



**RAJADHANI INSTITUTE OF
ENGINEERING AND TECHNOLOGY**

Approved by the AICTE & Affiliated to the APJ Abdul Kalam Technological University.



COGNITIO

STORIES IN SYNTAX

2024-25

*Department of
Computer Science
&
Engineering*





VISION OF THE INSTITUTION



Groom the Youth as Innovative, Creative and Empathetic Technologists, Hospitality Professionals, Managers and Entrepreneurs for Social Transformation.

MISSION OF THE INSTITUTION



M1: To encourage holistic development of students with well-balanced curricular, co-curricular and extra-curricular activities.

M2: To promote ethical and value-oriented teaching, research and consultancy among faculty and students for social transformation.

M3: To interact with industrial organizations, governmental agencies, and engineering, hospitality and business enterprises for collaborative learning.



VISION OF THE DEPARTMENT



To be a premier department nurturing students to be strong in core and interdisciplinary knowledge, employable skills, industrially competent, innovative and creative professionals with ethical values.

MISSION OF THE DEPARTMENT



M1 : To develop competency in Computer Science & Engineering through outcome based education.

M2 : To imbibe the culture of creativity and critical thinking to enhance research and innovations in advanced computing technology.

M3 : To enhance leadership, problem solving and entrepreneurial skills to transform social responsibilities with ethical values.



PEO STATEMENTS

PEO1: Exhibit knowledge and proficiency in various domains of Computer Science & Engineering.

PEO2: Develop innovative computing products for reconcile contemporary issues in industry.

PEO3: Demonstrate teamwork, ethical leadership and promote entrepreneurship

PROGRAM SPECIFIC OUTCOMES (PSOS)

PSO 1 : Able to analyze and design solutions for complex problems in computing technologies using software project management concepts and programming languages.

PSO2: Develop proficiency in interdisciplinary areas of computer engineering to perform tasks related to industry & research.

PSO 3 : Competent to solve real world problems pertaining to products and services in Information Technology.





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ABOUT RIET

A Scientific Approach to Learning

Engineering & Technology is demystified through a scientific approach of teaching and learning. Traditional concepts are shattered; new ideas are explored, possibilities are unraveled, and learning is unbounded by the environment prevailing at the Institute. The curriculum is adequately supported by value-added short-term certifications by the industry to meet the global standards of technology education. The pristine and natural terrain of the campus is an ideal place for both learning and fun at RIET, blending nature with technology. RIET has a strong orientation towards R&D, aligning with the national and international objectives of excellence.

Departments and Infrastructure

You just have to walk in and capture the spirit of scientific temperament at the campus. There are eleven departments, each having emphasis on instruction and research. State-of-the-art laboratories furnished with the latest equipment and experienced faculty ensures an enriching learning culture.

Research, Development, and Innovation

The Centre for Research and Development undertakes projects in the areas of Civil, Mechanical, Electronics & Communications, and Computer Science in collaboration with national/international research and R&D laboratories. RIET in partnership with Technopark, Govt of Kerala has a technology incubation centre for fostering a culture of entrepreneurship & creativity amongst the students. The other centres proposed are Innovations Lab, Centre for Alternative Technologies for Rural Development, and Industry Sponsored Research Centre etc.

The Vision

The vision of RIET is to groom and empower a new generation of technologists and innovators with a lifelong passion for learning and achievement. Efforts are to productively mold them to be good citizens with sensitivity, empathy, and compassion for society, thus enabling education to be a better tomorrow.



ABOUT CSE

The Department of Computer Science & Engineering (CSE) at Rajadhani Institute of Engineering & Technology (RIET) was established in 2009 with the vision of providing high-quality education of and training in the rapidly evolving fields of computer science and technology. The department initially began with an intake capacity of 60 students and has since expanded to meet the growing demand for skilled professionals in the tech industry.

Key milestones in the department's growth: 2009: Establishment of the Computer Science & Engineering department. 2020: Introduction of the Cyber Security program, with an intake capacity of 60 students. This program was designed to address the increasing need for experts in protecting digital systems and data from cyber threats. 2023: Launch of the Artificial Intelligence & Machine Learning (AI & ML) program, with an intake of 60 students. This program aims to equip students with the knowledge and skills required in the cutting-edge areas of AI, ML, and Data Science.

The department's growth in both academic offerings and intake reflects its dedication to preparing students for the challenges and opportunities in the ever-changing landscape of computer science and technology. The department has grown steadily over the years, maintaining a strong academic reputation, and producing skilled professionals who excel in both the industry and academia. The department has dedicated, qualified and experienced faculty members to guide the students in academics

CHAIRMAN'S REMARK



I appreciate the sincere efforts made by the faculty members and students of the Department of Computer Science in RIET for publishing a technological Magazine "COGNITIO" in connection with the "ITHIHA 2K25". The hard work and dedication of the whole computer science community and especially that by the organizing committee members is highly appreciable.

I wish all success to 'COGNITO'.



Dr. Biju Ramesh

DIRECTOR'S REMARK

It is a great joy to know that our computer science department is publishing a souvenir 'COGNITIO'. It will be a forum for the students to showcase and enhance their technical skills and an opportunity for their self-development at a time the country is marching ahead in the growth. Besides, the hard work put in for putting together such a remarkable magazine is admirable. I also wish that, the department continue their efforts to bring out innovative skills of not just the students of RIET, but that of the rest of the nation. I congratulate the organizers and wish the magazine a grand success.



Ms. Megha Biju Ramesh

PRINCIPAL'S REMARK

The Computer Science and Engineering Department continues to inspire innovation and excellence in a rapidly advancing technological world. This edition of *Cognitio* showcases the achievements of our students and faculty—from research and coding projects to workshops and hackathons—reflecting their dedication and creativity.

I appreciate the faculty for nurturing critical thinking and preparing students for emerging fields like AI, cyber security, and data science. May this magazine encourage every reader to use technology responsibly and continue striving for meaningful innovation.



Dr. MADHUKUMAR S

HOD'S REMARK

I am very happy to inform that our pride rests in the yearly magazine *Cognitio*, which highlights the academic and non-academic activities of the students of our department. Every semester showcases all the curricular and extra-curricular events of the department.

It is great to find a considerable number of articles, poems, and drawings that clearly show that our staff and students are well-equipped and possess the necessary skills to express their talent.

Reading this magazine will surely inspire and motivate all students to contribute even more in future editions. I hope everyone continues to give their full efforts to maintain the momentum and further enhance the standards of the magazine.



Dr. SANGEETHA SHIBU

MESSAGE FROM THE STAFF EDITOR



MS. BIJI BABU
Assistant Professor

Dear Students,

It is with great pleasure that I present this edition of **COGNITIO**, a magazine that reflects the creativity, talent, and thoughts of our students. Each page is a result of sincere effort, imagination, and a desire to express ideas meaningfully.

This issue brings together a variety of articles, stories, and creative works that inspire learning and encourage new perspectives. It stands as a reminder that young minds have the power to think, create, and make a difference. I extend my heartfelt thanks to all the contributors, editors, and teachers whose support and dedication made this publication possible. I hope this edition of **COGNITIO** inspires you and makes your reading experience truly enjoyable.

MESSAGE FROM THE STUDENT EDITOR



SNEHA PRASAD
S6 CSE

Dear Readers,

Welcome to this edition of **COGNITIO**, a platform that showcases the creativity and ideas of our students. Each page reflects their talent, effort, and passion for learning. I sincerely thank everyone who contributed to making this magazine a success. Your dedication has truly brought it to life.

Wishing you an inspiring and enjoyable reading experience.

Behind Our Magazine



AFSANA S
S6 CSE



NAJAH NAJM AHMED
S6 CSE



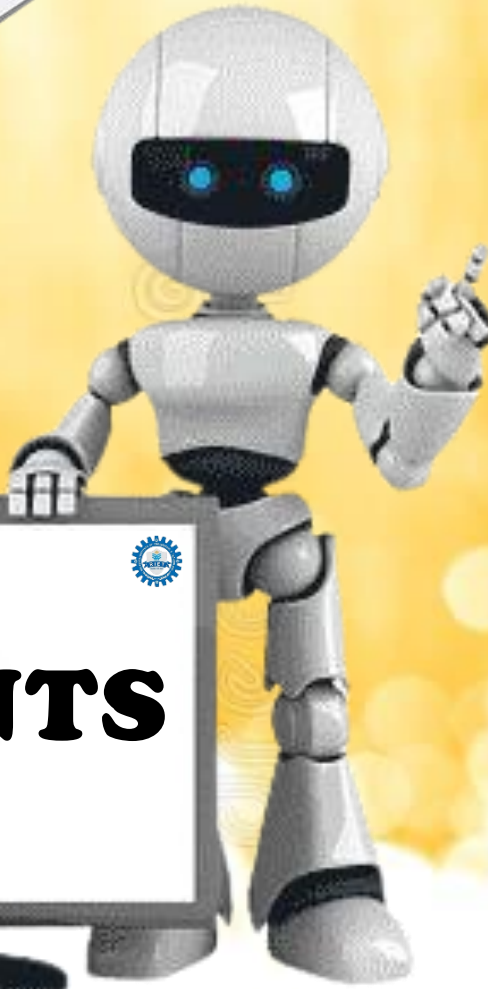
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S6 CSE



COGNITIO

STORIES IN SYNTAX

2024-25



HANDS-ON WORKSHOP ON DATA ANALYTICS

The rapid pace of technological advancements in today's digital era has led to an exponential surge in data generation. As a result, Data Analytics has emerged as a crucial tool for organizations to extract insights from data, make informed decisions, and drive business growth. In recognition of this trend, the IEEE SB RIET, in association with ITIHA 2K25, organized a hands-on workshop Session on Data Analytics on 13th February 2025.



The session began with a welcome by Meghna Jyothilal, Chairperson of IEEE SB RIET, who introduced the speaker, Vyasan J. The talk offered an engaging overview of Data Analytics, its importance in today's digital world, and its role in decision-making and innovation. Practical demonstrations helped participants understand real-world applications, while Vyasan J also discussed the growing career opportunities in this field.

The session concluded with a vote of thanks by Ayana Sasi B, Secretary of IEEE SB RIET, followed by the presentation of a memento to the speaker in appreciation of his valuable insights.

YIP ORIENTATION SESSION

Department of Computer Science and Engineering of Rajadhani Institute of Engineering and Technology (RIET) has organized the YIP Orientation Session. The orientation session was organized as part of the Youth Internship Program (YIP) to familiarize students with the program's



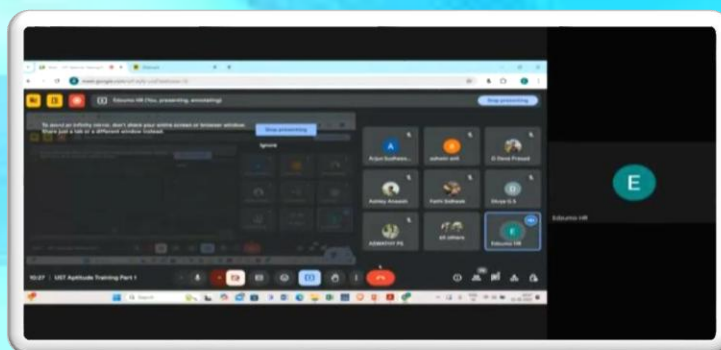
objectives, expectations, and opportunities. The session aimed to equip participants with the knowledge and tools needed to make the most of their internship experience. The primary objectives of the session were:

- To introduce students to the goals and structure of the YIP.
- To outline the roles and responsibilities of interns.
- To provide a platform for addressing student queries.
- To encourage active participation and goal setting.

The first session commenced at 9 am for second year students. The afternoon session was conducted for third year students. The session was handled by Amarnath A J, our alumni and YIP Ambassador. The orientation session successfully set the stage for a productive and impactful internship program. Students left with a clear understanding of their roles, a sense of excitement, and confidence in their ability to contribute meaningfully to the YIP.

ONLINE PLACEMENT TRAINING

The online placement training program was conducted on January 12, 2025, with the aim of enhancing students' aptitude, reasoning, and verbal skills required for placement opportunities. The training



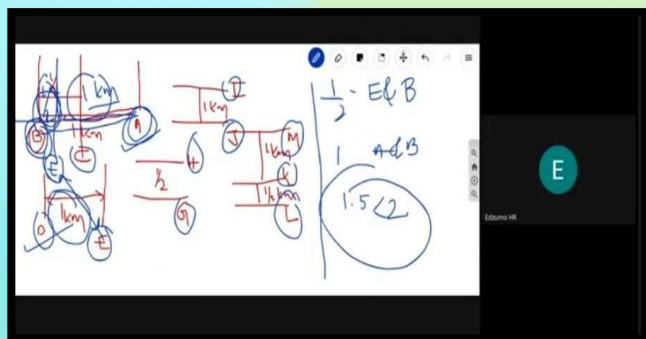
sessions were divided into three parts, each focusing on a crucial aspect of placement preparation.

PART 1: UST Aptitude Training

Time: 10:00 AM - 12:30 PM

Trainer: Mr. Jinu Jacob

The session commenced with an in-depth training on aptitude skills, covering key areas such as numerical ability, data interpretation, and logical problem-solving techniques. The trainer, Jinu Jacob, provided detailed explanations and conducted live problem-solving exercises to help students grasp the concepts effectively. Participants were engaged in practice questions and mock tests to enhance their speed and accuracy.



PART 3: UST Verbal Training

Time: 7:00 PM - 8:00 PM

Trainer: Dr. Jayaram

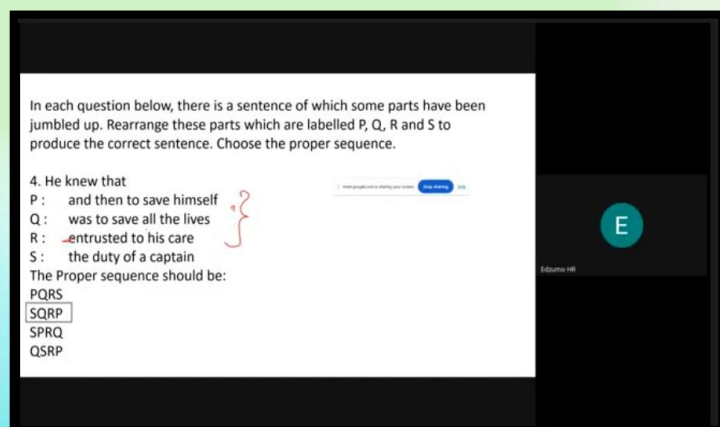
The final session of the day concentrated on verbal ability and communication skills. Dr. Jayaram conducted an engaging session covering grammar, vocabulary, reading comprehension, and verbal reasoning. The session aimed at improving students' proficiency in the English language, which is crucial for placement tests and interviews. Participants were provided with practice exercises, and common errors were discussed to refine their language skills.

PART 2: UST Reasoning Training

Time: 1:00 PM - 3:30 PM

Trainer: Ms. Nimisha

The second session focused on reasoning skills, essential for placement exams and interviews. Trainer Nimisha covered various reasoning topics, including analytical reasoning, logical puzzles, and critical thinking exercises. Interactive problem-solving activities were conducted to help students improve their logical reasoning abilities. The session also included real-time question-solving strategies to enhance students' confidence in tackling reasoning questions effectively.



WORKSHOP ON PYTHON FOR MACHINE LEARNING

A workshop on Python for Machine Learning was conducted on 27th March 2025 by the Department of CS-CY-AI in association with CSI and Verveox at SDPK-LAB.

The session offered a beginner-friendly approach to Python and machine learning concepts, providing hands-on project work and a step-by-step learning experience to enhance problem

solving skills with data. 63 students took part in the workshop and gained knowledge through it.

Ms. Arya A R delivered a thanking speech and thanked all the students and volunteers for making the workshop so successful and effective.



ANDROID DEVELOPMENT

A workshop titled "Android Development" was conducted on 6th March 2025 by the Department of CS-CY-AI in association with CSI at ASD LAB, exclusive to CSI members. The session was hosted by Adhinan (S8 CSE), who provided valuable insights into Android app development and mobile innovation.



INTRO TO RECONNAISSANCE



A workshop titled **"Intro to Reconnaissance"** was conducted on **5th March, 2025** by the Department of CS-CY-AI in association with CSI at ASD LAB, exclusive to CSI members. The HOD of Computer Science Department, Dr.Sangeetha Shibu inaugurated the Session with a brief about CSI club and its meaning . The session was hosted by Vishnu of S8 CY, who provided valuable insights into reconnaissance techniques used in cybersecurity. Vishnu covered topics such as footprinting, active and passive reconnaissance, Google Dorking, exploit databases, CVEs, Shodan, subdomains, WHOIS, the Harvester, Google Earth, and DIRB. He demonstrated how attackers and security professionals gather information using OSINT techniques.

Two competition challenges were conducted:

1. Social Media Reconnaissance – Finding publicly available information using OSINT. Winners of this Challenge: Daniel Isaac (S6,CY) & Irfan R.S (S6,CY)
2. Location Disclosure – Identifying a target's location using metadata and online clues. Winner of this Challenge: Prakhar Sharma (S4,CSE)

PLACEMENT TRAINING

A placement training program was conducted by **TALENTUS**, led by expert trainer **Mr. Roshan Roy Kattakayam**, to equip students with the necessary tools and competencies for successful campus placements. The primary aim was to develop **Knowledge, Skill, and Attitude** the core components required to thrive in any professional environment.



'BACK TO CAMPUS' ALUMNI TALK

The *Back to Campus* alumni interaction featured two distinguished guests: Mr. Ananthakrishnan (2016–2020) and Mr. Adityan (2019–2023). The session offered students valuable perspectives on startups, incubation, placements, and opportunities at the IDEA Lab.

Mr. Ananthakrishnan shared his entrepreneurial journey, explaining the importance of ideation, market research, funding, and perseverance. He highlighted how incubation centers support young innovators through mentorship and resources, encouraging students to actively engage with such programs.

Mr. Adityan provided insights into current placement trends, essential industry-ready skills, and the significance of internships and practical exposure. He also offered useful tips on resume building, interview preparation, and networking.

Both speakers emphasized the role of innovation and hands-on learning, showcasing how the IDEA Lab helps students develop prototypes and enhance technical creativity.

The event concluded with an interactive Q&A, where students discussed startup challenges, job trends, and interdisciplinary learning. The session proved highly enriching, motivating students to explore new opportunities and make the best use of institutional resources.





WORKSHOP ON NATURAL LANGUAGE PROCESSING (NLP)



The Department of Computer Science and Technology at Rajadhani Institute of Engineering and Technology (RIET), in association with FOSS RIET and ICFOSS, successfully conducted an Expert Workshop on Natural Language Processing (NLP) on March 10, 2025. This immersive session provided students and faculty with a deep dive into the world of AI-powered language technology and its real-world applications. The Guest Speakers and Resource Persons are Dr. Rajeev (Head of E-Governance & Training, ICFOSS), Ms Sneha T. G (Intern, ICFOSS), Mr Adithyakiran S (Intern, ICFOSS)



ETHICAL HACKING WORKSHOP BY ROOT x IEEE CS

The Ethical Hacking Workshop at RIET's SDPK Lab was conducted by Vervox Company in collaboration with RootRIET and IEEE Computer Society. The session introduced penetration testing, vulnerability assessment, and security practices, providing hands-on training to 60 students. Participants explored cyber security threats and ethical hacking strategies through interactive discussions and expert guidance. The practical approach

helped bridge theoretical knowledge with real-world applications, enhancing their cyber security skills. The event was a great success, equipping students with essential skills and



industry-relevant expertise.

The organizers extended their gratitude to Vervox Company and IEEE Computer Society for their valuable support in making the workshop impactful.



UNLOCKING LINUX



The Computer Science Department of Rajadhani Institute of Engineering and Technology (RIET), in collaboration with FOSS and Root RIET, conducted a workshop titled "Unlocking Linux: Getting Familiar with Terminal" on February 7, 2025.

The session introduced students to the Linux ecosystem, covering its history, key contributors, and essential commands, with a hands-on approach to using the Linux terminal. Students from first and second year CSE, along with participants from Rajadhani Polytechnic, actively engaged in the session, clearing their doubts and gaining practical insights. The workshop was mentored by Sangeeth Satheesh (S6 Cyber) and Devaprasad (S8 Cyber), whose guidance made the session highly informative.

As a token of appreciation, Lekshmi (Assistant Professor, CSE Department) honored Sangeeth Satheesh with a memento for his contribution. The event was a great success, sparking curiosity and enthusiasm among students to explore Linux further.

INAUGURATION FUNCTION OF ROOTRIET COMMUNITY



The RootRIET Community was inaugurated with great pride and excitement. The event was attended by distinguished guests from the Cyber Cell, including CI Suresh Kumar, SI Santosh Kumar, Cop Rishad, Mr. Vishnu V., and Vishnu R. The program featured a welcome speech, a promo launch by the Principal, and a website launch by Dr. Sangeetha Shibu, Head of the CSE Department. Guests delivered insightful talks on **“Emerging Threats in Cybersecurity and Real-Life Experiences,”** followed by an engaging Q&A session. The event concluded with a vote of thanks by the Deputy Lead of RootRIET and closing remarks by Mr. Jinu Raj, Assistant HoD of CSE. The inauguration was a successful and memorable start for the RootRIET Cyber Community.



CONNECTING TECHNOLOGY WITH HUMAN POTENTIAL

IEEE SB RIET, in association with ITIHA 2025 conducted a talk session on "AI and Beyond: Connecting Technology with Human Potential" on 13-02-2025. The purpose of this talk is to provide awareness to the students regarding the 'Machine Learning & Deep Learning', 'AI's futuristic applications'. It was attended by first year students and second year students. Manupriya (Treasurer of IEEE SB RIET) welcomed the gathering and gave the introduction of guest. Mr.Habeeb Muhammad P, Mr. Arun Kumar KV, Mrs.Archana Ajith enlightened the students about the transformative power of Artificial Intelligence (AI) in unlocking human potential, fostering personal growth, education, and creativity. It highlights the need for human- centric AI, ethics, and responsible innovation to ensure AI-driven solutions promote social good, equality, and human well-being.



PLACEMENT TRAINING

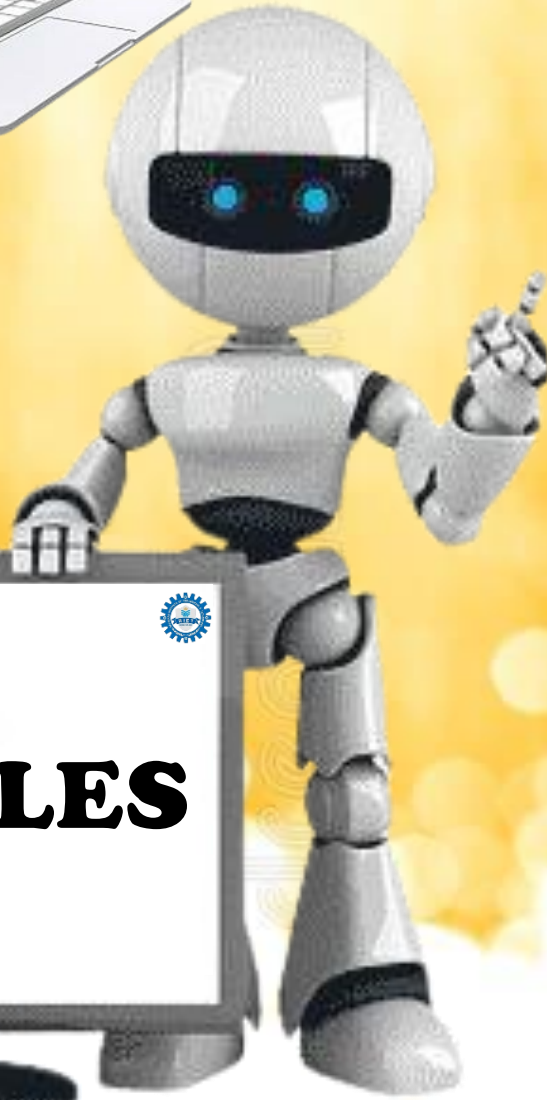
The Department of Computer Science, RIET, organized an insightful seminar on *Cyber Security & Ethical Hacking*. The session highlighted the rising importance of cyber awareness in today's digital world, with guidance from distinguished guests Dr. Sangeetha Shibu, Dr. Madhukumar S, and Dr. Shalij P R. A key attraction was Mr. Sreenath Gopinath, Director & Co-founder of Techbyheart, who introduced the *Cyber Smart* initiative—an impactful campaign promoting cyber hygiene and safe digital practices. His achievements, including the Kerala State Youth Icon Award and the Pride of Nation Award, added prestige to the event. The seminar also featured an engaging technical session by Mr. Dhanoop R, Cyber Security Analyst at Techbyheart, who discussed real-world cyber threats, ethical hacking concepts, and practical safety measures. Overall, the event successfully blended academic knowledge with industry expertise, inspiring students and staff to stay vigilant and informed in the digital space. It marked a valuable step toward fostering a cyber-secure campus culture.





COGNITIO

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EMERGING TRENDS IN AI



1. Generative AI

Generative AI refers to models that can create new content such as text, images, music, code, and even videos. Modern generative models learn patterns from massive datasets and can produce highly realistic outputs.

Impact:

- Automates creative tasks (design, writing, media production)
- Helps in software development through AI-assisted coding
- Enables content personalization at scale

Technologies like large language models (LLMs) and diffusion-based image generators are driving rapid innovation.

2. Multimodal AI

Multimodal AI systems can understand and process multiple types of data at once—such as text, images, audio, and video.

Why it matters:

- Makes interactions with AI more natural (e.g., describing an image and receiving analysis)
- Improves accuracy by combining information from different sources
- Enables advanced applications like autonomous vehicles, virtual assistants, and medical diagnostics

This trend moves AI closer to human-like perception.

3. Edge AI

Edge AI brings artificial intelligence onto local devices rather than relying on cloud servers.

Advantages:

- Faster processing with low latency
- Better privacy and security
- Works even without internet connectivity

Examples include smart cameras, IoT devices, drones, and mobile phones. This trend supports scalable, real-time AI deployment.

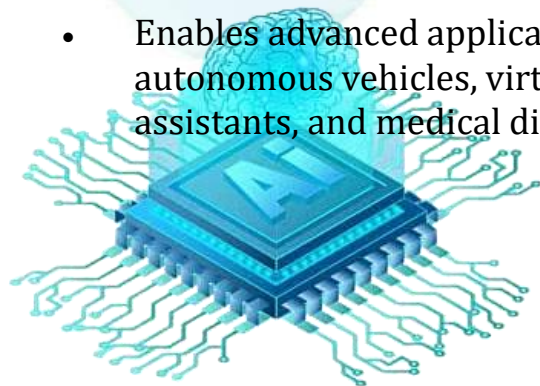
4. Explainable AI (XAI)

As AI becomes more widespread, understanding *how and why* AI makes decisions is increasingly important.

Key goals:

- Transparency in automated decisions
- Trust and accountability
- Compliance with regulations

XAI helps users identify biases, detect errors, and ensure fairness in fields like healthcare, finance, and law enforcement.



MACHINE LEARNING IN ARTIFICIAL INTELLIGENCE

Machine Learning (ML) is one of the most important and powerful components of Artificial Intelligence. It gives AI systems the ability to learn from data, improve from experience, and make decisions without being explicitly programmed. Without machine learning, modern AI as we know it today would not exist.

Machine learning transforms AI from a rule-based system into an intelligent system that can adapt, predict, and interact with the real world.

1. ML Helps AI Learn from Data

Traditional computer programs follow fixed rules.

But ML allows AI systems to:

- Analyze large amounts of data
- Identify patterns
- Learn from past experiences

For example, when you watch videos on YouTube or buy products on Amazon, ML algorithms learn your preferences to recommend better options.

2. ML Makes AI More Accurate and Smarter

The more data machine learning models receive, the better they become.

This improves the accuracy of AI applications like:

- Speech recognition (Siri, Google Assistant)
- Face recognition (phone unlock systems)
- Medical diagnosis
- Weather prediction

ML enables AI systems to handle complex tasks that humans alone cannot perform efficiently.

of machine learning.

AI systems can perform repetitive or time-consuming tasks such as:

- Sorting emails
- Detecting spam
- Recommending content
- Automated translation

By automating these tasks, ML helps save time, reduce human effort, and improve productivity.

4. ML Enables AI to Make Predictions

Predictive analytics is used in many fields, such as:

- Finance (stock market trends)
- Agriculture (crop prediction)
- Healthcare (disease risk prediction)
- Traffic forecasting

Machine learning models analyze past data to predict future outcomes, allowing businesses and governments to make informed decisions.

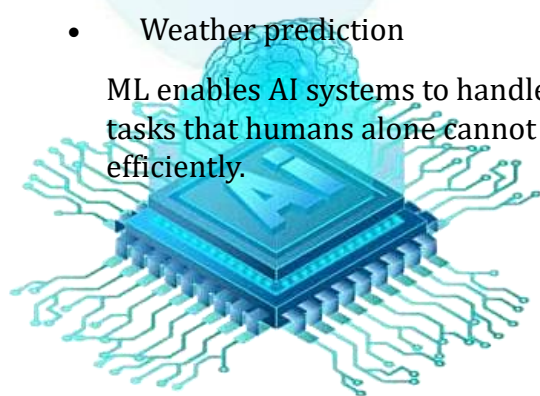
5. ML Improves Real-Time Decision Making

AI-powered systems like self-driving cars, robots, and virtual assistants need to make decisions instantly.

Machine learning makes this possible by allowing systems to:

- Process real-time data
- Recognize patterns
- Choose the best action immediately

For example, a self-driving car uses ML to identify obstacles, read road signs, and avoid accidents.



ROBOTS IN DAY-TO-DAY LIFE

Robots have become an important part of our daily routine, even if we don't always notice them. Once seen only in science-fiction movies, robots are now used in homes, offices, hospitals, shops, and many other places. These machines help make life easier, safer, and more efficient by performing tasks that are repetitive, difficult, or time-consuming for humans.

Robots at Home

Many households now use simple robots to complete everyday chores.

Examples include:

- **Robot vacuum cleaners** that clean floors automatically
- **Robot mops** that maintain cleanliness
- **Smart assistants** like Alexa or Google Home which respond to our voice commands
- **Automated kitchen robots** that help in cooking and food preparation

These devices save time and reduce effort, especially for busy families.

Robots in Healthcare

In hospitals, robots assist nurses and doctors in several ways:

- **Delivering medicines** to patient rooms
- **Helping in surgeries** with high precision
- **Monitoring patients** using smart sensors
- **Assisting disabled patients** with mobility and rehabilitation

Robotics makes healthcare safer, accurate, and more efficient.

Robots in Shopping and Services

Many shops, airports, and hotels use robots to improve customer service.

Help in ticket scanning and baggage handling at airports

- Display information
- Serve food in restaurants

These service robots work 24/7 without getting tired.

Robots in Office and Workplace

Robots are also used in industries and offices for:

- Packaging and sorting items
- Lifting heavy materials
- Assembling products
- Supervising dangerous environments
- Delivering office documents

By taking up repetitive or risky tasks, robots help humans focus on creative and important work.

Robots in Education

Robots make learning more interactive and fun.

Schools use educational robots to teach:

- Coding
- STEM concepts
- Problem-solving
- Robotics engineering basics

Children develop creativity and curiosity through hands-on robotic activities.

Robots in Transportation

Self-driving cars and delivery robots are becoming popular in many countries.

These robots can:

- Navigate traffic
- Deliver groceries and parcels
- Reduce accidents caused by human error

In the future, transportation may become fully automated.



IMPORTANCE OF ETHICS IN SOFTWARE DEVELOPMENT

Software today influences everything—from banking and healthcare to education, transportation, and social media. A small mistake, bias, or security flaw can affect millions of users. Ethical development ensures:

- Honesty and transparency
- Privacy and data protection
- Fairness and non-discrimination
- Safety and reliability
- Accountability for decisions and actions

Developers must consider not only what software *can* do, but also what it *should* do.

2. Privacy and Data Protection

Modern applications collect large amounts of personal data such as names, locations, payments, and search history. Ethical developers must:

- Collect only necessary data
- Keep data secure with encryption
- Inform users about how their data is used
- Follow laws like GDPR and IT Act
- Never sell or misuse personal information

Protecting user privacy builds trust and prevents harm.

3. Security and Safety

Poorly written or insecure software can be exploited by hackers, leading to financial loss, identity theft, or system failures. Ethical development requires:

- Writing secure code
- Regular testing and fixing vulnerabilities
- Avoiding shortcuts that compromise safety
- Protecting systems from unauthorized access

Security is not optional—it is a responsibility.

4. Avoiding Bias and Promoting Fairness

Many software systems use AI and algorithms to make decisions such as loan approval, job selection, or content recommendations. Unethical or biased algorithms can cause discrimination against groups or individuals. Developers must:

- Use unbiased and diverse datasets
- Test systems for fairness
- Avoid discrimination based on gender, race, religion, or background

Ethical design ensures equality.

5. Respect for Intellectual Property

Developers should respect copyrights, licenses, and patents. This includes:

- Avoiding piracy
- Following open-source licenses
- Giving credit to original creators

Respect for intellectual property maintains professionalism.

6. Professional Responsibility

Developers play an important role in society and must:

- Report unethical practices
- Maintain honesty in work
- Avoid harmful software such as malware

Ethical behavior protects users and upholds the reputation of the profession.

7. Social Responsibility

Software should benefit society, not harm it. Developers must consider:

- Impact on mental health (e.g., addictive apps)
- Accuracy of information

A VIRUS MORE DANGEROUS THAN AN ATOM BOMB

In the modern world, danger does not always come with loud explosions or visible destruction. Sometimes, the most powerful threats are silent and invisible. This idea became clear when comparing a deadly virus with an atom bomb—two forces that have shaped human history in very different ways.

An atom bomb is one of the most destructive weapons ever created. The devastating events of the Hiroshima bombing and Nagasaki bombing showed the world how a single explosion could wipe out entire cities within seconds. Buildings collapsed, thousands of lives were lost instantly, and survivors suffered from long-term radiation effects. The destruction was immediate, visible, and horrifying.

In contrast, a virus operates in silence. It cannot be seen with the naked eye, yet it has the power to spread across continents. The outbreak of COVID-19 demonstrated how a virus could bring the entire world to a standstill. Unlike an atom bomb, a virus does not destroy everything at once. Instead, it spreads gradually, affecting millions of people over time. It disrupts not only health but also economies, education systems, and social life.

What makes a virus even more dangerous is its ability to evolve and spread uncontrollably. While an atom bomb affects a specific location, a virus can cross borders without restriction. It creates fear, uncertainty, and long-lasting consequences that are difficult to predict or manage. Entire countries can be forced into lockdown, and normal life can be completely altered for months or even years.

Moreover, the psychological impact of a virus is far greater. People live in constant fear of infection, isolation becomes common, and the sense of normalcy disappears. In many ways, the damage caused by a virus is not just physical but also emotional and economic.

In conclusion, while an atom bomb represents sudden and massive destruction, a virus symbolizes slow and widespread devastation. Both are dangerous, but a virus proves that the greatest threats are not always explosive—they can also be quiet, persistent, and global. This comparison reminds us of the importance of preparedness, scientific advancement, and global cooperation to face such invisible enemies.

THE SOFTWARE BOOM: SHAPING THE MODERN WORLD

In the last few decades, the world has witnessed a powerful transformation known as the **software boom**. This rapid growth of software development has changed the way people live, work, communicate, and learn. From mobile apps to advanced artificial intelligence, software has become the backbone of modern society.

The journey of the software boom began with the rise of computers, but it truly accelerated with the growth of the internet and companies like Microsoft, Apple Inc., and Google. These organizations developed operating systems, applications, and platforms that made technology accessible to millions of people around the world.

One of the biggest impacts of the software boom is seen in communication. Today, people can connect instantly using apps like WhatsApp and Zoom, breaking geographical barriers. Education has also changed dramatically, with online learning platforms allowing students to study from anywhere.

The business world has been completely transformed as well. Companies now depend on software for managing data, analyzing trends, and improving customer experiences. The rise of e-commerce platforms has made shopping easier than ever before. Even small businesses can now reach global markets through digital tools.

Another important aspect of the software boom is the growth of emerging technologies such as artificial intelligence, cloud computing, and cybersecurity. These fields are creating new job opportunities and driving innovation across industries. Countries like India have become major hubs for software development, providing skilled professionals to the global market.

However, the software boom also brings challenges. Issues like data privacy, cyber threats, and digital addiction are becoming serious concerns. It is important to use technology responsibly and ensure that its benefits reach everyone equally.

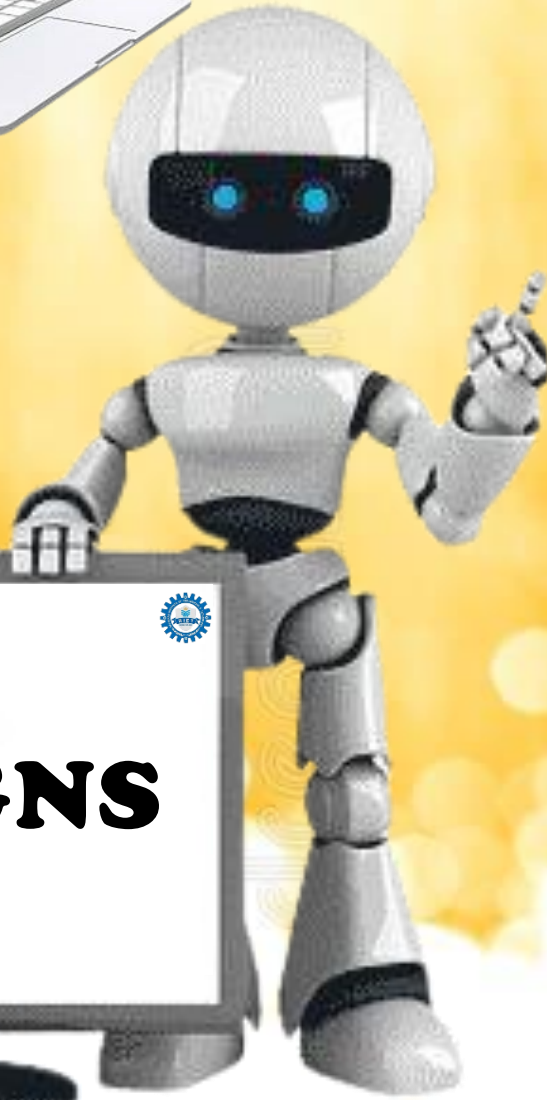
In conclusion, the software boom is not just about technology—it is about transformation. It has reshaped the world into a more connected, efficient, and innovative place. As technology continues to evolve, software will remain at the heart of human progress, guiding us into the future.



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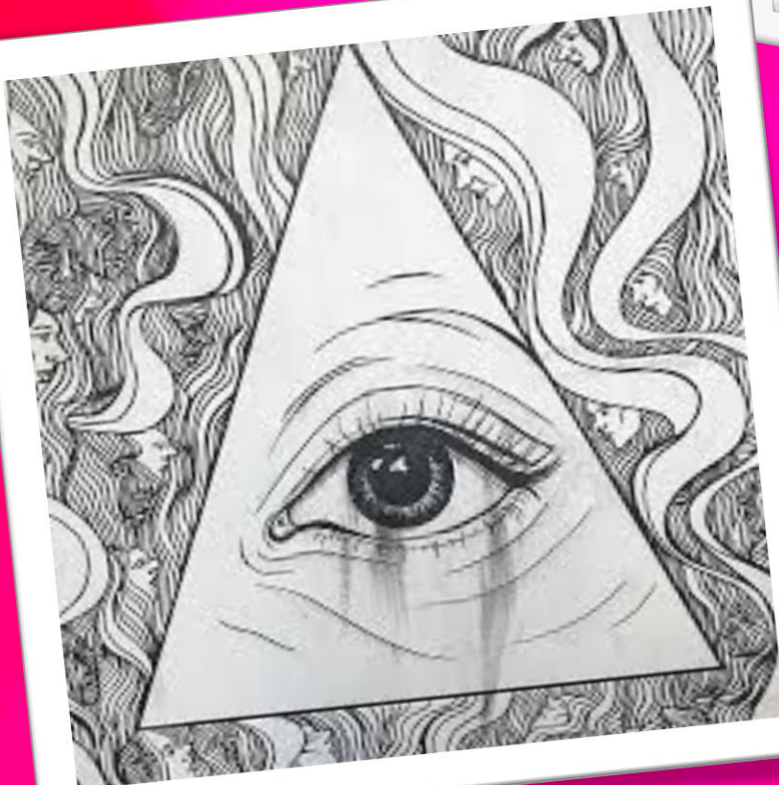


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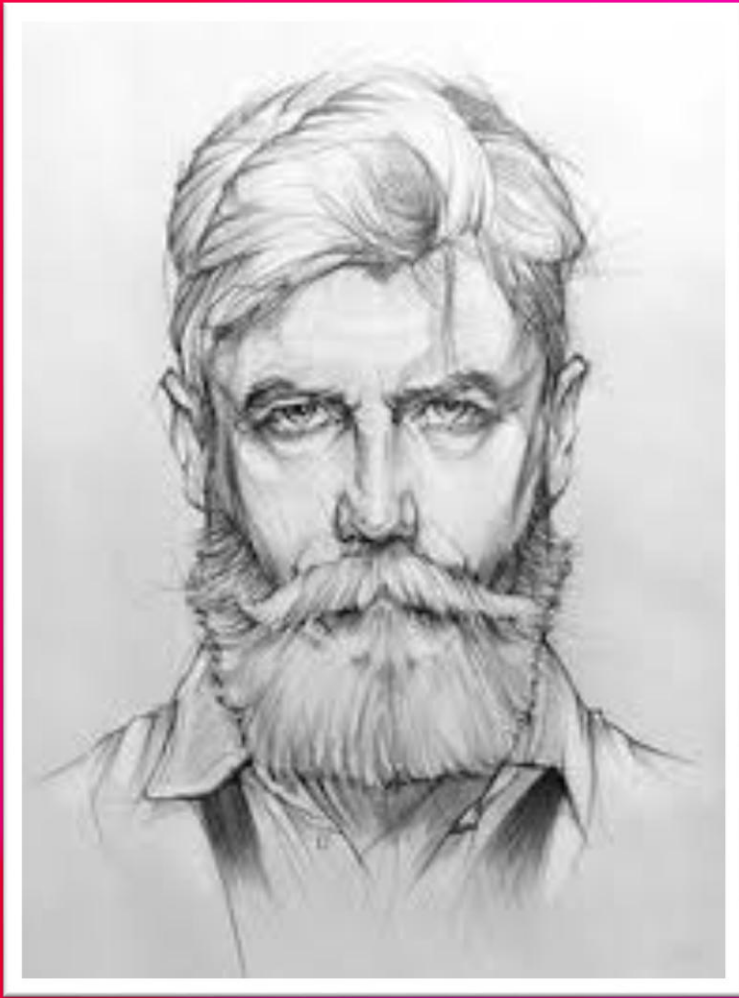


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SANU ABRAHAM - RIE22CS062



**MOHAMMED IRFAN
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THE LAST LETTER

Mira found the old envelope tucked between the pages of a forgotten diary. The ink was faded, but the message was clear: *“I’ll meet you at the lighthouse—sunset, always.”*

Curiosity tugged at her, so she walked to the abandoned lighthouse by the sea. The door creaked, and dust floated like ghosts in the sunbeams.

Inside, she found a wooden box. Inside it was a photograph of a young couple—her grandmother and a man Mira had never seen.

On the back: *“For the day she returns.”* Mira smiled, placing the letter beside it. Some stories, she thought, wait decades to be finished.



THE SILENT FREEDOM

In a small village in India during the time of British rule, lived a young boy named Ravi. Every morning, he watched British officers ride through the streets, their presence filling the villagers with fear.

Ravi's father was a school teacher who secretly spoke about freedom. "One day," he would say softly, "this land will be ours again."

One evening, Ravi noticed his father hiding some papers. Curious, he asked, "What are these?"

His father smiled gently, "These are words of freedom. They give people hope."

Days later, British soldiers came searching houses. Ravi's heart raced. Without hesitation, he took the papers and hid them inside his school books.

When the soldiers entered, they searched everywhere but ignored Ravi, thinking he was just a child. After they left, his father looked at him with pride.

"You were brave," he said.

Ravi replied quietly, "I was not brave... I just didn't want our hope to disappear."

Years later, as India gained independence, Ravi remembered that moment. He realized that freedom was not only won by great leaders, but also by small, silent acts of courage.

WHISPERS OF THE NIGHT

The sun has gone, the sky turns deep,
The world slows down, the silence speaks,
A silver moon begins to rise,
And paints soft dreams across the skies.

Oh beautiful night, calm and bright,
You shine with stars, a gentle light,
In your arms, all fears take flight,
I lose myself in the beauty of night.

The wind hums low, a secret tune,
Dancing shadows beneath the moon,
Every star a story untold,

Shimmering softly in shades of gold.

Oh beautiful night, calm and bright,
You shine with stars, a gentle light;
In your arms, all fears take flight,
I lose myself in the beauty of night.

No noise, no rush, just peace so true,

A quiet world, a fresher view,
In darkness, there's a hidden light,
A magic only found at night.

Oh beautiful night, hold me tight,
Wrap my dreams in silver light,
Forever stay within my sight,

My heart belongs to the silent night.

THE LITTLE WISH

In a quiet orphanage at the edge of the town lived a small boy named Manu. Every evening, while other children played, Manu would sit near the gate and watch people passing by. One day, the caretaker asked him gently, “Why do you sit here every day?”

Manu smiled softly and said, “I am waiting... maybe someone will come for me.”

Days turned into months, and months into years. Many children found families, but Manu stayed. Yet, he never lost hope. He would greet every visitor with a bright smile, even if they didn't notice him.

One rainy evening, a couple visited the orphanage. While other children tried to impress them, Manu quietly offered them his only treasure—a small handmade paper flower.

“This is for you,” he said. “So you can remember me... even if you don't take me.”

The couple was touched. They looked at each other, then knelt beside him.

“Would you like to come home with us?” they asked.

Manu's eyes filled with tears—not of sadness, but of joy.

For the first time, he didn't wait at the gate that evening...

because he finally had someone waiting for him at home.

A GIFT BEYOND MONEY

The soft morning light spread across the sky as the day of **Eid al-Fitr** arrived. After a long month of **Ramadan**, the air was filled with joy, prayers, and the sweet smell of delicious food.

In a small town lived a 10-year-old boy named Ayaan. This Eid was very special for him. His father, who worked far away, had finally come home after two years.

“Ayaan!” his father called with a warm smile.

Ayaan ran into his arms, his heart full of happiness. That morning, he wore his brand-new kurta, shining shoes, and a bright smile. After offering the Eid prayer with his father, he eagerly waited for his favorite part—**Eidi**.

His father handed him some money and said, “Use this wisely, my son.”

Ayaan’s eyes sparkled. He had already planned to buy a toy car he had been dreaming about for months.

As he walked through the busy street with his friends, laughter and excitement filled the air. Shops were decorated, children were playing, and families were sharing sweets.

But suddenly, something caught Ayaan’s attention.

Near the corner of the road, sitting quietly on the ground, was a boy about his age. His clothes were old and worn out. His eyes followed every happy child passing by, but he didn’t move.

Ayaan slowed down.

“Why is he sitting alone?” he thought.

His friends called out, “Come fast, Ayaan! Let’s go buy toys!”

But Ayaan couldn’t move. He kept looking at the boy.

After a moment, he walked towards him.

“Assalamu Alaikum,” Ayaan said softly.

The boy looked up, surprised. “Wa Alaikum Assalam,” he replied, his voice low.

“What’s your name?” Ayaan asked.

“Sameer,” he said.

“Why are you sitting here? Aren’t you celebrating Eid?”

A GIFT BEYOND MONEY

Sameer looked down. "I have no new clothes... no money... no food. My mother is sick. So... no Eid for me."

Those words hit Ayaan deeply.

He slowly opened his hand and looked at his Eidi. The toy car flashed in his mind... but so did Sameer's sad eyes.

There was silence for a few seconds.

Then Ayaan smiled.

"Come with me," he said.

Sameer hesitated. "Where?"

"To celebrate Eid."

Ayaan took him to a nearby shop and bought him a simple new dress.

Sameer couldn't believe it.

"For me?" he asked.

"Yes," Ayaan smiled. "Today, you are my friend."

Then they went home. Ayaan shared his food, sweets, and laughter with Sameer. His mother, seeing everything, had tears in her eyes—but they were tears of pride.

Later that evening, Ayaan's father asked,

"Did you buy your toy car?"

Ayaan shook his head and told him everything.

For a moment, his father was silent.

Then he placed his hand on Ayaan's head and said,

"My son, today you bought something much more valuable than a toy."

"What is it, Abba?" Ayaan asked.

His father smiled gently.

"You bought happiness for someone else... and that is the greatest gift of Eid."

That night, as Ayaan lay in bed, he didn't feel any regret.

Because in his heart, he knew—

this was the happiest Eid of his life. ❤️

THE STRENGTH OF GENTLENESS

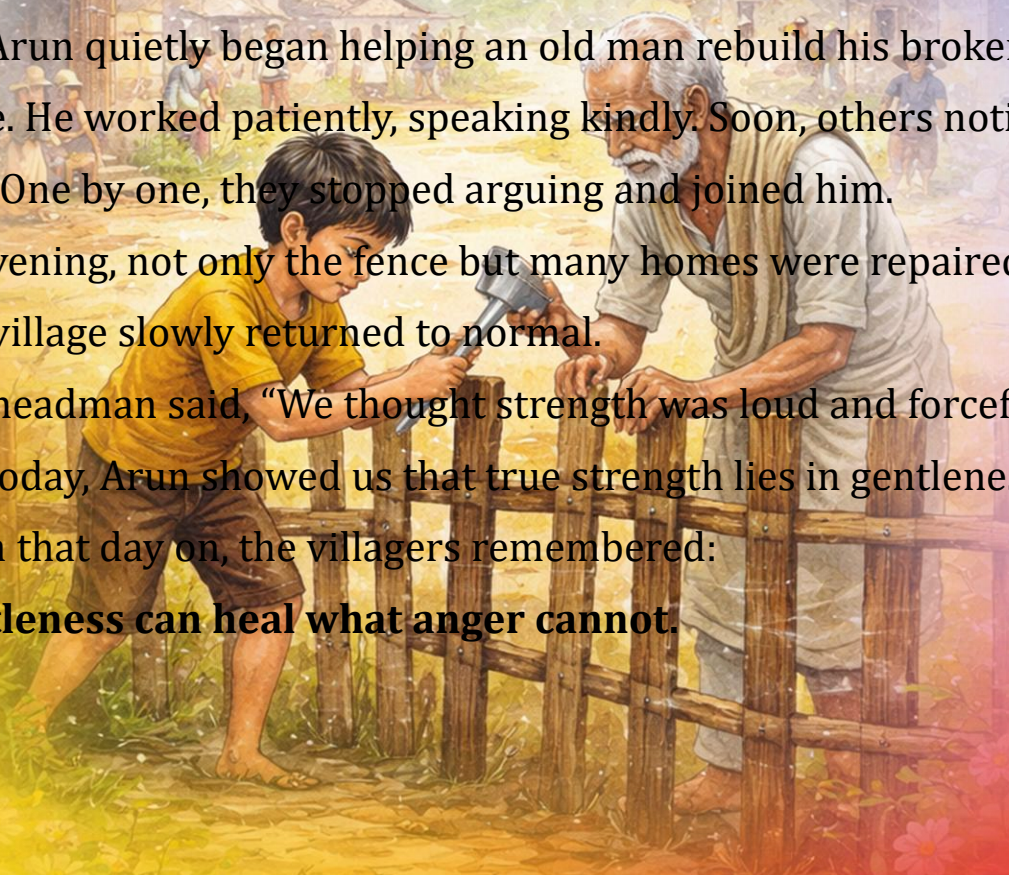
In a small village, there lived a young boy named Arun. He was known not for his strength, but for his kind and gentle nature. While other children shouted and fought, Arun spoke softly and helped everyone.

One day, a fierce storm hit the village. Trees fell, houses were damaged, and people were frightened. After the storm, everyone rushed to fix their homes quickly, arguing and blaming each other. But Arun quietly began helping an old man rebuild his broken fence. He worked patiently, speaking kindly. Soon, others noticed him. One by one, they stopped arguing and joined him.

By evening, not only the fence but many homes were repaired. The village slowly returned to normal.

The headman said, "We thought strength was loud and forceful. But today, Arun showed us that true strength lies in gentleness." From that day on, the villagers remembered:

Gentleness can heal what anger cannot.



THE BENCH BY THE RIVER

The Bench by the River

(Lengthy Short Story for Adults)

Every evening, after work, Aarya walked to the riverside. It wasn't on her way home, but it had become a quiet ritual—a small rebellion against the rush of her life. The riverbank had an old wooden bench facing the water. No one knew who placed it there, but everyone used it.

One evening, she found someone already sitting on the bench—a man in his late thirties, staring at the water as if waiting for it to speak.

"Do you mind?" Aarya asked.

He shifted slightly. "Plenty of room."

For weeks, they shared the bench without exchanging more than a polite nod. The silence between them was comfortable, like two strangers agreeing not to disturb each other's thoughts.

One chilly evening, he finally spoke.

"Strange thing about rivers," he said, eyes on the water. "No matter what happens, they keep moving."

Aarya smiled softly. "Wish I could do that." He glanced at her for the first time. "You're stuck?"

"Maybe," she admitted. "Life feels like a loop lately—work, home, sleep, repeat. Everyone my age seems to have things figured out. I'm just... drifting."

He laughed under his breath. "Trust me, no one has anything figured out."

There was something honest in his tone, something heavy.

Over time, they learned small pieces of each other. His name was Rayan. He was a graphic designer. He loved old music and hated phone calls. He visited the river because it reminded him of childhood summers he could never return to.

Aarya told him about her job, her anxieties, the way she felt her life shrinking into deadlines and bills. With him, the truth felt lighter.

One evening, she noticed a ring mark on his finger.

"You're married?" she asked softly.

"Separated," he said. "Eight months now. Still trying to adjust to the silence at home."

She didn't press further.

Their conversations grew deeper, sometimes playful, sometimes raw. They talked about fear, regret, hope—things people usually hide.

One day, Rayan didn't show up.

The next day, nothing.

A week passed. The bench felt painfully empty.

Then, one windy evening, Aarya found a small envelope resting on the bench. Inside was a short note in familiar handwriting: "*Thank you for giving a lonely man company when he needed it most. I'm leaving the city—trying to fix what can still be fixed.*"

I hope you keep going to the river.

Some places heal us quietly."

There was no goodbye, no return date.

Aarya sat down, the river whispering beside her. She let the wind carry the sadness away, piece by piece.

The bench was still warm with memory.

And somehow, she felt less stuck than before.

S.IBRAHIM
RIE22CS064



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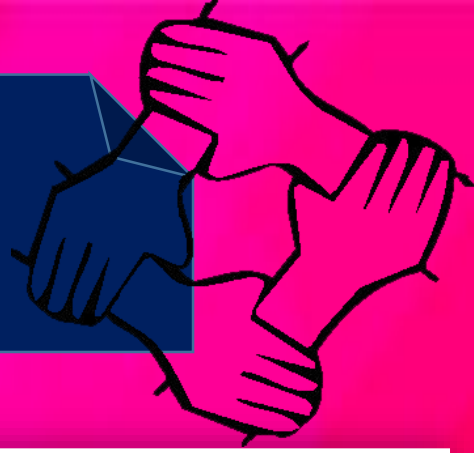


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