DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING (CYBER SECURITY)

AUGUST 2023-DECEMBER 2023

VISION

Excellence and leadership in the educational, professional and research fields of cybersecurity at the global level. A commitment to effectively meet the needs of the society.

MISSION

- Collaborate with innovators to provide real-world, standards-based cybersecurity capabilities that address business needs.
- Prepare the professionals in both academic and industrial settings capable of solving real-world cybersecurity threats.
- Inculcate the students in designing and developing various projects in different areas of cybersecurity, by providing a distinguished and high-quality education.

PROGRAM EDUCATION OBJECTIVES (PEOs)

Graduates of Computer Science and Engineering Program (Cyber Security) will be able to

- **PEO I:** Students will acquire the knowledge, skills and the attitude necessary for the analysis of Cybersecurity.
- **PEO II:** Students will apply the cutting-edge latest technology within a professional, legal and ethical framework and will operate effectively in a multidisciplinary stream.
- **PEO III:** Students will practice continued, self-learning to keep their knowledge and skills up to date and to remain abreast of the latest developments in cybersecurity.

PROGRAM OUTCOMES

- **Engineering Knowledge:** Apply knowledge of mathematics, science, engineering fundamentals and an engineering specialization to the solution of complex engineering problems.
- **Problem Analysis:** Identify, formulate, research literature and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences.
- **Design/ Development of Solutions:** Design solutions for complex engineering problems and design system components or processes that meet specified needs with appropriate consideration for public health and safety, cultural, societal and environmental considerations.
- **Conduct investigations** of complex problems using research-based knowledge and research methods including design of experiments, analysis and interpretation of data and synthesis of information to provide valid conclusions.
- **Modern Tool Usage:** Create, select and apply appropriate techniques, resources and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations
- **The Engineer and Society:** Apply reasoning informed by contextual knowledge to assess societal,

health, safety, legal and cultural issues and the consequent responsibilities relevant to professional engineering practice.

- **Environment and Sustainability:** Understand the impact of professional engineering solutions in societal and environmental contexts and demonstrate knowledge of and need for sustainable development.
- **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of engineering practice.
- **Individual and Team Work:** Function effectively as an individual, and as a member or leader in diverse teams and in multi-disciplinary settings.
- **Communication:** Communicate effectively on complex engineering activities with the engineering community and with society at large, such as being able to comprehend and write effective reports and design documentation, make effective presentations and give and receive clear instructions.
- **Project Management and Finance:** Demonstrate knowledge and understanding of engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
- **Life-long Learning:** Recognize the need for and have the preparation and ability to Engage in independent and life- long learning in the broadest context of technological Change.

PROGRAM SPECIFIC OUTCOMES

- To understand, analyze, design, and develop computing solutions by applying algorithms, web design, database management, networking & cyber security.
- To develop cyber security skills including network defense, ethical hacking, penetration testing, application security and cryptography to provide real time solution
- To apply standard tools, practices and strategies in cyber security for successful career and entrepreneurship.

DEPARTMENT
ACTIVITIES

AUGUST 2023 – DECEMBER 2023

DEPARTMENT ACTIVITIES

- The Department of Computer Science and Engineering (Cyber Security) had the privilege of organizing a **Field visit** to the prestigious **IIT Madras Research Park** on 02.09.2023.

- The Department of Computer Science and Engineering (Cyber Security) organized a **Two Days Session on Problem Solving and Ideation Workshop – Diving into Application Security** on 29.09.2023 & 30.09.2023 delivered by **Mr. Udhaya Prakash C, Product Security Engineer, Zomato.**

- The Department of Computer Science and Engineering (Cyber Security) hosted an insightful **One Day Workshop** on **Cyber Security and Ethical Hacking** on 13.10.2023

featuring a keynote presentation by **Mr. Vinod Senthil T, Founder of infySEC, digiALERT, and Harry Productions.**

- On account of the celebration of National Education Day, on 09.11.2023, the Department of Computer Science and Engineering(Cyber Security), hosted an electrifying **"Pitch Your Ideas"** event for the aspiring minds of CSE Cyber Security students.
- The Department of Computer Science and Engineering (Cyber Security) orchestrated an illuminating **seminar** titled **"Innovative Applications of Linux in Cyber Security Explored: Industry Perspectives on Hacking Techniques"** on 10.11.2023 in hybrid mode delivered by **Mr.Ramkumar Nadar,Information Security Consultant, qSEAP Infotech,Navi Mumbai**.
- The Department of Computer Science and Engineering (Cyber Security) inaugurated the **OWASP Student Association** with the presence of **Mr.Ramkumar Nadar,Information Security Concultant, qSEAP Infotech,Navi Mumbai** on 10.11.2023.

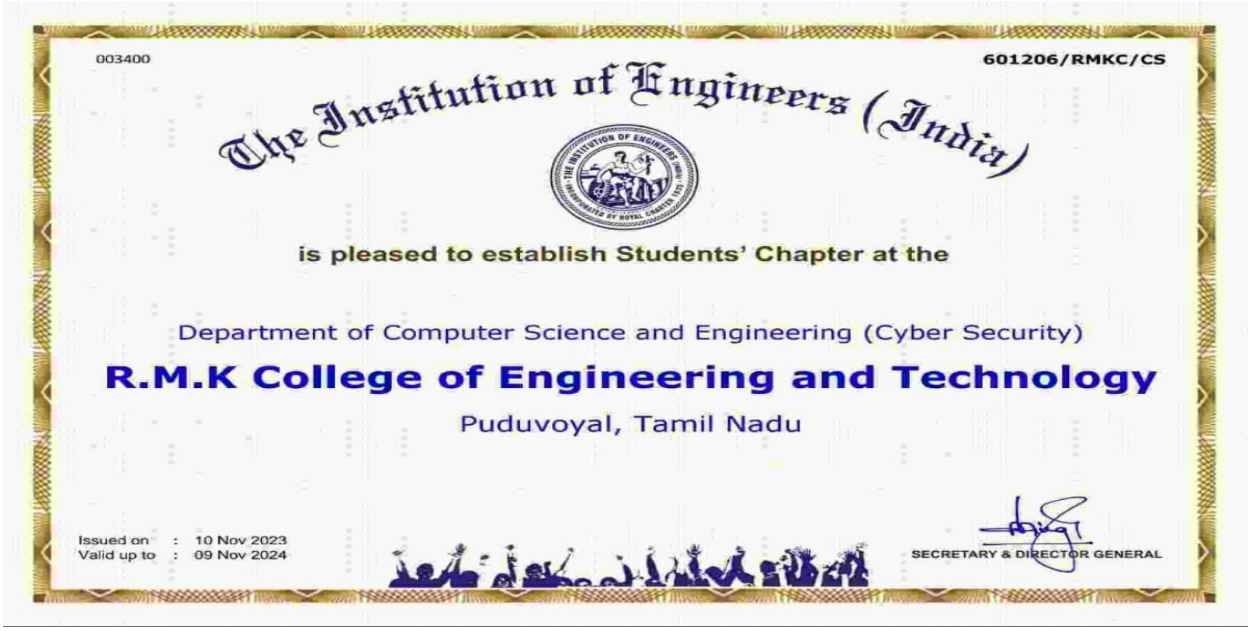
DEPARTMENT ASSOCIATION ACTIVITIES

- The Department of Computer Science and Engineering (Cyber Security) inaugurated the **Student Association** on 12.10.2023 having **Mr.Balaji Muthukumarasamy, Director, Hubstream**, as a distinguished expert in the field of Cyber Security.

- The Department of Computer Science and Engineering (Cyber Security) organized a club activity titled "**Tech Vortex", A Paper Presentation event** as a part of the **"Cyber Oratory Oasis Club"** on 07.10.2023.
- The Department of Computer Science and Engineering (Cyber Security) organized a club activity titled "**Cyber Code Poltergeists", Coding Contest** as a part of **Hack-a Holic Club** on 06.10.2023.

INSTITUTION OF ENGINEERS

The Department of Computer Science and Engineering (Cyber Security) established the **Students' Chapter in Association with Institution of Engineers (IE) at R.M.K College of Engineering and Technology**



OWASP(OPEN WEB APPLICATION SECURITY PROJECT) CYBER SECURITY CHAPTER

RMK College of Engineering and Technology, Department Of Computer Science and Engineering (Cyber Security) proudly established its **OWASP Cybersecurity chapter** in October 2023.

OWASP
RMKCET

PLACEMENT & TRAINING ACTIVITIES

- **Aptitude Training Programme** is conducted for 2022-2026 batch by M/S SMART Training resources at R.M.K College of Engineering and Technology from August 16 to 18- 2023
- **Aptitude Training Programme** is conducted for 2022-2026 batch by M/S SMART Training resources at R.M.K College of Engineering and Technology from August 20 to 22 to 25-2023
- **Aptitude Training Programme** is conducted for 2022-2026 batch by M/S SMART Training resources at R.M.K College of Engineering and Technology from September 20 to 23- 2023
- **Aptitude Training Programme** is conducted for 2022-2026 batch by M/S SMART Training resources at R.M.K College of Engineering and Technology from October 04 to 06 - 2023
- **Aptitude Training Programme** is conducted for 2022-2026 batch by M/S SMART Training resources at R.M.K College of Engineering and Technology on October 21- 2023
- **Aptitude Training Programme** is conducted for 2022-2026 batch by M/S SMART Training resources at R.M.K College of Engineering and Technology on November 02-2023.
- **AMCAT-L1 Assessment** was conducted for 2022-2026 students on 06.11.23, 07.11.23 and 08.11.23
- **Entrepreneurship Development Workshop** was conducted by M/S FACE for 2022-2026 batch students on 28.08.2023 and 29.08.2023
- **Orientation on LitQ and Psychometric tests** for 2022-2026 batch was conducted on 07.09.2023
- **Personality Development-Path Finding Workshop** by M/S Jade Training Resources for 2022-2026 batch students was conducted on 16.10.2023

CENTRE OF EXCELLENCE (CYBER SECURITY) ACTIVITIES

- Cyber Security Centre of Excellence organized a Guest Lecture on **"Importance of Cyber Security in IT sector"** on 12.10.2023 delivered by **Mr.Balaji Muthukumarasamy, Director Hubstream India**

STAFF PUBLICATIONS

INTERNATIONAL JOURNALS / CONFERENCES

- **Dr.S.M.Udhaya Sankar** published a paper "Hybrid Grey PIPRECIA and Grey OCRA method-based dynamic multi-criteria decision-making model for mitigating non-cooperating node attacks in WSNs" in Peer to Peer Networking and Applications, Springer during September 2023(SCIE).
- **M.Karthikeyan** published a paper "Artificial Intelligence in Human Resource Management: Advancements, Implications and Future Prospects" in International Journal on Recent and Innovation Trends in Computing and Communication during October 2023(SCOPUS)
- **Dr.S.M.Udhaya Sankar** published a paper "Leveraging Semi-Supervised Graph Learning for Enhanced Diabetic Retinopathy Detection" in International Journal of Electronics and Communication Engineering during November 2023(SCOPUS).
- **Dr.S.M.Udhaya Sankar** published a paper "Levarging Blockchain for Transparency in Agriculture Supply Chain Management Using IoT and Machine Learning" in IEEE Digital Xplore during October 2023(SCOPUS)
- **Dr.S.M.Udhaya Sankar** published a paper "Optimized Retrieval of Data from Cloud using Hybridization of Bellstra Algorithm" in IEEE Digital Xplore during October 2023(SCOPUS)
- **Dr.S.M.Udhaya Sankar** published a paper "A Neural Radiance Field-Based Architecture for Intelligent Multilayered View Synthesis" in IEEE Digital Xplore during October 2023(SCOPUS)
- **Dr.S.M.Udhaya Sankar** published a paper "A Research on Metaverse and its Application" in IEEE Digital Xplore during October 2023(SCOPUS)
- **M.Karthikeyan** published a paper "Artificial Intelligence on Mobile Multimedia Networks for Call Admission Control Systems" in IEEE Digital Xplore during October 2023(SCOPUS)
- **M.Karthikeyan** published a paper "IOT and Sensor Based Technique to Track and Monitor the Work of the Street Sweepers" in IEEE Digital Xplore during October 2023(SCOPUS)
- **M.Karthikeyan** published a paper "Intelligent Caching Strategies for 5G Edge Networks

using Machine Learning" in IEEE Digital Xplore during October 2023(SCOPUS)

- **Dr.S.M.Udhaya Sankar** published a paper "IoT Based Automated Irrigation System for Agricultural Activities " in IEEE Digital Xplore during November 2023(SCOPUS)

GRANTS RECEIVED

- **Dr. S.M. Udhaya Sankar and Dr. Dharini N** received a Financial Grant of **Rs.100000** from **DST-SERB** for conducting a Two Days National Level Seminar on **"Contemporary Research Issues in Security Evolution for Adapting to Future Challenges in Cybersecurity"** to be held on 09.02.2024 and 10.02.2024

STAFF ACTIVITIES

WORKSHOPS/SEMINARS/FDTPS

- **Dr.S.M.Udhaya Sankar** attended a one week workshop on "Outcome based Curriculum and Accreditation Criteria" at NITTTR, Chandigarh during 03.07.2023- 07.07.2023
- **Dr.S.M.Udhaya Sankar** attended an online webinar on "ChatGPT: A Teaching and Learning Tool" at NITTTR, Chennai on 04.09.2023

ONLINE COURSES

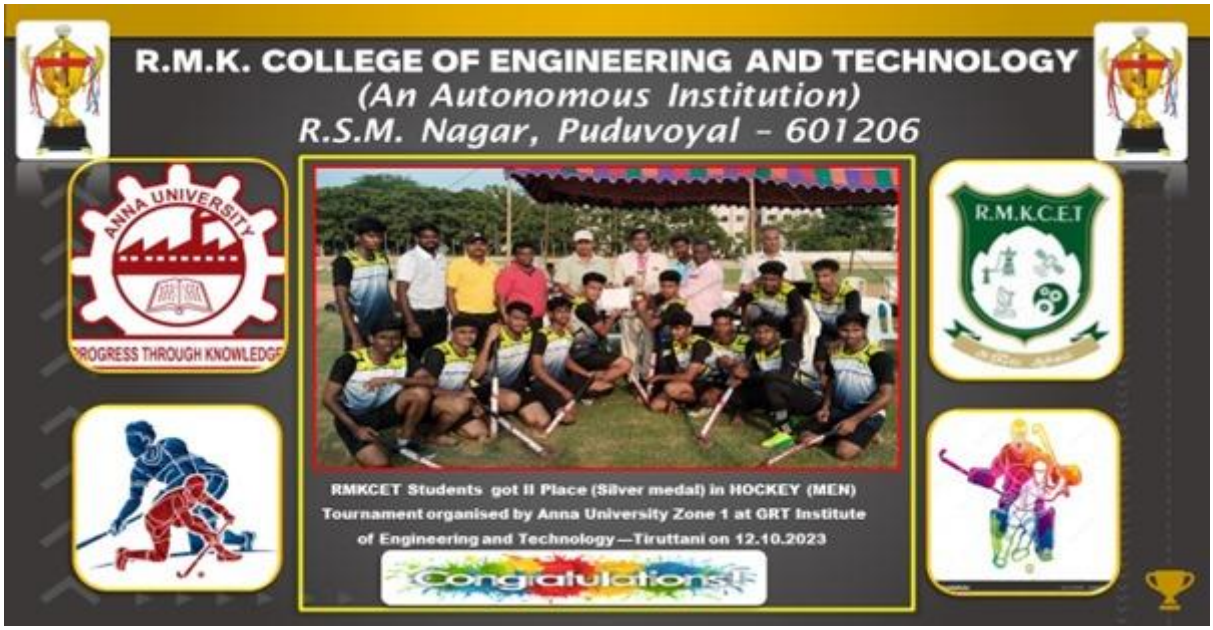
- **Mr. Karthikeyan M** completed a course on "Python 101: Develop Your First Python Program" in Coursera on 02.10.2023.
- **Mr.Karthikeyan M** completed a course on "Amazon Echo Reviews Sentiment Analysis Using NLP" in Coursera on 02.10.2023
- **Mr.Karthikeyan M** completed a course on "Introduction to Java Programming: Java Fundamental Concepts" in Coursera on 17.07.2023
- **Dr.Dharini N** completed a course on "Google Ads for Beginners" in Coursera on 30.12.2023
- **Dr.Dharini N** completed a course on "Create a Lead Generation Messenger Chatbot using Chatfuel" in Coursera on 30.12.2023
- **Dr.Dharini N** completed a course on "Business Analysis & Process Management" in Coursera on 30.12.2023
- **Dr.Dharini N** completed a course on "Build a free website with WordPress" in Coursera on 30.12.2023

REVIEWER OF JOURNALS/CONFERENCES

- **Dr.S.M.Udhaya Sankar** acted as IEEE Conference Session Chair at International Conference on Intelligent Computing and Control for Engineering and Business Systems", Sri Sairam Engineering College.
- **Dr.S.M.Udhaya Sankar** acted as "IEEE Conference Reviewer at 12th International Conference on Advanced Computing", MIT Campus, Anna University.
- **Dr.S.M.Udhaya Sankar** acted as reviewer in the "Journal of Intelligent and fuzzy system.
- **Dr.Dharini N** is the member of the Section Editor Team of "Journal of Toxicology".
- **Dr.Dharini N** is the editorial board member in the American Journal of Computer Science and Technology.

STUDENT ACTIVITIES

SPORTS



Gokul N, Shailesh Balaji K, Dhanush Kodi A of II year CSE-Cyber Security won Silver Medal in Hockey (MEN)Tournament by Anna University Zone at GRT Institute of Engineering and Technology.

PAPER PRESENTATIONS

- **Kalaiyarasan G, Murali V, Madhu Karthick A** presented a paper on "Self replenishing Battery" in the National Level Technical Symposium conducted by the Department of Computer Science and Engineering held at SIMATS Engineering on 23rd Aug 2023.

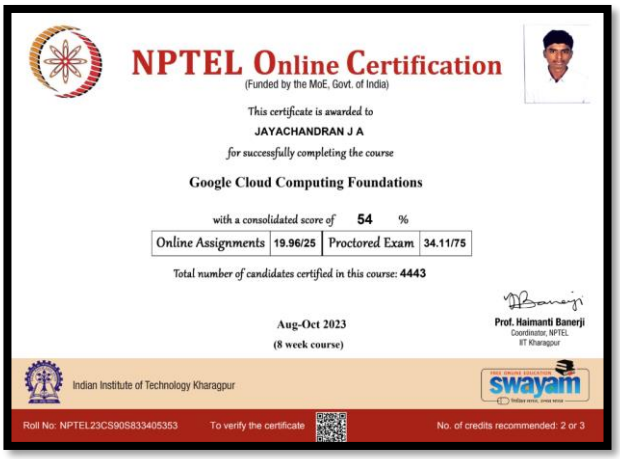
- **Aswanth Babu N, Mohamed Mustafa A, Sibi K** presented a paper titled "The performance of Smart Agriculture using IoT and Big Data Analysis" in the National Level Technical Symposium conducted by the Department of Computer Science and Engineering held at SIMATS Engineering on 23rd Aug 2023.
- **Triumbika.M, Madhuvanthi.M** presented a paper titled "Advancement in Audiology" in the National Level Technical Symposium conducted by the Department of Computer Science and Engineering at Chennai Institute of technology on 19th September 2023.
- **Triumbika.M, Madhuvanthi.M** presented a paper titled "ADVANCING AUDIOLOGY: MOBILE AUDIOMETRY APP FOR COMPREHENSIVE HEARING EVALUATIONS" in the Second National Level Symposium on Recent Trends in Electrical, Information & Technology, Electronics & Communication and Computers organized by IETE Chennai Centre during 21, September 2023.
- **Thirugnanam D,E P Vishnu Sudarsan , Praveen B** presented a paper on "Phishing detection using VI/ML algorithm" in the Vidyutrenz Symposium conducted by the Department of Electronics and communication Engineering held at CIT Engineering college on 21st September 2023
- **Dharshin SK, Atifa A, Jothisha K** presented a paper on "Spherical Camouflaging Robot for Detecting Alive Humans in Warfields And Natural Disaster Affected Zones conducted by the Department of Computer Science and Engineering held at Eswari Engineering College on 3rd of September 2023.

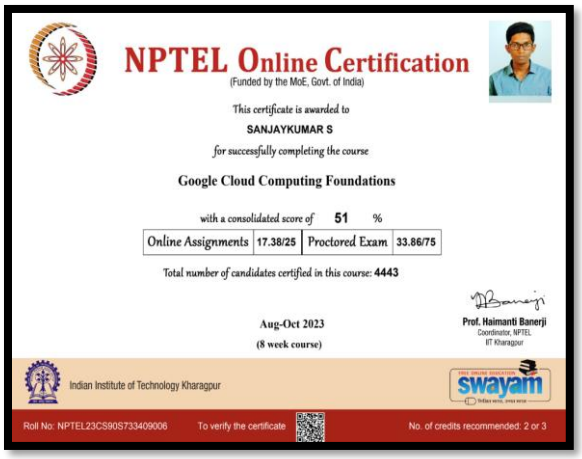
WORKSHOPS

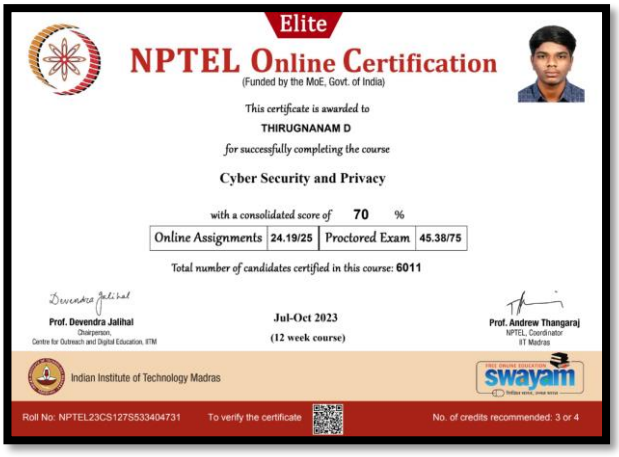
- **Triumbika M ,Madhuvanthi M** attended a workshop on "BLOCKCHAIN" in the Hackerz-National level Symposium conducted by the Department of Computer science and Engineering held at CIT Engineering college on 19th September 2023
- **Triumbika M ,Madhuvanthi M , R M Kalandhi** attended a workshop on "Web Development" conducted by Top Engineers held at IIT Madras Resarch Park on 27th August 2023
- **Thirugnanam D,E P Vishnu Sudarsan , Praveen B** attended a workshop on "Network security" in the vidyutrenz Symposium conducted by the Department of Electronics and communication Engineering held at CIT Engineering college on 21st September 2023
- **E P Vishnu Sudarsan , Kalaiarasan G, Shyam Sundar, Murali V** attended a workshop " in the vidyutrenz Symposium conducted by the Department of Computer science and Engineering held at CIT Engineering college on 19th September 2023
- **K.Shailesh Balaji , E P Vishnu Sudarsan** attended workshop on "Web Development" conducted by Top Engineers held at IIT Madras Resarch Park on 27th August 2023

STUDENT ONLINE COURSES

- **Murali. V** II year CSE (CS) Successfully Completed NPTEL course on Google Cloud Computing during the month of **Aug-Oct 2023**
- **Thirugnanam. D,** II year CSE (CS) Successfully Completed NPTEL course on Cyber Security and Privacy during the month of **Jul- Oct 2023**
- **Jayachandran. J. A,** II year CSE (CS) Successfully Completed NPTEL course on Google Cloud during the month of **Aug-Oct 2023**
- **Sanjay Kumar. S,** II year CSE (CS) Successfully Completed NPTEL course on Google Cloud Computing during the month of **Aug-Oct 2023**
- **Madhu Karthick.A** II year CSE (CS) Successfully Completed NPTEL course on Programming, Data Structures And Algorithms Using Python during the month of **Jul-Sep 2023**
- **Pravin. S,** II year CSE (CS) Successfully Completed UDEMY course on Could Computing Essentials on **Aug 19 2023**
- **Lakshya. R,** II year CSE (CS) Successfully Completed UDEMY course on Cloud Computing Essentials on **Aug 20 2023**
- **Madhuvanthi. M,** II year CSE (CS) **Successfully** Completed UDEMY course on Web Flow Essentials Course on **Oct 17 2023**







Revolutionizing Online Authentication: The Power of Zero-Knowledge Proofs

Have you ever wondered whether you can access your favourite websites without passwords?? What if we say that there is a way in which you can access online websites without passwords!! In this scenario Zero-Knowledge Proof comes into for us to ponder with.

By hearing the word you may be wondering what Zero-knowledge proof is? It is basically enable one party to convince another party that they possess specific information without disclosing the details of that information itself. Interesting right! Let us take an example for say, there is a secret code which on entering a hidden door opens and you want to prove to your friend that you know the code without actually mentioning it. For him to believe that you know the code, you open the door several times before him without actually telling the code to him.

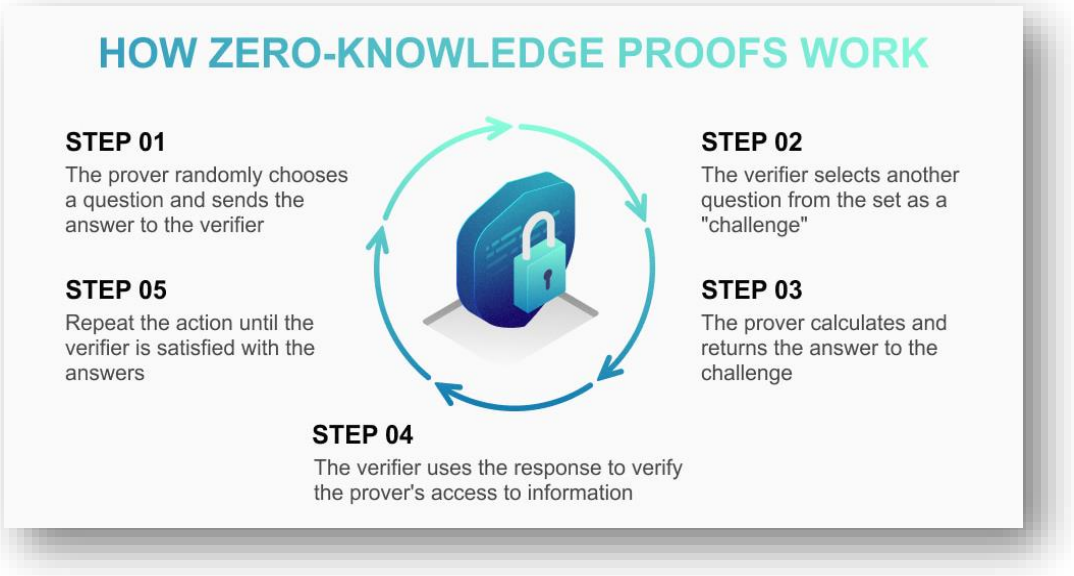
In a nutshell, Zero-Knowledge Proof lets you prove that you know something (like a secret code) without actually revealing the thing itself. It's like showing off a magic trick without revealing how it's done. In Zero – knowledge Proof there are four components involved. Prover, Verifier, Statement, Proof. Let us take the latter case for example

Prover: The person who knows the secret code and wants to prove to the verifier that they know it without revealing the code itself. In the analogy, you are the prover.

Verifier: The person who wants to be convinced that the prover knows the secret code without actually learning what the code is. In the analogy, your friend is the verifier.

Statement: The claim being made, which in this case is that the prover knows the secret code to open the door.

Proof: The evidence provided by the prover to convince the verifier that the statement is true, without revealing the secret code. In the analogy, the act of consistently opening the door without revealing the code serves as the proof.



Zero-Knowledge Proofs (ZKPs) have diverse applications across various domains, including cybersecurity, privacy-preserving technologies, and decentralised systems. In cybersecurity, ZKPs can enhance authentication protocols by allowing users to prove their identity without revealing sensitive information such as passwords or cryptographic keys. In privacy-preserving technologies, ZKPs enable anonymous transactions in digital currencies like cryptocurrencies, ensuring the confidentiality of financial transactions while maintaining integrity and authenticity. Additionally, ZKPs play a crucial role in decentralised systems such as blockchain networks, enabling trust less interactions and verifiable computations without revealing private data.

With the power of Zero-Knowledge Proofs (ZKPs), online websites can revolutionise user authentication without relying on traditional passwords. Instead of storing sensitive password information, users can engage in ZKP protocols to prove their identities securely. Through this approach, users demonstrate possession of specific credentials or knowledge without disclosing the actual password itself.

By leveraging ZKPs, websites can enhance security by eliminating the risks associated with password breaches and unauthorised access. Users can authenticate themselves with confidence, knowing that their privacy and sensitive information remain protected. With ZKPs, we can pave a way for a password-free future where security and convenience go hand in hand, redefining the paradigm of online authentication.

Prepared by,
Prashanth.C.M.
II Year, CSE(Cyber Security)

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