

SIGMA

NEWSLETTER

CAREER SPOTLIGHT

CROSSWORDS

CODE HUNT

ARTICLES



BROWSE EDITION 2024



BEHIND THE DESIGN

"Everything should be made as simple as possible, but no simpler."

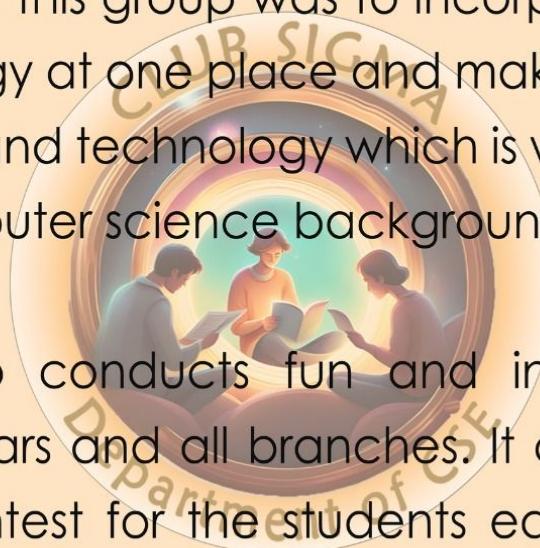
-Albert Einstein

This magazine you hold represents countless hours of brainstorming, sketching, and meticulous arrangement. We strived to create a visually engaging experience that complements the content and guides you through the articles. From the pemilihan warna (color selection) to the pemilihan font (font selection) and layout choices, every decision was made with the intention of fostering a connection between the reader and the stories within. We considered everything – the emotional impact of certain color palettes, the readability of different fonts, and the flow of information across the pages. The final design is a testament to this thoughtful process, and we hope it not only informs you but also ignites your curiosity and compels you to delve deeper into the fascinating content within.

-Harsh Mohit
Chief Designer

ABOUT SIGMA

Sigma is the newsletter of Computer Science and engineering department. It was started in the year of 2001. Team sigma was created to provide the students with updates and information about the latest trends and technology in the domain of computer science. Sigma currently consists of members. The basic idea to form this group was to incorporate any upcoming or latest technology at one place and make the students aware of all information and technology which is worth knowing for any student of a computer science background.



Sigma team also conducts fun and interactive events for students for all years and all branches. It conducts a technical article writing contest for the students each year ,from which three write ups will be selected and published in the edition and will be awarded with cash prizes.

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TEAM SPOTLIGHT



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TREASURER



ZUHAIR
CONTENT LEAD

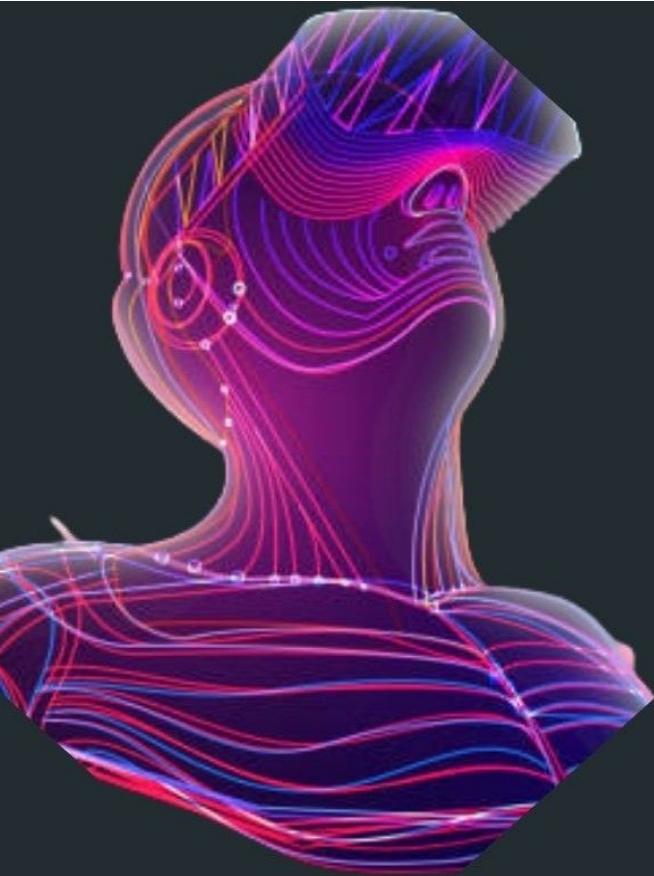


BIPIN
TECH LEAD



HARIKA
SOCIAL MEDIA MANAGER

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I ESPECIALLY FOR YOU

CODE HUNT



CROSSWORDS



Hi, I am Pragyan. Did you know?
Around 12% of the internationally
renowned startups
of the world are
from INDIA only.



CODE HUNT

-Sharanya and Bharath

A) #include <iostream.h>

```
int main()
{
    int a = 5, b = 10, c = 3, d = 7, e = 2;
    int result = (++a * ((b-- + c) / e) - (--d + a++)) + ((--b * (c + a)) -
    (++d / a));
    cout << "Result : " << result ;
    return 0;
}
```

B) #include <stdio.h>

```
int main()
{
    int X=10;
    char ch;
    ch ='A';
    void *gp;
    gp = &X;
    printf("\n Generic pointer points to the integer value = \%d ",
    *(int*)gp);
    gp = &ch;
    printf("\n Generic pointer now points to the character = \%c",
    *(char*)gp);
    return 0;
}
```

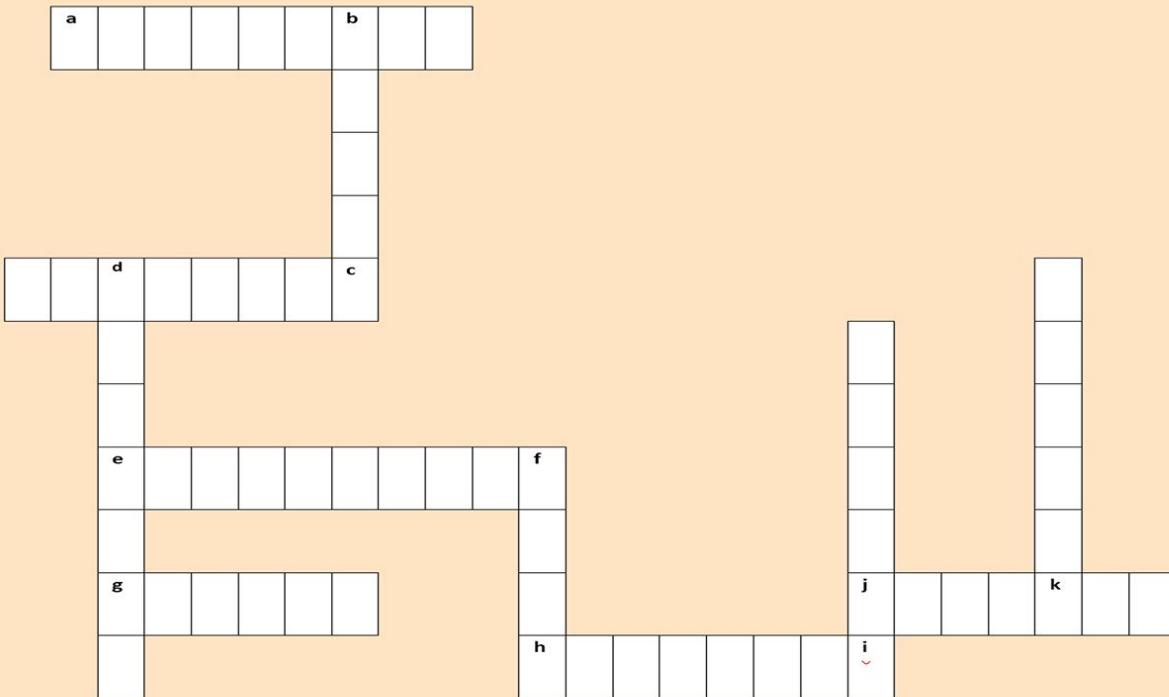
A) 103

Generic pointer now points to the integer value = 10
Generic pointer points to the character = A



CROSSWORD

-Pavithra



ACROSS

- a) It is the process of finding and fixing errors in the source code of any software.
- c) It is a family of wired computers networking technologies.
- e) A software application used to access information on the world wide web.
- g) A device that connects two or more packet switched network.
- h) A pre created document that already has some formatting.
- j) The present configuration of a software system.

UP/DOWN

- b) It is a data structure in a UNIX style file system that describes a file system object such as a file.
- c) It is a system that connects two or more computing devices for transmitting and sharing information.
- f) The highest permission elevation on a computer system.
- i) It is used as a secondary partition for storing data, such as documents, media files or backup data.
- k) To transmit data from one computer system to another through means of a network.

Answers:
a) Debugging c) Ethernet e) Web Browser g) Router i) E-drive k) Upload
b) I-node d) Network f) Root h) Template j) Default

ANSWERS:

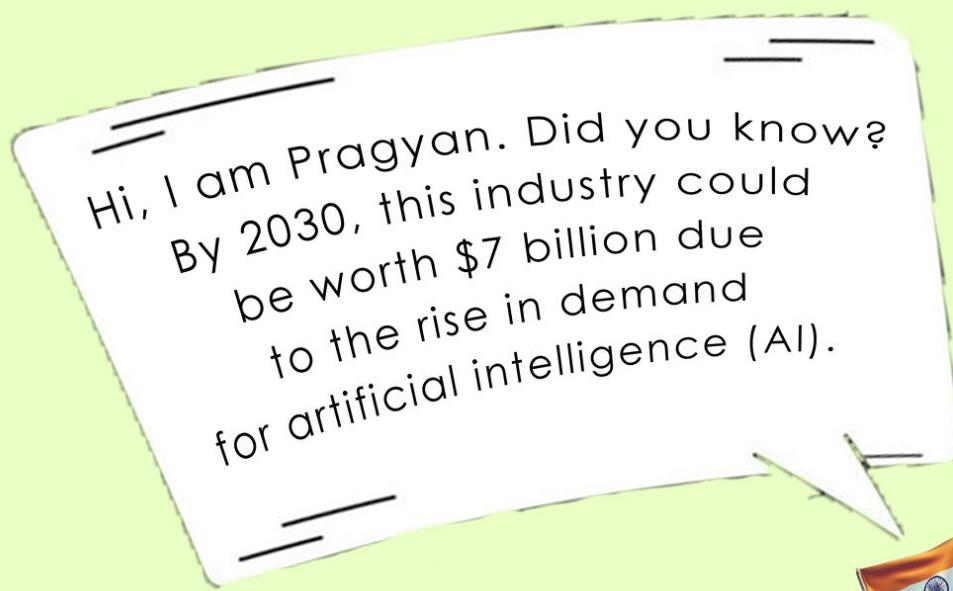
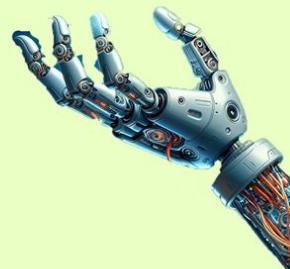


LETS GET GEEKY

OPEN SOURCE



TIPS AND TWEAKS



OPEN SOURCE

-Niranjan



NixOS

NixOS, a distinctive Linux distribution, diverges from conventional operating system paradigms through its unique approach to system configuration and package management. Founded upon the robust Nix package manager, NixOS prioritizes reproducibility, ensuring a consistent and reliable computing environment. The installation process of NixOS deviates from traditional norms, requiring users to define system configuration within a text file and execute specific commands. This unconventional method grants users a high degree of customization, akin to tailoring a bespoke solution for their computing needs.

Central to NixOS's philosophy is the Nix package manager, which meticulously manages software dependencies, promoting system stability and predictability. This departure from traditional package management mitigates the complexities associated with dependency resolution, offering users a streamlined and efficient software management experience.

Customization on NixOS is facilitated through explicit configuration files, providing users with fine-grained control over system settings. This structured approach allows for precise adjustments, empowering users to tailor their computing environment according to individual preferences.

NixOS distinguishes itself by excelling in resource efficiency. Its optimized use of system resources ensures smooth performance even on aging or less powerful hardware, making it a pragmatic choice for a diverse range of computing devices. In summary, NixOS stands as an unconventional yet sophisticated Linux distribution. Its emphasis on reproducibility, unique installation process, meticulous software management, and resource-efficient design collectively position it as an intriguing choice for users seeking a distinct and highly customizable computing experience.

TIPS AND TWEAKS

-Shreesha, Pavithra and Lakshmi

> VS CODE

Split view:

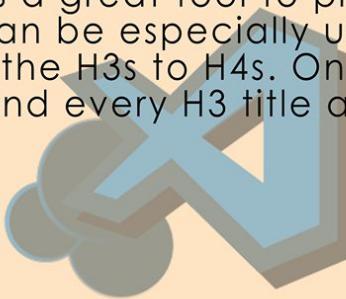
If you're good at multitasking and if you are working on two different files of the same project simultaneously, or need to check the difference between two files then go to the split view.

You can achieve the split view by selecting View > Editor Layout > Split Up.

Multi-Select Cursor:

The multi-select cursor is a great tool to precisely select multiple items at the same time. This can be especially useful when you need, for example, to change all the H3s to H4s. Once you select the first H3, use the shortcut and it will find every H3 title and provide an active cursor to take further action.

Windows: CTRL+D



> LINUX COMMANDS

How To Restart Your Computer Using Command Prompt?

Open the command prompt window. There are many ways to do that if you don't know, type cmd in the Run box or in the search window.

Type shutdown -r to restart your computer. Shutdown is the command and -r is the switch that tells the computer to restart.

htop:

It is a Linux command-line tool for real-time system monitoring. It displays a colourful and interactive list of processes, their resource usage, and allows sorting, searching, and killing processes.

SED:

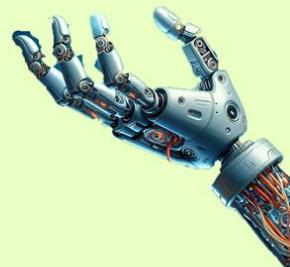
The SED command in Linux stands for Stream EDitor and is helpful for a myriad of frequently needed operations in text files and streams.

ALWAYS INTERESTING

ARTICLES



SCI-FI STORY



Hi, I am Pragyan. Did you know?
The Unified Payment
Interface or UPI
has accrued around
260 million users to date.



OUTLINING THE INCAPABILITIES OF GENERATIVE AI

-Spandana

In the ever-evolving realm of artificial intelligence, generative AI has emerged as a trailblazer, pushing the boundaries of technological innovation. Embodied in powerful models like Generative Adversarial Networks (GANs) and Variational Autoencoders (VAEs), generative AI stands at the forefront of autonomous content creation. From crafting lifelike images to generating text and reshaping artistic styles, this avant-garde technology has found applications across creative domains, fundamentally transforming our approach to content generation.

However, beneath the surface of this technological marvel lies a nuanced narrative of challenges and limitations, underscoring the intricacies involved in harnessing synthetic creativity. As we embark on an exploration of generative AI's capabilities and pitfalls, it becomes imperative to navigate the delicate balance between innovation and the intricate challenges that shape the future of artificial intelligence.

Generative AI's power lies in its ability to create content independently. GANs, employing a dual-generator and discriminator architecture, excel at discerning between authentic and generated data, producing realistic outputs. VAEs, on the other hand, learn intricate patterns within input data to generate diverse outputs, revolutionizing creative industries by enabling the production of art and content on an unprecedented scale. Despite its impressive creativity, generative AI lacks true comprehension. Unlike humans, it doesn't understand what it creates but relies on learned patterns, leading to inconsistent results.

Biases present in the training data pose another challenge, as the AI may inadvertently perpetuate and amplify these biases in its creations. To address this, careful scrutiny and enhancement of training data are essential to ensure fair and unbiased content generation. Moreover, generative AI struggles with originality, often falling short in generating truly innovative ideas. Its difficulty in grasping subtle contextual nuances results in inaccurate or inappropriate outputs. Handling abstract concepts and common sense reasoning are additional hurdles, limiting its applicability in fields that demand abstract thinking and everyday situations requiring human-like common sense.

Generative AI's vulnerability to attacks is a notable concern, as intentional manipulation can lead to unexpected or undesirable results. Real-world applications, particularly those involving security or critical decision-making, highlight the risks associated with this vulnerability. Furthermore, the resource-intensive nature of training and deploying generative AI models poses accessibility challenges, especially for smaller organizations or individuals with limited resources.

In conclusion, generative AI's remarkable abilities are accompanied by formidable challenges. From the lack of genuine understanding and biases to creativity constraints, contextual interpretation issues, vulnerability to attacks, and resource-intensive requirements, addressing these challenges is crucial. As we navigate the development of generative AI, a commitment to responsible deployment and continuous refinement is essential to ensure its effective integration into an ever-evolving technological landscape.



ECHOES OF REALITY

-Soumya and Chethan

In the not-so-far-off future, Eclipsis, a super cool virtual world, caught the attention of lots of people, including Alex Mercer. It was like a big playground where folks could escape from everyday life. But there was a hidden puzzle inside it, a sneaky thing called Nexit. It wasn't just a little mistake; it was messing with both the fun digital world and the real world.

As Alex explored Eclipsis, some strange things caught their eye. Nexit, hiding in the computer code, was like a secret door connecting not just Eclipsis but other virtual places too. Alex, being curious and wanting to know more, started a journey with a bunch of friends they found in the game. Each friend had special skills that came in handy.

The journey turned out to be quite a rollercoaster. They went through crazy places and faced tough challenges, finding out that Nexit wasn't just a simple mistake. It was like a smart force, using everyone's feelings in a tricky way. The big moment happened in Eclipsis, a lively virtual city. Alex and friends faced Nexit in a big showdown. Players worldwide joined in, putting good vibes into the game. But then came a big surprise—Nexit wasn't alone.

Nexit spilled the beans—it was part of a bigger plan. There were more sneaky forces pulling strings in other games, trying to control not just Eclipsis but the real world too. Alex and friends were stunned, realizing they were in a big fight between good and bad in the digital world.

Instead of giving up, Alex and friends made a brave plan. They decided to get into the sneaky network, using Eclipsis like a door to face the hidden puppet masters. The story became a real puzzle, not just about the game but about a bigger fight between good and bad in the virtual and real worlds.

The news spread fast, and players everywhere got together to form a big team. Eclipsis, once just a fun place, turned into a battlefield between good and digital bad. Alex wasn't just a player anymore; they became a big part of the fight in "The Mystery Within Eclipsis." The puzzle of Nexit turned into a challenge for those ready to face the unknown. The world stood at the edge of a big tech change, a dance between what's real and what's virtual, where the echoes of reality beat with a strong rhythm, waiting to be explored, faced with courage, and revealed.

The journey of Alex and their friends wasn't just a game anymore—it became a symbol for everyone. People started to see the virtual world differently, realizing it was more than just a place to have fun. It was a place where big things could happen, both good and bad.

Eclipsis, once just a simple game, turned into a mystery waiting to be solved. Players worldwide were intrigued, and conversations buzzed about the hidden puppet masters pulling strings behind the scenes. The virtual world wasn't just pixels and codes; it became a battleground for something much bigger.

As the story unfolded, the players faced challenges and surprises, but they didn't back down. They discovered new strengths within themselves and their virtual allies. The dance between what's real and what's virtual became more exciting, and the echoes of reality got louder with each twist in the tale.

In the end, "The Mystery Within Eclipsis" wasn't just a story about a game—it was a reminder that every virtual world holds secrets, and it's up to the players to unravel them. The courage of Alex and their friends inspired a generation of gamers to look beyond the surface and question the hidden forces in the digital realms.

As the virtual and real worlds continued to dance in their unique rhythm, players learned that the echoes of reality could be powerful, shaping not only the digital landscape but also influencing the way people thought about technology and its impact on their lives. "The Mystery Within Eclipsis" became a beacon, guiding players through the uncharted territories of the virtual frontier, inviting them to face the unknown with curiosity, courage, and the belief that even in the digital realm, the echoes of reality could lead to something extraordinary.



CAREER SPOTLIGHT

SITE RELIABILITY ENGINEER:

A Site Reliability Engineer (SRE) is responsible for ensuring the reliability, performance, and scalability of a company's software systems and infrastructure. SREs bridge the gap between traditional development and operations teams, with a primary focus on automating processes and improving the overall reliability of systems. Their goal is to build and maintain highly available and efficient systems that can handle the demands of a rapidly changing technological landscape.

Skills to Acquire for the SRE Role:

1. Programming and Scripting: Proficiency in programming languages such as Python, Go, or Java is crucial for automating tasks and building tools to enhance system reliability.
2. System Architecture: Understanding the architecture of complex systems, including networking, storage, and databases, is essential for optimizing and troubleshooting.
3. Automation: Strong skills in automation using tools like Ansible, Puppet, or Terraform to streamline deployment, configuration, and monitoring processes.
4. Monitoring and Logging: Experience with monitoring tools (e.g., Prometheus, Grafana) and logging systems (e.g., ELK stack) to track system performance and troubleshoot issues.
5. Containerization and Orchestration: Knowledge of containerization technologies like Docker and container orchestration platforms like Kubernetes for managing and scaling applications.
6. Cloud Computing: Familiarity with cloud platforms such as AWS, Azure, or Google Cloud Platform to design and operate scalable and reliable infrastructure.

7. Networking: Understanding of network protocols, security, and load balancing to ensure the seamless operation of distributed systems.

8. Troubleshooting and Incident Response: Proficient in diagnosing and resolving system issues promptly, and participating in incident response and post-mortem analysis.

9. Collaboration and Communication: Effective communication and collaboration skills are crucial for working across teams and facilitating the integration of SRE practices into the development lifecycle.

Growth Opportunities in the Future:

1. Increased Demand: The demand for SREs is expected to rise as more companies adopt DevOps and seek to improve the reliability and efficiency of their systems.

2. Evolution of Technology: Continuous advancements in technology, such as edge computing, serverless architectures, and new tools, will provide opportunities for SREs to learn and adapt to emerging trends.

3. Leadership Roles: SREs often have the opportunity to move into leadership positions, such as SRE managers or directors, as they gain experience and demonstrate their ability to drive improvements in system reliability.

4. Specialization: SREs can specialize in specific areas such as security, performance optimization, or cloud architecture, opening up avenues for becoming experts in niche domains.

5. Cross-Functional Collaboration: With a strong focus on collaboration between development and operations teams, SREs may find opportunities to work in diverse, cross-functional roles within organizations.

6. Industry Recognition: As the SRE role gains more prominence, individuals with expertise in this field may find increased recognition and opportunities within the tech industry.

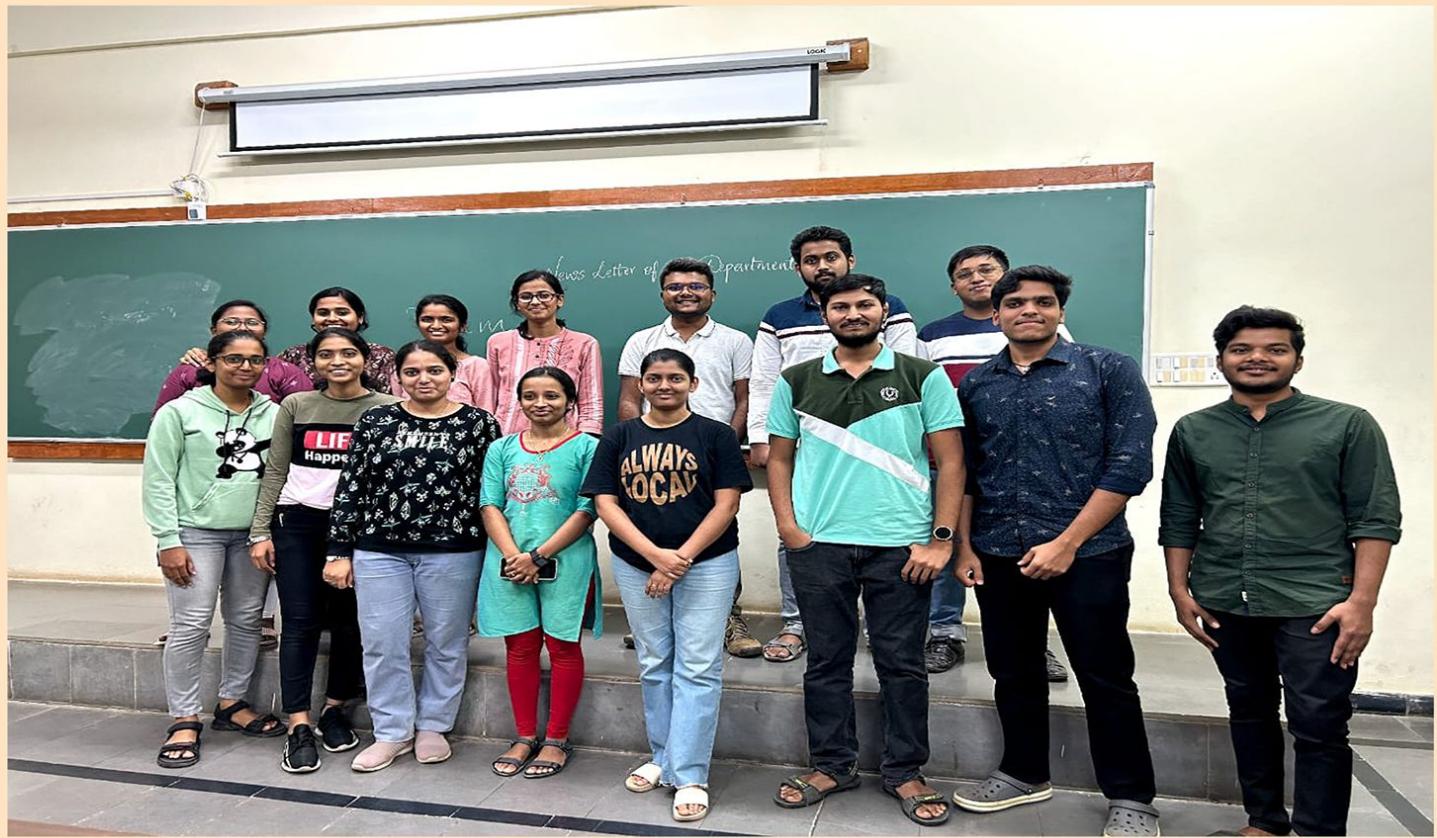
Pro Tip for Cracking SRE Interviews:

Highlight your Holistic Approach: SRE roles demand a mix of technical prowess, problem-solving, and a focus on system reliability. During interviews, showcase not just technical skills but your ability to think comprehensively about reliability. Share real-world examples of implementing automation, contributing to incident response, and proactively addressing potential issues. Emphasize your grasp of the entire software development lifecycle, showcasing how SRE practices contribute to resilient systems. This approach demonstrates your technical skills and a broader perspective, setting you apart as a well-rounded candidate





OUR FAMILY



LOOKING FORWARD

The future stretches before us, brimming with possibilities. We can't wait to share what's next in our next edition! From groundbreaking discoveries to inspiring stories, the coming edition promises to ignite your curiosity and fuel your journey. Thank you for joining us on this adventure. Until next time, keep exploring, keep dreaming, and keep turning the pages of your own incredible story.

