PSNA COLLEGE OF ENGINEERING AND TECHNOLOGY, DINDIGUL

(An Autonomous Institution affiliated to Anna University, Chennai)

Department of Computer Science and Engineering

EXPERIMENTAL LEARNING

Hacker rank

Hacker Rank is an online platform for competitive programming and technical assessments. It is widely used by companies for hiring and by developers to improve their coding skills. The platform supports multiple programming languages and offers challenges in algorithms, data structures, artificial intelligence, databases, mathematics, and more.

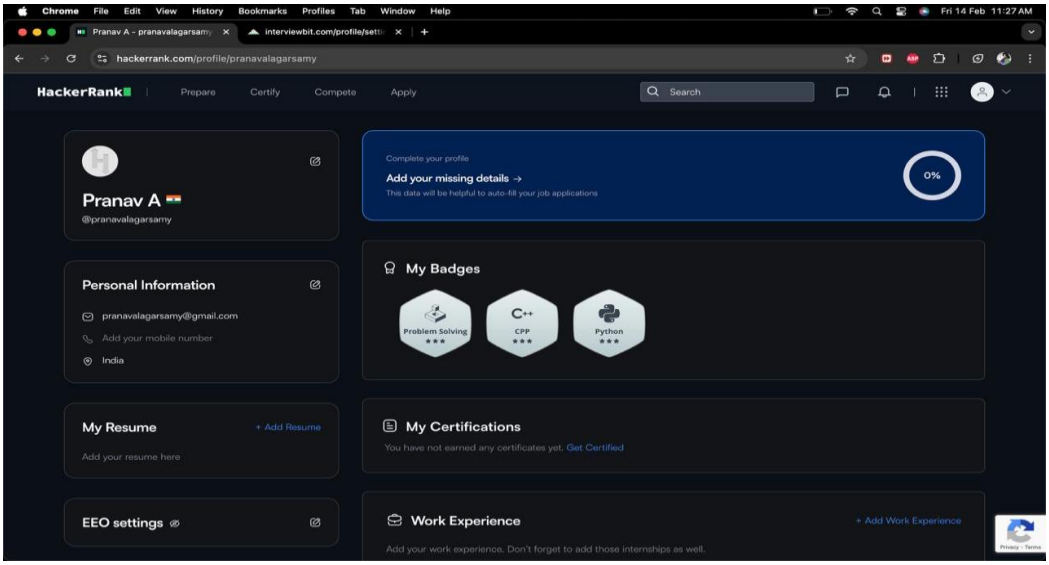


Figure 1. Sample Hacker Rank profile of Pranav A (Student of III CSE)

Faculty members encourage students to engage in coding practice from their first year, nurturing a strong foundation in programming. Third and final-year students are particularly guided to enhance their coding proficiency through platforms like HackerRank.

Academic year	No. of. Students
2024-2025	145
2023-2024	120
2022-2023	57

Table 1. Students benefited through Hackerrank in three assessment years

Leet code

Leet Code is another popular online platform for coding practice and technical interview preparation. It provides a vast collection of coding problems, categorized by difficulty (Easy, Medium, Hard) and topic (Algorithms, Data Structures, SQL, System Design, etc.).

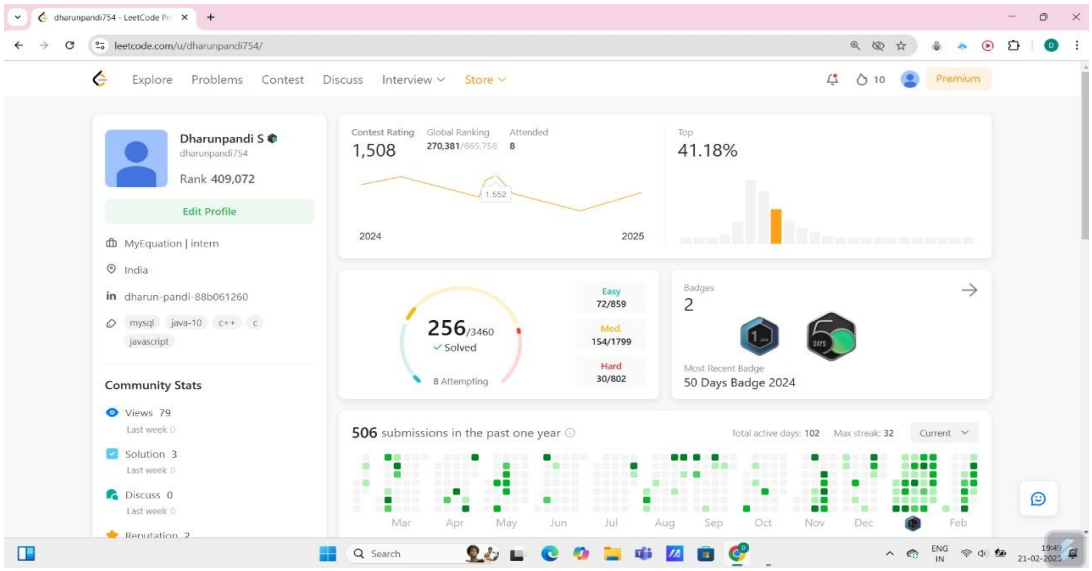


Figure 2. Sample Leet Code profile of Dharunpandi S (III CSE Student)

This platform encourages students to prepare for technical interviews and industry placements. This reflects his active participation in coding challenges and continuous skill enhancement. His profile showcases an impressive contest rating of 1,508, placing him among the top 41.18% globally. Additionally, he has successfully solved 256 out of 3,460 problems. His achievement of the 50 Days Badge 2024 highlights his persistence and commitment to consistent skill development.

Academic year	No. of. Students
2024-2025	120
2023-2024	80
2022-2023	67

Table 2. Students benefited through Leetcode in three assessment years

Codetantra

Codetantra is an interactive learning and assessment platform designed for programming education, technical training, and online proctored examinations. It is used for conducting curriculum lab, Programming Assignments, coding tests, Quiz, MCQs and aptitude training programs.

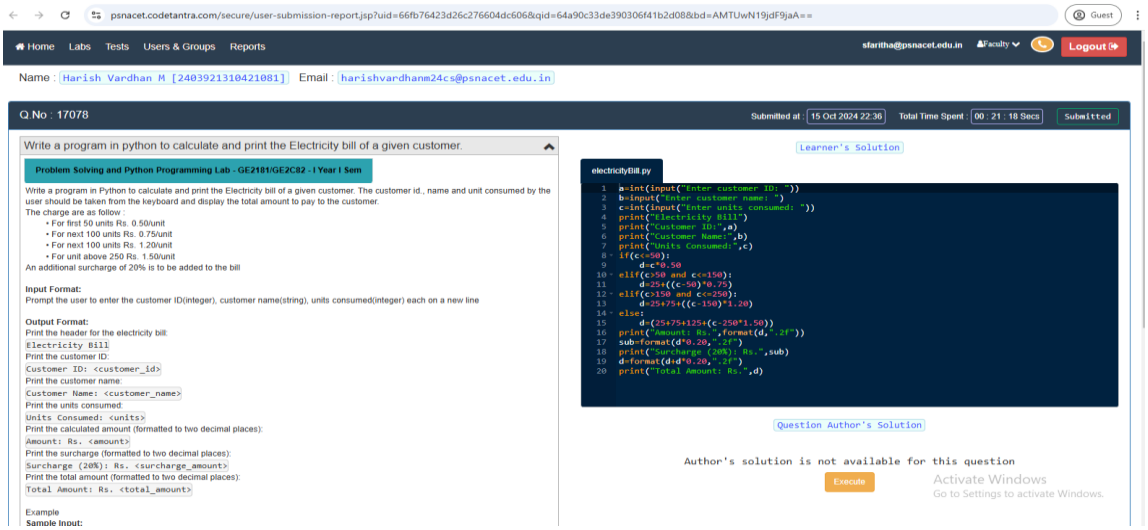


Figure 3. A sample submission report for a Python programming problem on electricity bill calculation

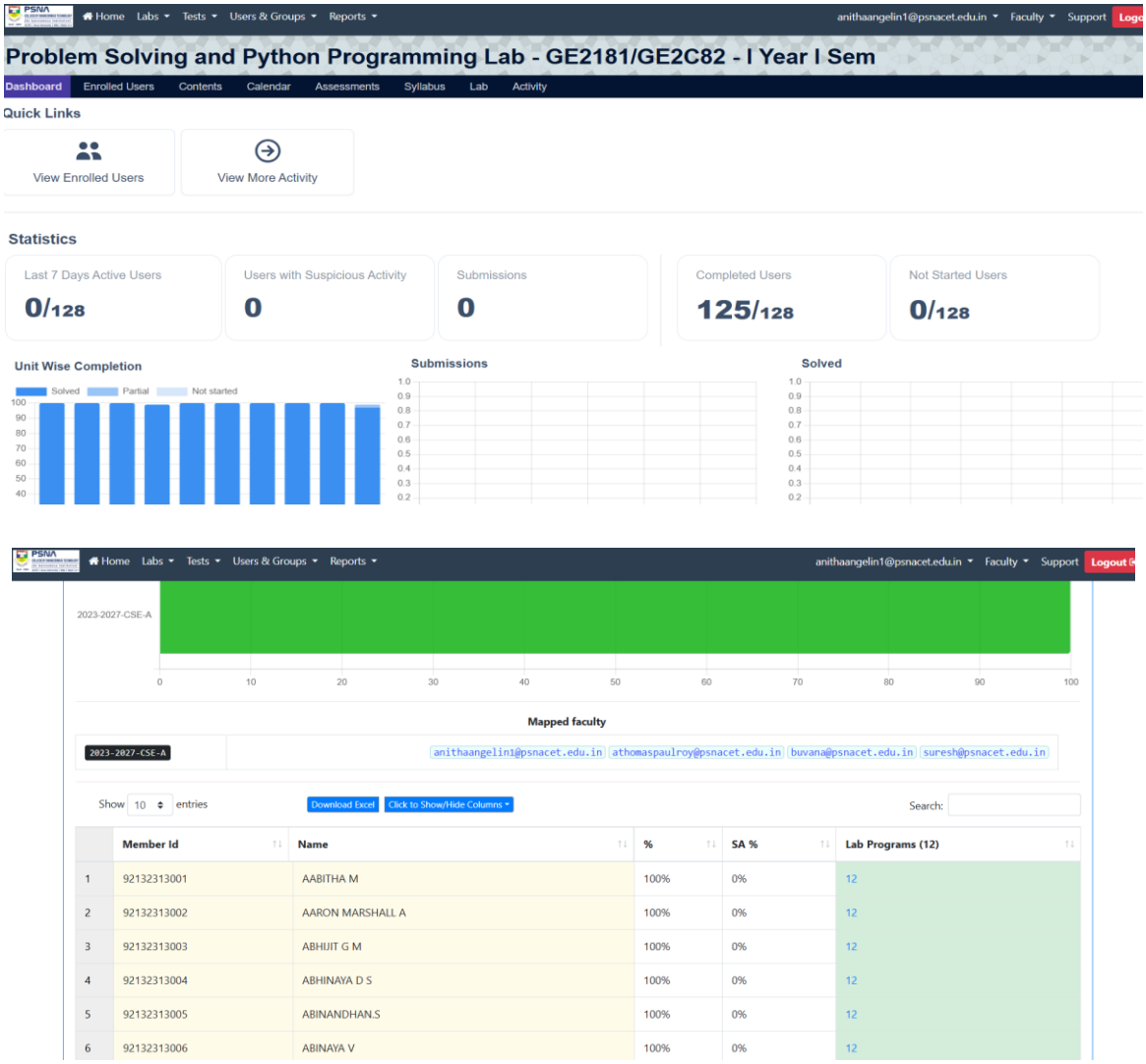


Figure 4. Codetantra Faculty dashboard

PSNACET has integrated CodeTantra into its curriculum to provide students with a structured, interactive, and automated coding environment that enhances learning and assessment. Each semester, atleast one course can be conducted through CodeTantra, starting from the First Semester through the Seventh Semester.

Code Tantra is an online learning and assessment platform that provides interactive coding environments, virtual labs, and proctored examinations. PSNACET has integrated with CodeTantra for conducting regular Theory and Lab sessions, placement sessions and training programmes. Currently, 42 faculty members and 1,038 students from the Department of Computer Science Engineering have been provided access to CodeTantra.

Faculty members can design assignments in theory and laboratory subjects like Problem solving and python programming, Programming in C, Operating systems, Data structures, Data Science and Competitive coding series, evaluate submissions, and monitor student progress using detailed analytics. The platform enables real-time assessment and feedback, ensuring a comprehensive learning experience for students.

IIT Hyderabad Virtual Labs

IIT Hyderabad Virtual Labs is part of the Virtual Labs initiative by the Government of India, aimed at providing remote access to laboratory experiments in various engineering and science disciplines. These labs enable students to conduct experiments virtually, enhancing their practical knowledge without needing physical lab infrastructure.

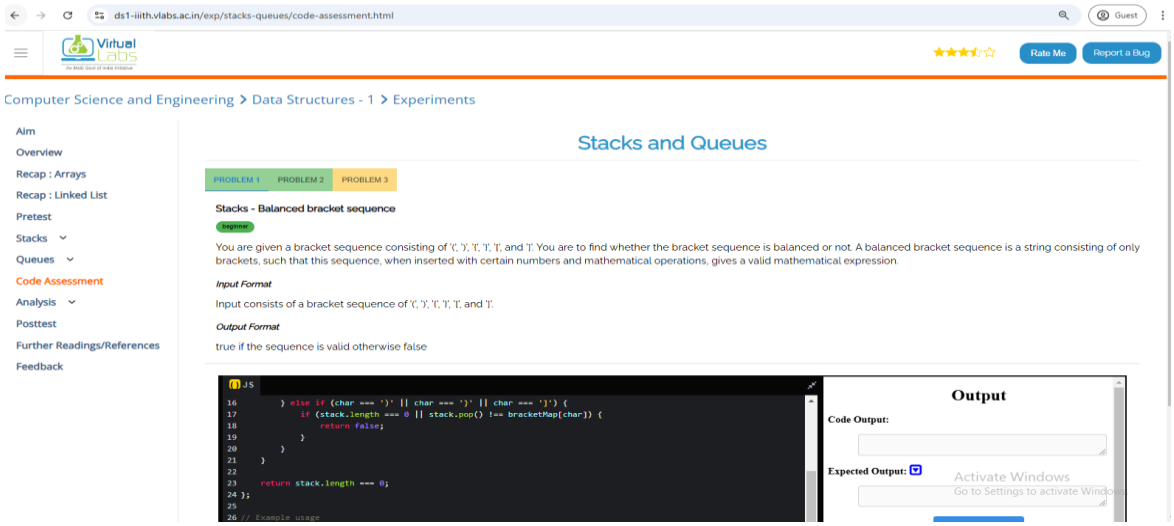


Figure 5. Stacks and Queues experiment in the Data Structures through IIT Hyderabad Virtual Lab

Our second- and third-year students used these labs for the course CS2611 - Cryptography and Cyber Security, as well as CS3301 - Data Structures.

The link to the Virtual Labs is given below.

- https://www.vlab.co.in/broad-area-computer-science-and-engineering
- https://cse29-iiith.vlabs.ac.in/

Academic year	No. of. Students
2024-2025	265
2023-2024	170
2022-2023	150

Table 3. Students benefited through IIT virtual labs in three assessment years

Skillrack

Skillrack is an online platform that helps students improve their coding skills and prepare for technical interviews. The platform offers placement-oriented training with tests in logical reasoning, aptitude, and coding, along with daily challenges and assignments to encourage regular practice. It tracks individual progress in performance, accuracy, and speed, covering industry-relevant topics like C, C++, Java, Python, SQL, and Data Structures.

Figure 6.Certificate of SkillRack

In the academic year 2022-23, all third-year students actively participated in these sessions, which leveraged Skillrack for hands-on practice. This initiative helped refine their problem-solving skills and technical expertise, preparing them for placement opportunities.

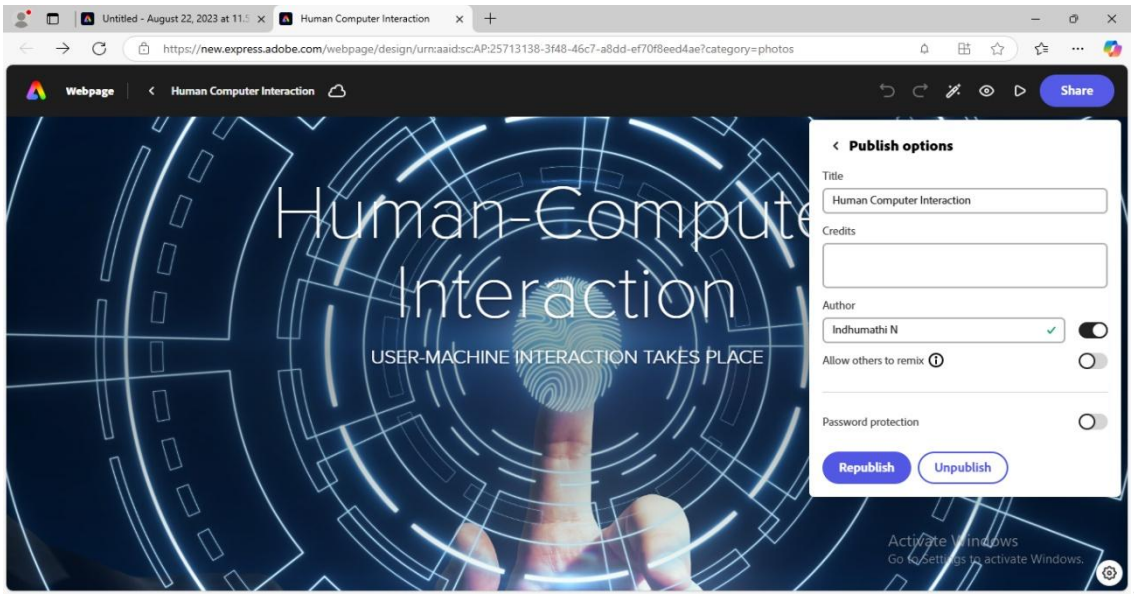
Academic year	No. of. Students
2024-2025	260
2023-2024	210
2022-2023	160

Table 4. Students benefited through Skilrack in three assessment years

Design thinking approach using Adobe Express

Experimental learning promotes a deeper understanding of theoretical concepts by engaging students in practical, hands-on experiences. Adobe Express, a user-friendly digital content creation tool, enables individuals and teams to easily design graphics, web pages, videos, and other multimedia content.

By utilizing Adobe Express, students applied design thinking principles to develop functional website designs, enhancing both their technical proficiency and creativity. In the CS8079 Human-Computer Interaction (HCI) course, faculty members integrated this tool into their teaching for the Final year students to understand the key concepts.



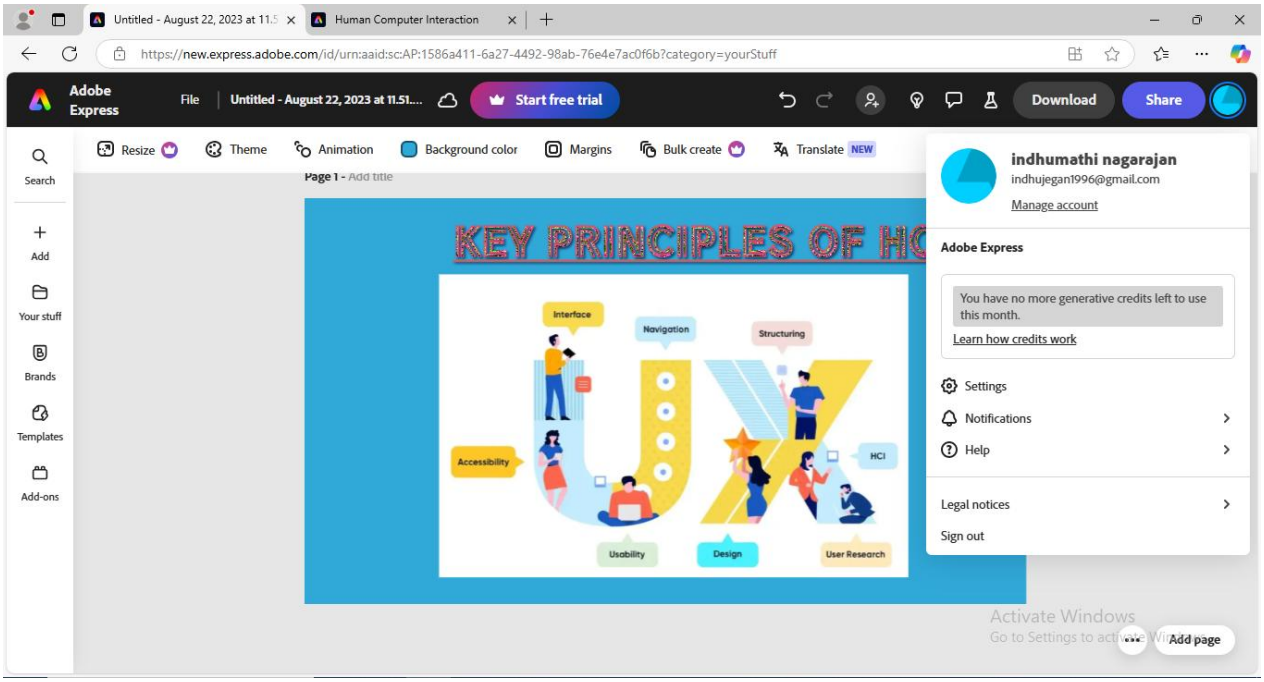


Figure B.5.141.3.7. HCI course demonstration using Adobe express

S.No	Academic Year	Course Code & Name	Year of Study & No. of students	Faculty Name
1	2023-24 ODD	CS8079 Human-Computer Interaction	IV CSE D - 61	Ms.N.Indhumathi
2.	2023-24 EVEN	CCS370 - UI and UX Design	III CSE A - 67	Mrs.M.Jayanthi

Table 5. List of courses demonstrated using Adobe express