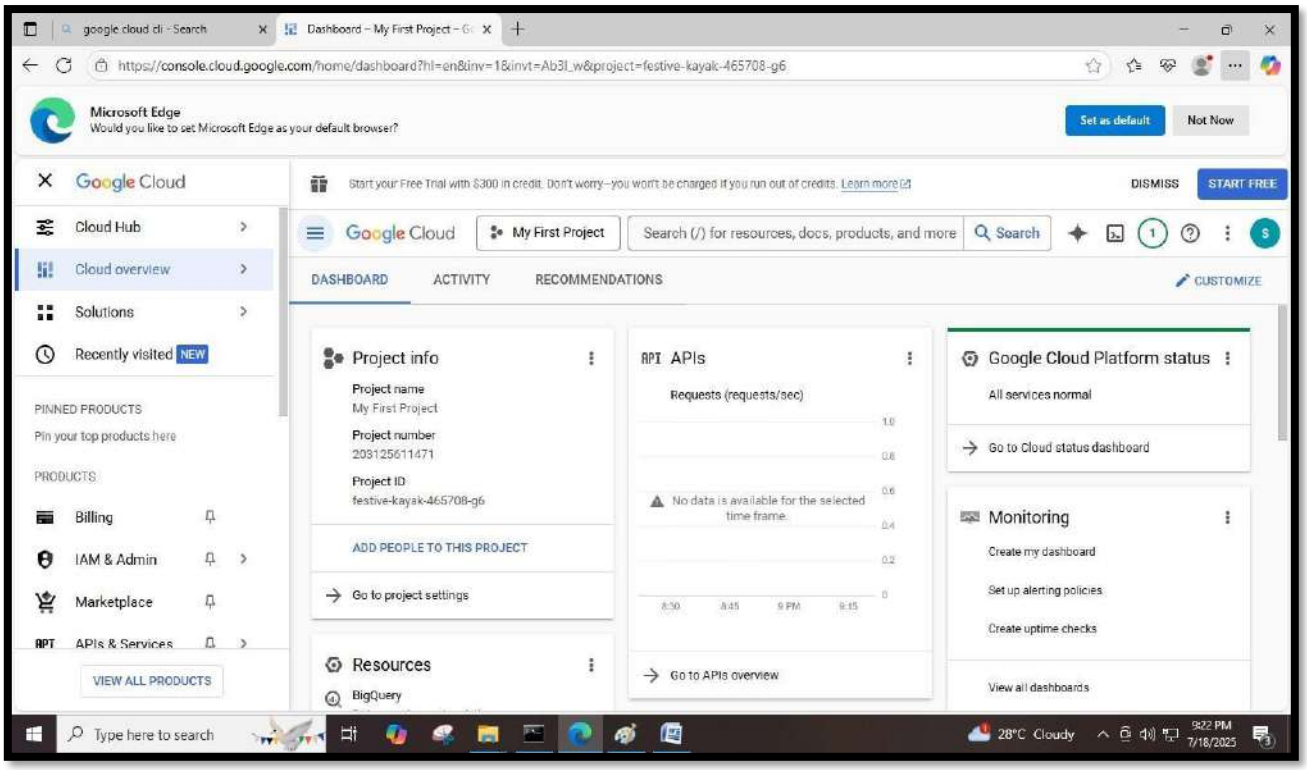
Demo on drawing the Use case diagram, for the specified problem in subject Object Oriented Analysis and Design for III IT students Handled by Dr A. Meiappane in 2023-2024



Use Case Diagram simulated using the - Virtual lab



Signing in of Google Cloud Platform



Creating a project in Google Cloud Platform in cloud computing lab for III IT-A students in 2025-26 handled by B.V.SARANYA AP/IT

Outcomes

1. Enables practical experience without physical hardware constraints.
2. Students gain cloud computing skills through hands-on GCP sessions.
3. Simulated environments allow safe experimentation and repetition.
4. Bridges gap between theoretical concepts and real-world technical implementation.

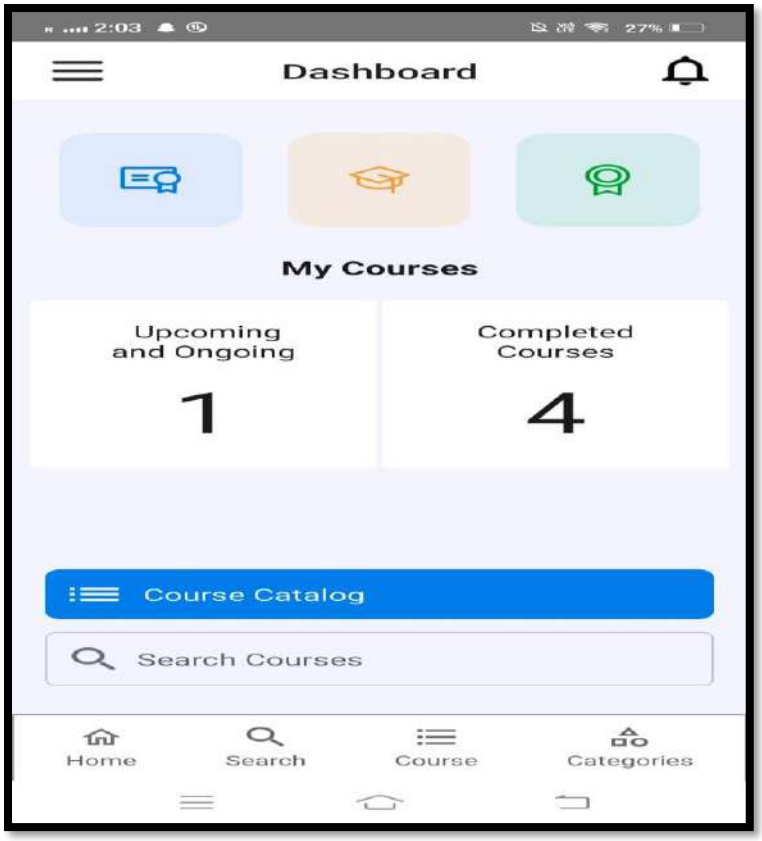
E-LEARNING PLATFORMS (Coursera, NPTEL, Udemy)

Category: *Online Learning & Certification Platform*

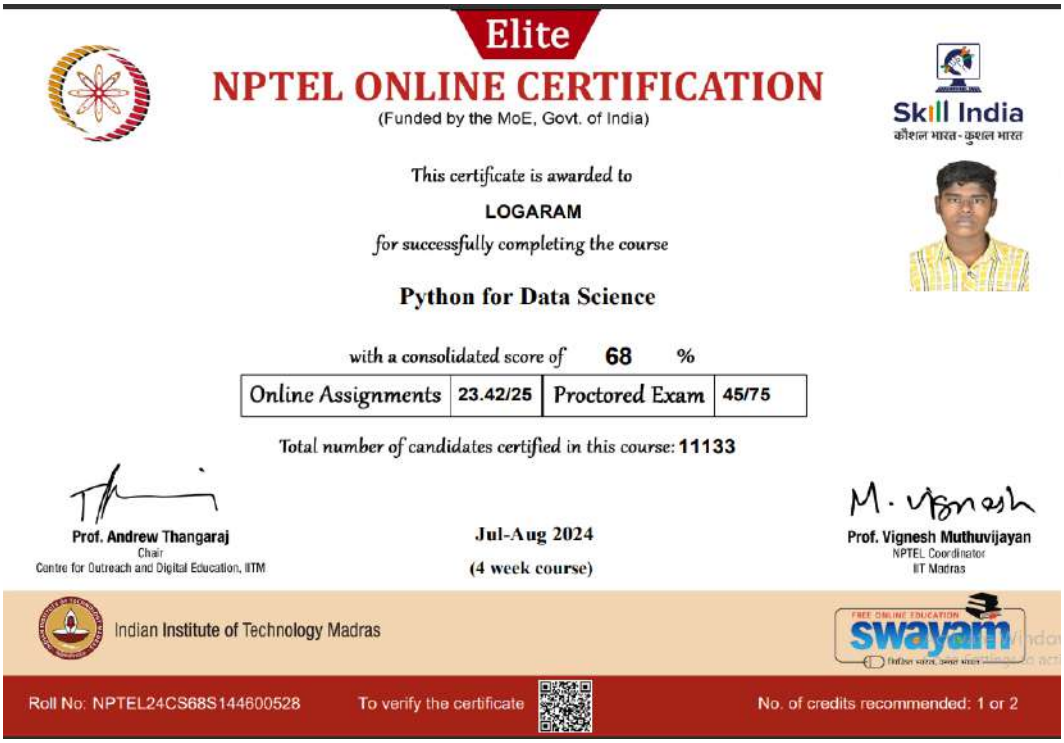
Summary

Description	Students and faculty leverage MOOC platforms including Coursera, NPTEL, and Udemy to access high-quality online courses, certifications, and supplementary learning content beyond the classroom curriculum.
Usage / Application	Students accessing Coursera; S. Logaram (II Year) acquired NPTEL certificate in Python for Data Science (2024-25); Sumaiyah A and Ashvitha V completed Udemy courses (2024-25).

E-Learning Platform



Dashboard of students using Coursera



Elite

NPTEL ONLINE CERTIFICATION

(Funded by the MoE, Govt. of India)

Skill India
कौशल भारत - कुशल भारत

This certificate is awarded to

LOGARAM

for successfully completing the course

Python for Data Science

with a consolidated score of 68 %

Online Assignments	23.42/25	Proctored Exam	45/75

Total number of candidates certified in this course: 11133

Prof. Andrew Thangaraj
Chair
Centre for Outreach and Digital Education, IITM

Jul-Aug 2024
(4 week course)

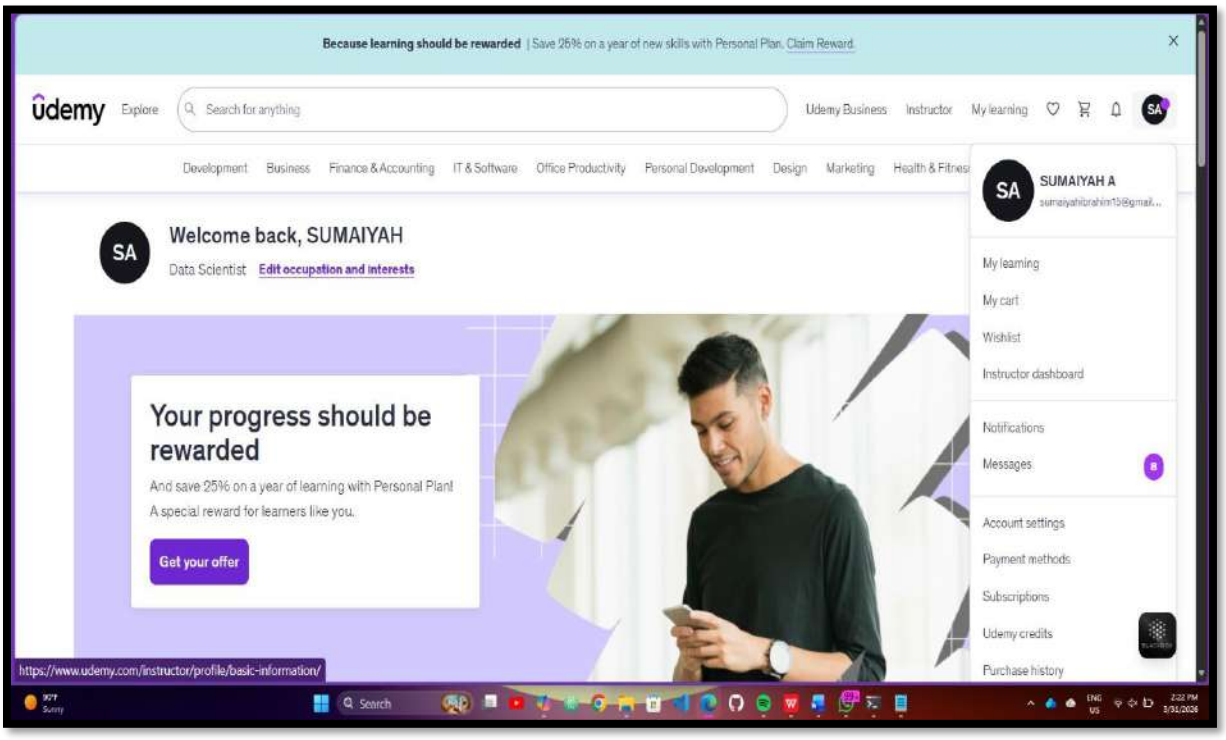
Prof. Vignesh Muthuvijayan
NPTEL Coordinator
IIT Madras

Indian Institute of Technology Madras

swayam

Roll No: NPTEL24CS68S144600528 To verify the certificate No. of credits recommended: 1 or 2

Our second year student S.Logaram acquired NPTEL certificate in Python for Data Science (2024-25)



Udemy Home page(Sample) used by our IT student Sumaiyah A (2024-25)

Certificate of completion acquired by third year student(Ashvitha.V) in Udemy

Outcomes

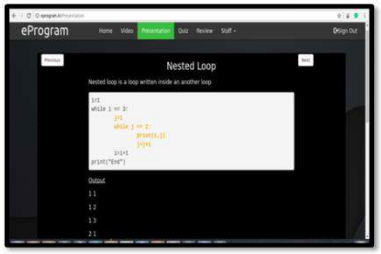
1. Students gain industry-recognized certifications enhancing employability.
2. Exposure to global faculty and diverse learning content.
3. Self-paced learning cultivates autonomous study habits.
4. Supplementary knowledge strengthens understanding of core curriculum topics.

e-PROGRAMS

Category: *Online Events & Enrichment Programs*

Description	e-Programs are structured online enrichment activities and webinars organized for IT students. They expose students to emerging technologies, industry practices, and expert insights through virtual participation, complementing classroom learning.
Usage / Application	II Year IT students attended e-Programs in 2024-25.

e-Programs



E-Program Webpage

Second Year IT Students attending E-Program(2024-25)

Outcomes

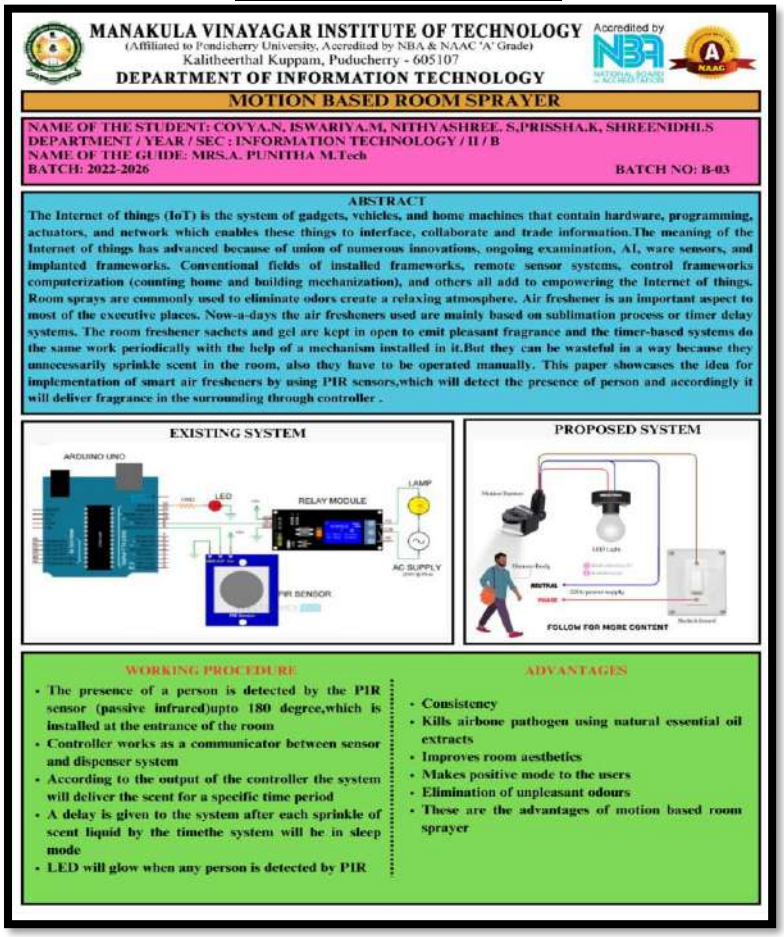
1. Students gain awareness of emerging technologies and industry trends.
2. Exposure to expert practitioners and domain specialists.
3. Develops online participation and digital communication skills.
4. Enhances overall academic and professional development.

Project-Based Learning (PBL)

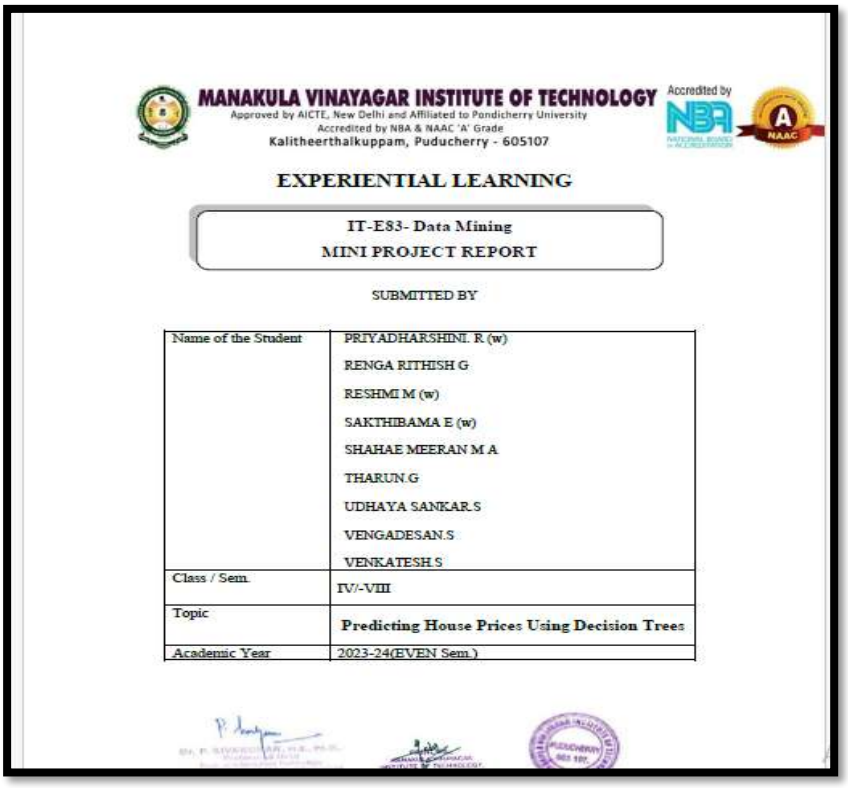
Category: *Active Learning Methodology*

Description	Project-Based Learning involves students working on mini-projects and experiential learning reports as part of the curriculum. Students present posters for mini-projects and prepare structured experiential learning reports, developing research, design, and presentation skills.
Usage / Application	Poster Presentation for mini-projects by II Year IT students (2023-24); Experiential learning report index prepared by Final Year IT students (2023-24).

Project-Based Learning



Poster Presentation For Mini Project Done By IInd Year IT Students in 2023-24



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Approved by AICTE, New Delhi and Affiliated to Pondicherry University
Accredited by NBA & NAAC 'A' Grade
Kalitheerthalkuppam, Puducherry - 605107

Accredited by NBA NAAC

EXPERIENTIAL LEARNING

IT-E83- Data Mining
MINI PROJECT REPORT

SUBMITTED BY

Name of the Student	PRIYADHARSHINI. R (w) RENGA RITHISH G RESHMI M (w) SAKTHIBAMA E (w) SHAHAE MEERAN M A THARUN.G UDHAYA SANKAR.S VENGADESAN.S VENKATESH.S
Class / Sem.	IV/-VIII
Topic	**Predicting House Prices Using Decision Trees**
Academic Year	2023-24(EVEN Sem.)

Index of Experiential learning report done by final year IT students(2023-24)

Outcomes

1. Students develop end-to-end project execution skills.
2. Research, documentation, and presentation abilities are strengthened.
3. PBL encourages creativity, teamwork, and real-world problem-solving.
4. Improves student readiness for capstone projects and industry work.

TUTORIAL CLASSES

Category: *Supplementary Academic Support*

Description	Tutorial classes are conducted as additional academic support sessions for students struggling with complex subjects. Faculty conduct focused, small-group or class-level tutorial sessions to reinforce concepts and provide personalized guidance.
Usage / Application	Tutorial class for Java Programming conducted by Mrs. J. Prabhavathi for II Year IT students on 06.02.2024.

Tutorial Class conducted for the subject Java Programming by Mrs J. Prabhavathi for Second year IT students on 06.02.2024

Outcomes

1. Targeted support reduces knowledge gaps in difficult subjects.
2. Students benefit from focused, topic-specific reinforcement.
3. Improved student performance and confidence in complex subjects.
4. Faculty identify and address common learning difficulties across batches.

WEBINARS / INDUSTRIAL VISITS

Category: *Industry Exposure & Training*

Description	Webinars and industrial visits provide students with direct exposure to industry environments, practices, and professionals. These experiences bridge academic knowledge with real-world applications, enhancing students' understanding of industry expectations.
Usage / Application	Industrial visit to Lenovo India Private Limited, Pondicherry, attended by IT students in 2023-24.

Webinars / Industrial Training

Students Attended Industrial Visit at Lenovo India Private Limited, Pondicherry-605007 in 2023-24

Outcomes

1. First-hand exposure to industry work environments and processes.
2. Students gain insights into real-world applications of academic knowledge.
3. Networking opportunities with industry professionals.
4. Motivates students to align their skills with current industry requirements.

ROLE PLAY

Category: *Active Learning & Soft Skills Development*

Description	Role play activities are used as an active learning strategy where students enact scenarios related to subject topics, promoting deeper understanding through experiential participation. It is used in subjects like User Interface Design, System Software, and Operating Systems.
Usage / Application	Role play for User Interface Design (23.4.2024 by Mrs. J. Prabavathi); System Software (26.4.2024 by Mrs. V. Vimala Dheekshanya); Operating Systems (24.7.2024 by Mrs. B.V. Saranya). All for III Year IT students.

Role play

Role Play was conducted by 3rd Year IT students for Subject User Interface Design handled by Mrs J.Prabavathi on 23.4.2024

Role Play was conducted by 3rd Year IT students for Subject system software handled by Mrs V.Vimala Dheekshanya on 26.4.2024

Role Play was conducted by 3rd Year IT students for Subject Operating Systems handled by Mrs B.V.Saranya on 24.7.2024

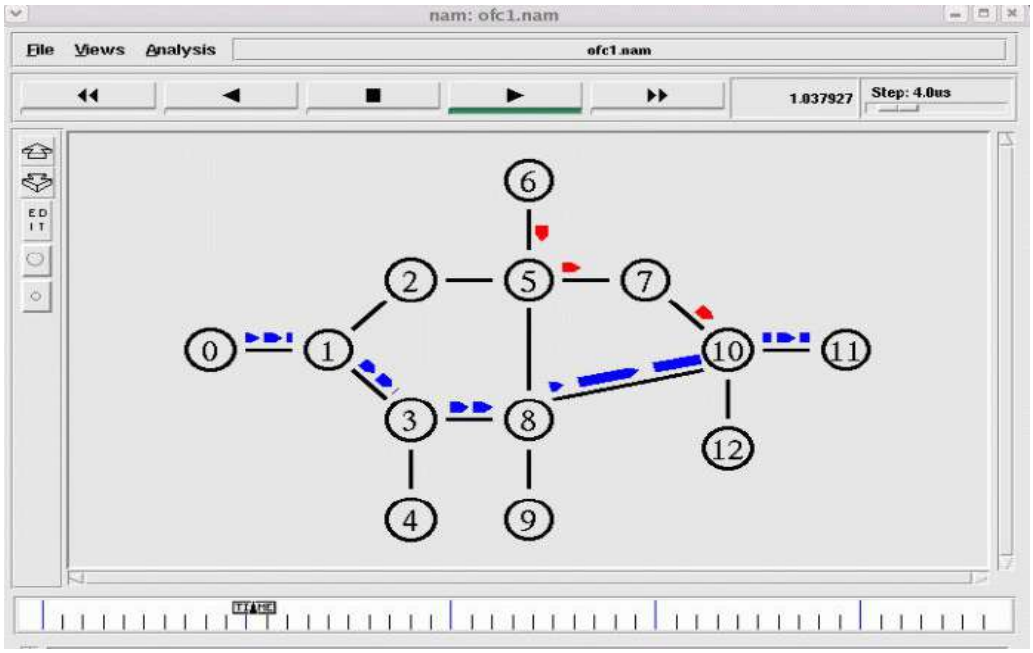
Outcomes

1. Promotes active learning through student participation and enactment.
2. Improves understanding of user-centric and system-level concepts.
3. Develops communication, teamwork, and presentation skills.
4. Makes abstract technical concepts more relatable through simulation

SIMULATION TOOLS (NETWORK SIMULATOR)

Category: *Technical Lab Simulation*

Description	Network simulation tools are used in the Computer Networks Lab to simulate network topologies, protocols, and behaviours in a controlled virtual environment. These tools help students practically explore networking concepts without requiring physical hardware.
Usage / Application	Network Simulator used in Computer Networks Lab for III Year IT students in 2024-25.



Network Simulator Tool Used In Computer Networks Lab for III year IT students in 2024-25

Network Simulator Tool Used In Computer Networks Lab for IT-III year students 2024-25

Outcomes

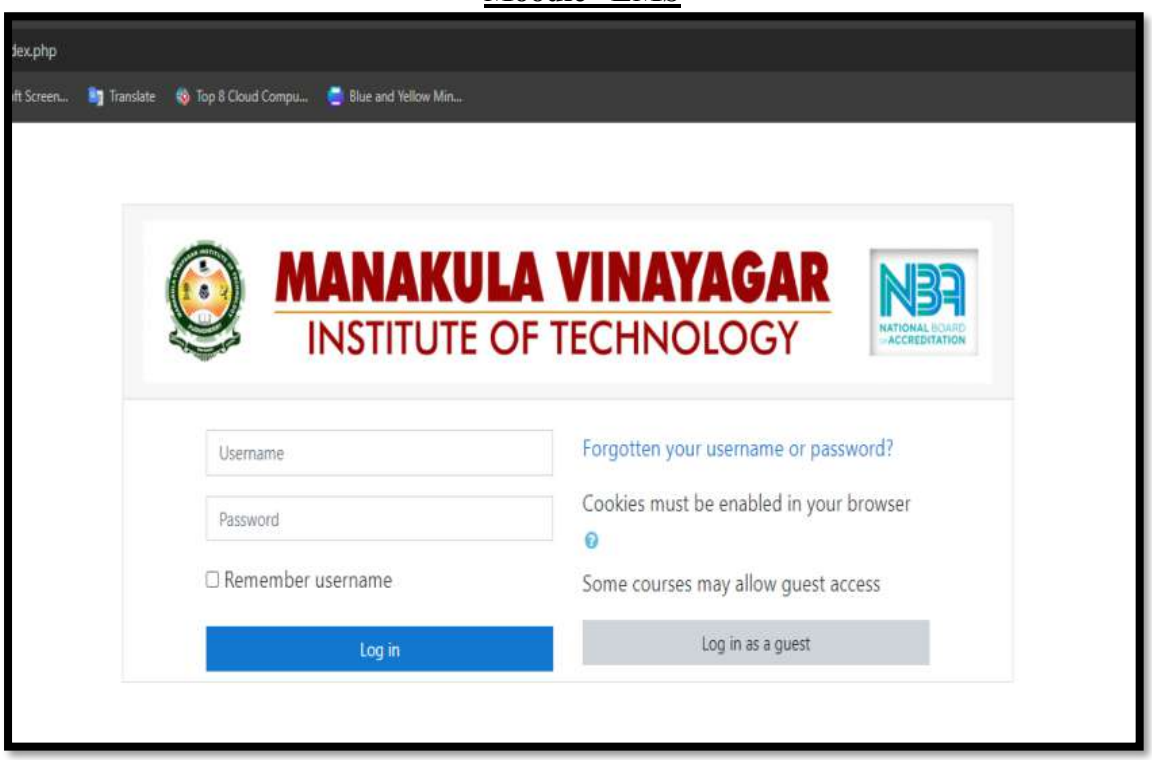
1. Students gain practical exposure to network configuration and troubleshooting.
2. Safe simulation environment allows trial-and-error learning.
3. Reinforces theoretical networking concepts through hands-on practice.
4. Prepares students for networking certifications and industry tool.

MOODLE – LMS

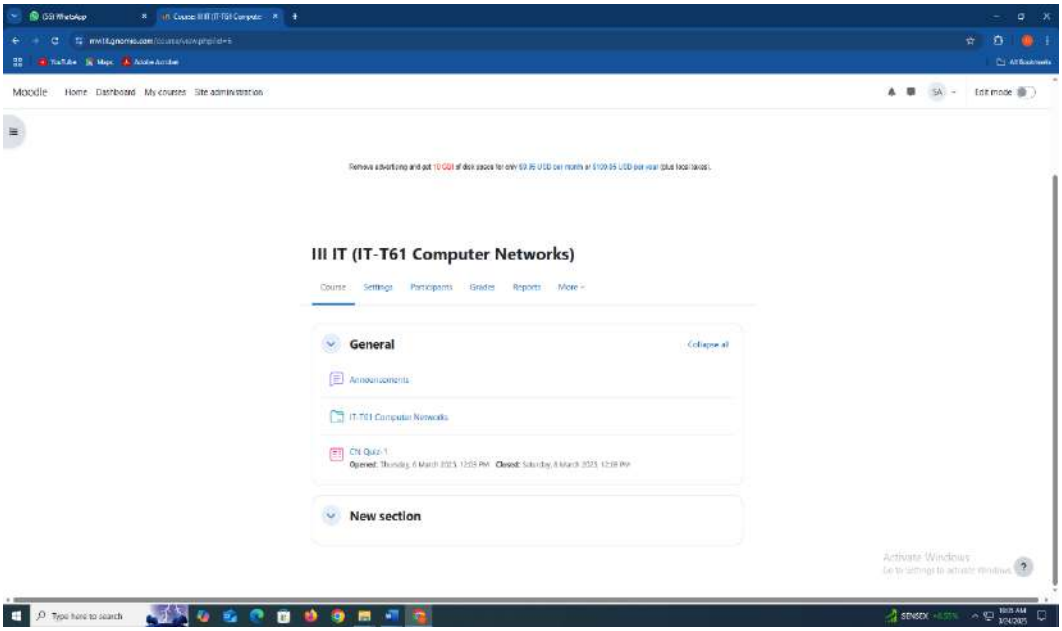
Category: *Learning Management System*

Description	Moodle is the institution's primary Learning Management System (LMS), accessible at http://elearn.mvit.edu.in. Faculty use Moodle to post course notes, conduct online quizzes, and run surveys, creating a centralized digital repository for all course activities.
Usage / Application	Faculty post notes, quizzes, and surveys; students log in through the institutional Moodle portal for all IT subjects.

Moodle –LMS



MOODLE-LOGIN PAGE



Moodle Usage for posting notes, quiz and survey

Outcomes

1. Centralized platform for all course materials, assessments, and communications.
2. Faculty can administer quizzes and surveys with automated grading.
3. Students have 24/7 access to notes and resources.
4. Supports blended learning by integrating online and offline components.