Sandip Foundation's

Sandip Institute of Engineering and Management, Nasik

DEPARTMENT OF COMPUTER ENGINEERING

Presents

E-Insights

Volume 2 Issue 2 2020-21

About SIEM

Sandip Institute of Engineering and Management (SIEM) is located in the scenic, eco-friendly and conductive-to-study campus at an elevation off the Trimbak Road (Mahiravani, Nasik) leading to one of the twelve renowned pilgrimages of jyotirlingas known as Trimbakeshwar (abode of Lord Shiva) at the foot hills of Brahmagiri mountain ranges. SIEM is approved by All India Council for Technical Education, New Delhi Government of India and affiliated to Savitribai Phule University of Pune. SIEM is committed to imparting quality education in an atmosphere that will ensure that its students are confident, self motivated and industry-ready. Towards this goal, we are giving importance to qualified and experienced faculty for effective teaching-learning process, equipping our laboratories with best-in-class machines and instrument and developing overall personality of our students (with emphasis on strengthening the fundamentals of subjects, ability to work as a team and good communication skill). There is a well formulated regime with a blend of theoretical learning and practical experience. This enables the faculty to guide the students to learn tomorrow, today.

Sandip Foundation's

Sandip Institute of Engineering and Management, Nasik.

Department of Computer Engineering

January, 2021 **E-Insights** **Volume 2: Issue 2**

About Department

Computer Engineering

The Department of Computer Engineering sustains and strengthens its teaching and learning program by adapting a comprehensive student centric approach designed to add significant value to the learner in an integrated manner through conceptual and interactive teaching, active lab sessions, seminars, projects, and independent study. As the continued up gradation of the knowledge and skills of faculty members is vital for continuous growth and development of the department, faculties are motivated to attend workshops, seminars, conferences and Training programs. Department has well equipped state-of-the-art laboratories with latest hardware and software configuration for conducting various practical's as well as highly qualified and experienced faculty to nurture the future technocrats of the nation.

Editor-in-chief
Mr.Hardic Gosavi

Editor
Mr.Dhanesh Vasaikar
Mr.Kunal Rajput

Vision and Mission of Institute

Vision of the Institute

We at SIEM aspire to be a globally recognized Institute that delivers a world class education to outstanding intellectuals by nurturinc and grooming their interests, creative abilities and thrusts to acquire a life-long learning so as to imbibe values of their commitmen1 towards society.

Mission of the Institute

We at SIEM shall strive continuously,

• To inculcate and imbibe knowledge of cutting-edge technologies and its implementation for solving real life problems in E conducive environment.

• To collaborate with national and international institutes/industries/ universities of repute for sustainable growth through tearr work.

• To motivate and retain highly skilled and knowledgeable individuals, whose creativity and interest in teaching upholds to achieve desired goals. • To provide a dedicated platform to cater the needs of individuals and inspire them for their intellectual growth and character building.

• To enable the students to achieve excellence in the chosen fields and to share the responsibilities of citizenship and service in E disciplined manner.

Vision and Mission of Department

Vision of the Department

The department aims to be recognised in the field of quality education through excellence in teaching, learning, research and innovation for the betterment of society.

Mission of the Department

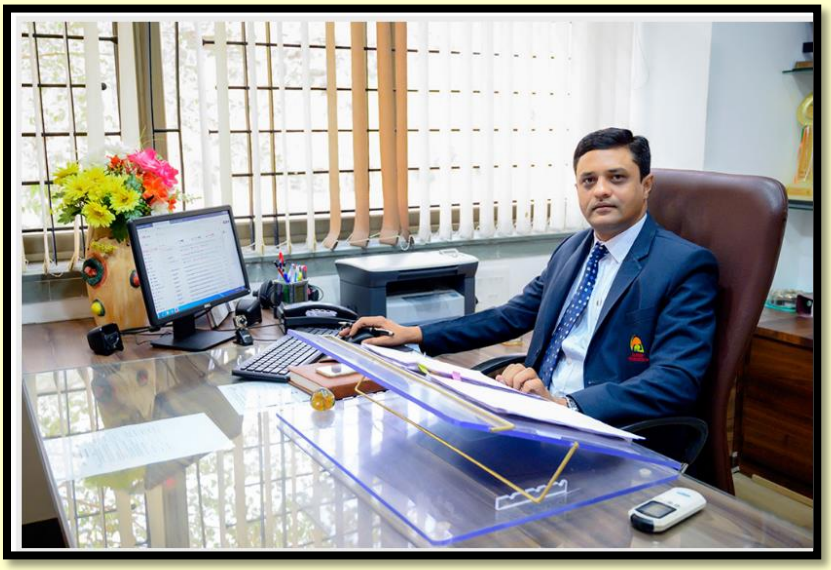
• To provide world class infrastructure with modern tools and technologies for better learning ambiance.

• To enhance problem-solving skills approaches by encouraging young and inspiring minds with innovative teaching & learning.

• To build competent professionals and entrepreneurs through collaborative learning with national and international institutes of repute.

• To contribute in the development of society & nation at large through excellence in research and innovation.

Golden Words from Principal



Welcome to Sandip Foundation's Sandip Institute of Engineering and Management.

Representing Sandip Institute of Engineering and Management is a great matter of pride for me. In this marvelous campus of Sandip Foundation, we strive to inculcate values in students which nurture them in a way that makes them excel in academics, innovation and personal growth. The prime interest of the institute has always been to impart knowledge, values, skills and wisdom in students to empower them to become the torch bearers of their respective fields.

We support an all-encompassing approach to education that integrates academic concepts with real-world applications. We pledge to deliver each and every stakeholder top-notch facilities and services. In order to integrate academic understanding to real-world problems and applications, our laboratories and research facilities provide students with hands-on learning opportunities.

We encourage our students to engage in extracurricular and intellectual activities as a supplement to their academic endeavors.

These experiences aid in the development of critical life skills, the enhancement of communication abilities, and the formation of enduring connections that will last a lifetime. The institutes additionally offer employability-enhancement programs, value-added programs, and credentials in addition to the primary academic curriculum. Furthermore, we furnish webinars, seminars, guest lectures, workshops, and skill-based training modules for advancing the level of bar of the knowledge of students' field of interest.

In my ability and as this prestigious institution's principal, I can confidently assure you that we are dedicated to creating an orderly and enriching campus environment. To ascertain everyone's success both academically and personally, we place a high priority on their well-being and provide the best assistance whenever required.

Let's change the world together and leave an enduring impression of being an integral part of the Sandip Group of Institutes.

Thank You. Best Regards.
Dr. Dipak P. Patil Principal

Valuable Words from Head of the Department

Greeting from the Department of Computer Engineering!!

The world is going through a tremendous positive transformation, and in education its effects are clearly visible. We in the Department of Computer Engineering wish to be part of this positive change utilizing our core strengths in Technical knowledge, Research, Data Analytics and world class Infrastructure. Department of Computer Engineering was established in the year 2010 with Batchelor of Computer Engineering (BE) Programme with Intake of 60. Being an integral part of an institution, Sandip Institute of Engineering and Management, Sandip Foundation, Nasik, naturally helps the department and its programmes imbibe all the values and ethos that have made the institute an epitome of excellence.

The rigorous education and training which students get, helps them to tackle the complexity of the engineering and corporate environment as they are able to unshackle themselves from the confines of mere technical competencies. With a carefully designed syllabus by SPPU, we keep up to the true Sandip Foundation tradition of sensitizing ourselves with the latest trends in the industry. The emphasis of the training, Value added Programs in the Department is on building technical as well as people skills, which is indispensable for each of our students to do well in their life.

The class being a heterogeneous mix of academically motivated students from diverse, yet related fields naturally enriches the learning environment, turning it into a fountainhead of vibrant ideas.

The response from both academic institutes as well as industry has been very enthusiastic and encouraging. This bears testimony to the fact that our alumni have made us proud by assuming various positions in reputed organizations like Persistent, Accenture, Amazon, Synel and many more. The placement of the students has been equally encouraging as they have joined many reputed organizations like Infosys, Persistent, Amazon, TCS, Accenture, etc

All these achievements of the department would not have been possible without the enthusiastic and dedicated work of our past and present faculty members. Department faculty members are exceptionally dedicated set of teachers and at the same time top notch researchers in their field of study publishing on regular intervals in reputed journals. They have also done the department extremely proud by writing various books, book chapters etc. Department has also been in the fore front of industry interaction.

We are supremely confident that in years to come Department with its rigorous and regularly updated syllabus, research, innovative teaching techniques and active participation with industry will enforce the reputation of as an enviable seat of higher learning.

Dr. K. A. Shirsath (Nalavade)
Head, Department of Computer Engineering
Sandip Institute of Engineering and Management, Nasik

Table Content

01. Innovations and trends in computer engineering

Computing Power - Computing power will continue to explode in 2022. We now have considerably better cloud infrastructure, and many businesses are re-platforming to the cloud.

We are also seeing a push towards better networks 5G is being rolled out, and 6G is on the horizon. That means even more power in our phones, in our cars, and in our wearable devices.

Smarter Devices - Growing computer power is enabling us to create smarter devices. We now have intelligent televisions, autonomous cars, and more intelligent robots that can complete more tasks. In 2022 we'll see continued work alongside humans tomomentum for this smart device explosion.

Extended Reality-

We now have augmented reality(AR)capabilities on our devices(particularly our phone and tablets),and we're seeing an even bigger push towards virtual reality(VR).In 2022 ,we"see new,lighter ,more portable VR devices,so instead of having clunky headsets that require WiFI connections,we will have decives that are more like glasses that connect to our phone and gives us superior VR experiences on the go. These extended reality advances pave the way for incredible experiences in the metaverse,a persistent shared virtual world that users can access through different devices and platforms.

02. Cloud Computing

What is Cloud Computing?

Cloud Computing is defined as storing and accessing of data and computing services over the internet. It demand availability of computer services like servers, data storage, networking, databases, etc. The main purpose of cloud computing is to give access to data centers to many users. Users can also access data from a remote server. Examples of Cloud design that was used by network engineers to represent the location of various network devices and there inter-connection. The shape of this network design was like a cloud.

Why Cloud Computing?

With increase in Computer and Mobile user's data, the storage has become a priority in all fields. Large-scale and small-scale businesses today thrive on their data & they spent a huge amount of money to maintain this data. It requires a strong IT support and a storage hub. Not all businesses can afford high cost of in- house IT infrastructure and

back up support services. For them Cloud Computing is a cheaper solution. Perhaps its efficiency in storing data, computation and less maintenance cost has succeeded to attract even bigger businesses as well.

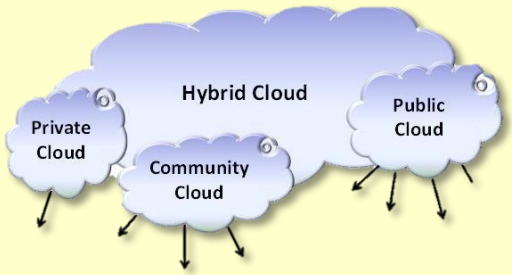
Cloud computing user must be able to run is the cloud computing systems interface software, which can be as simple as Web browser, and the Cloud network takes care of the rest. We all have experienced cloud computing at some instant of time, some of the popular cloud services we have used or we are still using are mail services like Gmail, Hotmail or yahoo etc. While accessing e-mail service our data is stored on cloud server and not on our computer. The technology and infrastructure behind the cloud is invisible. It is less important whether cloud services are based on HTTP, XML, Ruby, PHP or other specific technologies as far as it is user friendly and functional.

An individual user can connect to cloud system from his/her own devices like desk laptop or mobile. Cloud computing harnesses small business effectively having limited resources, it gives small businesses access to the technologies that previously were out of their reach. Cloud computing helps-house IT server, you have to pay a lot of attention and ensure that there are no flaws into the system so that it runs smoothly. And in case of any technical glitch you are completely responsible; it will seek a lot of attention, time and money for repair. Whereas, in cloud computing, the service provider takes the complete responsibility of the complication and the technical faults.

Types of Clouds

Following are the different Types of Clouds:

Private Cloud: Here, computing resources are deployed for one particular organization. This method is more used for intra-business interactions. Where the computing resources can be governed, owned and operated by the same organization.



Community Cloud: Here, computing resources are provided for a community and organizations.

Public Cloud: This type of cloud is used usually for B2C (Business to Consumer) type interactions. Here the computing resource is owned, governed and operated by government, an academic or business organization.

Hybrid Cloud: This type of cloud can be used for both type of interactions B2B (Business to Business) or B2C (Business to Consumer). This deployment method is called hybrid cloud as the computing resources are bound together by different clouds. Benefits of Cloud Computing The potential for cost saving is the major reason of cloud services adoption by many organizations. Cloud computing gives the freedom to use services as per the requirement and pay only for what you use. Due to cloud computing it has become possible to run IT operations as an outsourced unit without much in-house resources.

Benefits of Cloud Computing

- Lower IT infrastructure and computer costs for users
- Improved performance
- Fewer Maintenance issues
- Instant software updates
- Improved compatibility between Operating systems
- Backup and recovery
- Performance and Scalability
- Increased storage capacity
- Increase data safety
- Examples of Cloud Computing

Cloud Computing Applications.

Health Care: Medical professionals can do diagnostics, host information, and analyse patients remotely with the help of cloud computing. Cloud computing allows doctors to share information quickly from anywhere. It also saves costs by allowing large data file transfers instantly. This certainly increases efficiency. Ultimately, cloud technology helps the medical team ensure patients receive the best possible care without unnecessary delay. The condition of patients can also be updated in seconds with the help of remote conferencing.

Education: Cloud computing is also useful in educational institutions for distance learning. It offers various services for universities, colleges,

professors, and teachers to reach thousands of students all around the world. Companies like Google and Microsoft offer various services free of charge to faculties, teachers, professors, and students from various learning institutions. Various educational institutions across the world use these services to improve their efficiency and productivity.

Government: The U.S. military and government were early adopters of cloud computing. Their Cloud incorporates social, mobile, and analytics technologies. Although, they must adhere to strict compliance and security measures (FIPS, FISMA, and FedRAMP). This protects against cyber threats both domestically and abroad.

Big data Analytics: Cloud computing helps data scientists analyze various data patterns, insights for better predictions and decision making. There are many open-source big data development and analytics tools available like Cassandra, Hadoop, etc., for this purpose.

Communication: Cloud computing provides network-based access to communication tools like emails and social media. WhatsApp also uses a cloud-based infrastructure to facilitate user communications.

Business Process: Nowadays, many business processes like emails, ERP, CRM, and document management have become cloud-based services. SaaS has become the most vital method for enterprises. Some examples of SaaS include Salesforce, HubSpot.

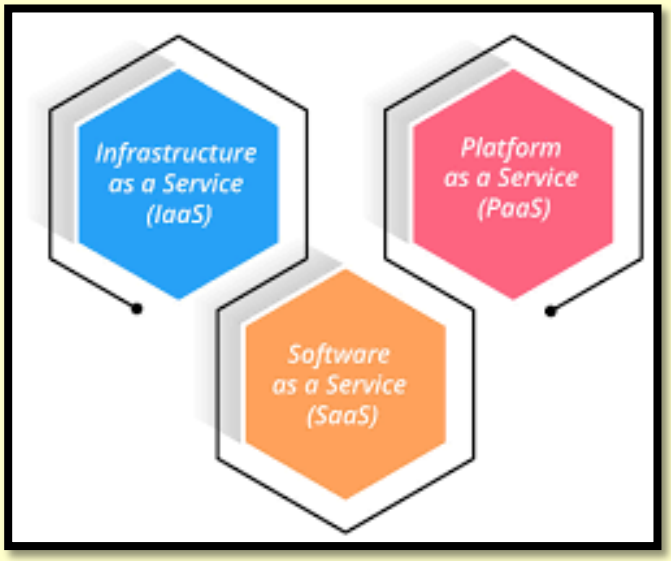
Facebook, Dropbox, and Gmail: Cloud computing can be used for the storage of files. It helps you automatically synchronize the files from different devices like desktop, tablet, mobile, etc. Dropbox allows users to store and access files up to 2 GB for free. It also provides an easy backup feature. Social Networking platforms like Facebook demand powerful hosting to manage and store data in real-time. Cloud-based communication provides click-to-call facilities from social networking sites and access to the instant messaging system.

Citizen Services: The cloud technology can be used for handling citizen services too. It is widely used for storing, managing, updating citizen details, acknowledging forms, and even verifying the current status of applications can be performed with the help of cloud computing.

Cloud Computing Services

The three major Cloud Computing Offerings are

- Software as a Service (SaaS),
- Platform as a Service (PaaS) and
- Infrastructure as a Service (IaaS)



Different business use some or all of these components according to their requirement.

- **SaaS (Software as a Service)** SaaS or software as a service is a software distribution model in which applications are hosted by a vendor or service provider and made available to customers over a network (internet). SaaS is becoming an increasingly prevalent delivery model as underlying technologies that supports Service Oriented Architecture (SOA) or Web Services. Through internet this service is available to users anywhere in the world. Traditionally, software application needed to be purchased upfront &then installed it onto your computer. SaaS users on the other hand, instead of purchasing the software subscribes to it, usually on monthly basis via internet. Anyone who needs an access to a particular piece of software can be subscribe as a user, whether it is one or two people or every thousands of employees in a corporation. SaaS is compatible with all internet enabled devices. Many important tasks like accounting, sales, invoicing and planning all can be performed using SaaS.

- **PaaS (Platform as a Service)** Platform as a service, is referred as PaaS, it provides a platform and environment to allow developers to build applications and services. This service is hosted in the cloud and accessed by the users via internet. To understand in asimple terms, let compare this with painting a picture, where you are provided with paint colours, different paint brushes and paper by your school teacher and you just have to draw a beautiful picture using those tools. PaaS services are constantly updated & new

features added. Software developers, web developers and business can benefit from PaaS. It provides platform to support application development. It includes software support and management services, storage, networking, deploying, testing, collaborating, hosting and maintaining applications.

- **IaaS (Infrastructure as a Service)** IaaS (Infrastructure As A Service) is one of the fundamental service model of cloud computing alongside PaaS(Platform as a Service). It provides access to computing virtual server space, network connections, bandwidth, load balancers and IP addresses. The pool ofhardware resource is extracted from multiple servers and networks usually distributed across numerous data centers. This provides redundancy and reliability to IaaS. IaaS(Infrastructure as a service) is a complete package for computing. For small scale businesses who are looking for cutting cost on IT infrastructure, IaaS is one of the solutions. Annually a lot of money is spent in maintenance and buying new components like hard-drives, network connections, external storage device etc. which a business owner could have saved for other expenses by using IaaS.

  1. Cloud Computing is defined as storing and accessing data and computing services over the Internet.
  2. Today many large and small-scale businesses thrive on their data & they spend a huge amount ofmoney to maintain this data.

3. Cloud computing architecture helps organizations to lower their IT infrastructure and computer costs per user.
4. Four Types of Cloud are 1) Private, 2) Community, 3) Public, and 4) Hybrid.
5. Important Cloud Computing Services are 1) Software as a Service (SaaS), 2) Platform as a Service (PaaS), and 3) Infrastructure as a Service (IaaS).
6. Grid Computing is a middleware to coordinate disparate IT resources across a network, allowing them to function as a whole.
7. Utility computing is the process of providing service through an on-demand, pay-per-use billing method.
8. Privacy is a strong barrier for users to adapt Cloud Computing systems.

Tejal Deokar

Second Year Student-Computer Engg

03. Report on Workshop

1. **Event Title**: Workshop “Log4j Vulnerability”

2. **Event Date**: 15/01/2022 (Saturday)

3. **Event Conduction Duration**: 1 day (Timings: 11 am to 12 pm)

4. **Event Venue**: Online (Google meet)

5. **Event Resource Person Details**: Mr Vishal Waghmare, Hacksudo Nashik.

6. **Name of Event Coordinator**: Prof. V V Mahale

7. **Expected Audience**: Students of SE, TE Computer Engineering Department.

8. **Number of Participants**: 50

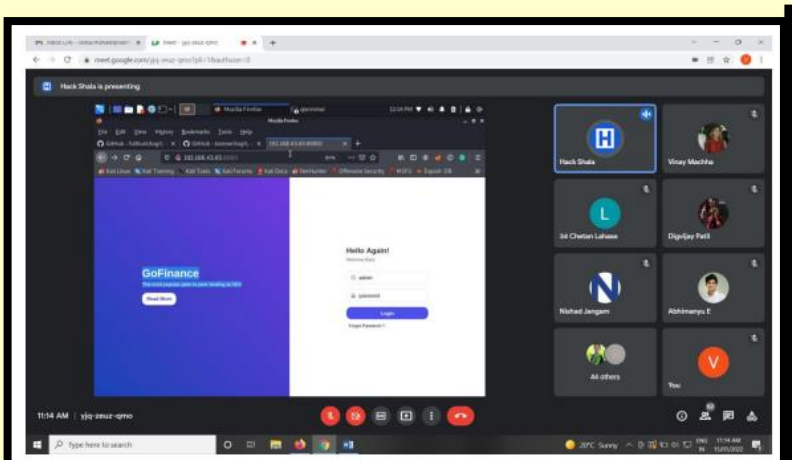
9. **Course Content**: λ Attack demo on server using LOG4J Vulnerability Event

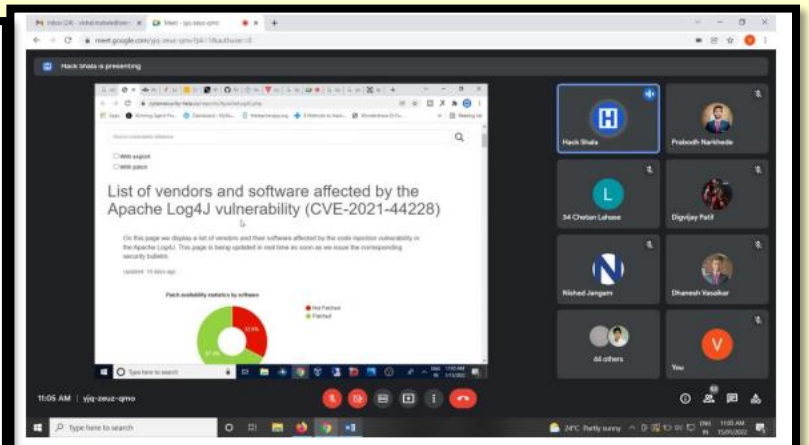
10. Objectives & Outcomes:

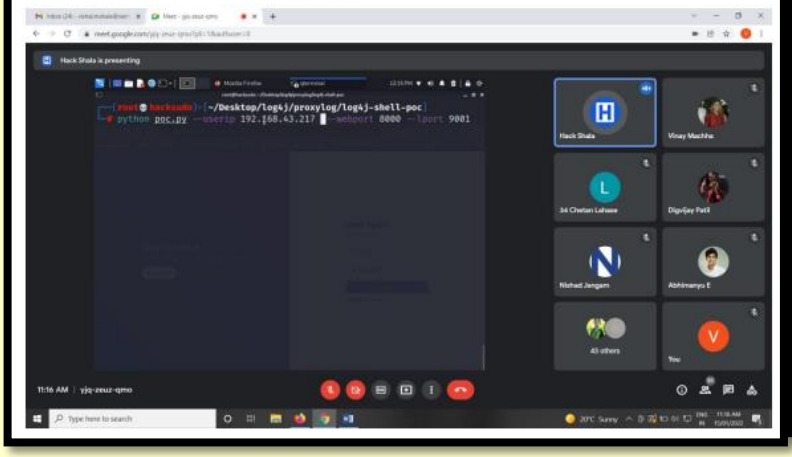
Objectives: To make students aware of hacking and making the servers secure.

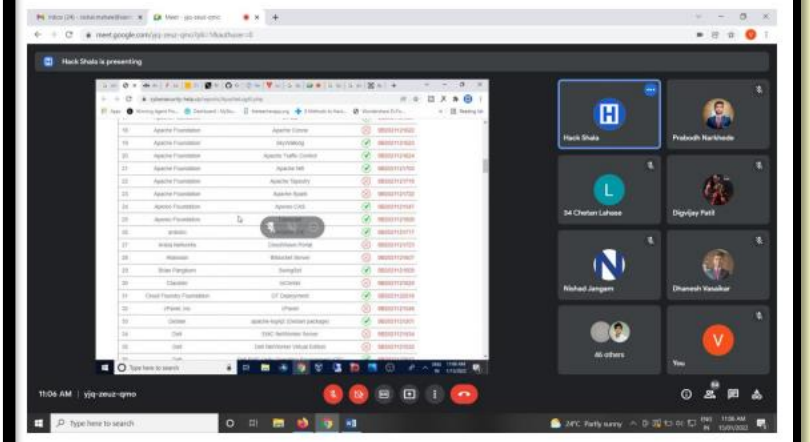
Outcomes: Students have learned the LOG4J method.

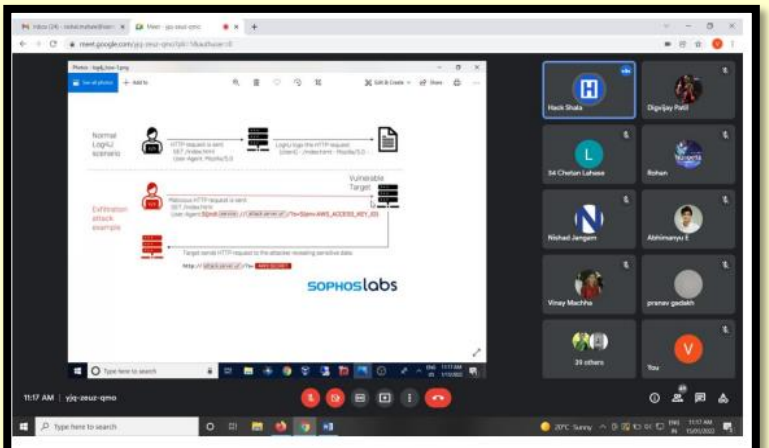
11. **Photos Log4j attack** : hack shala

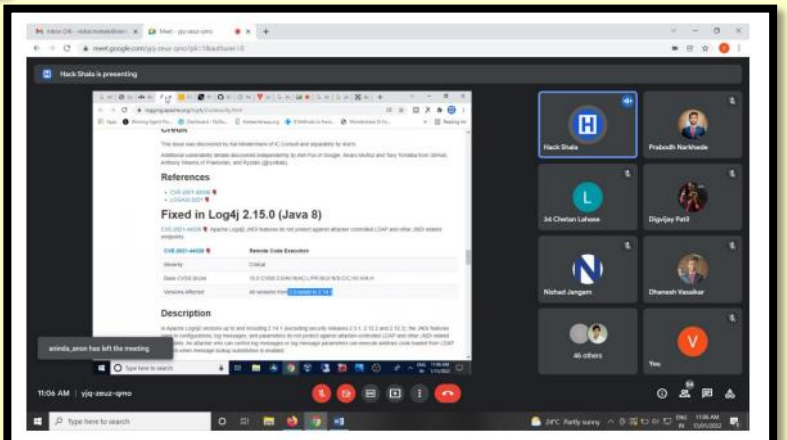


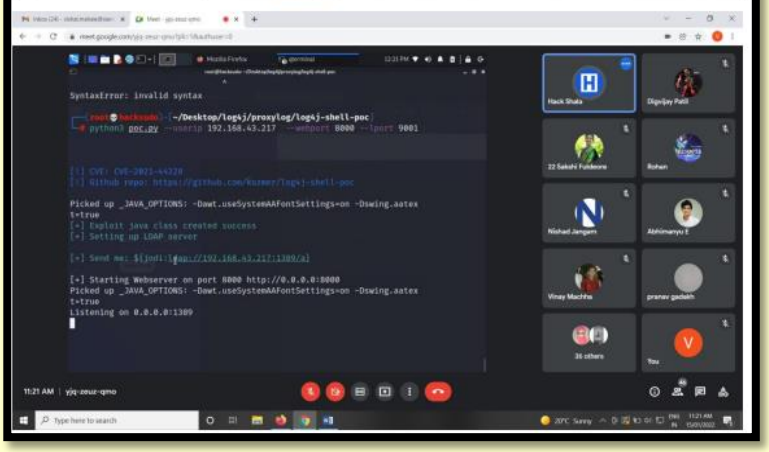


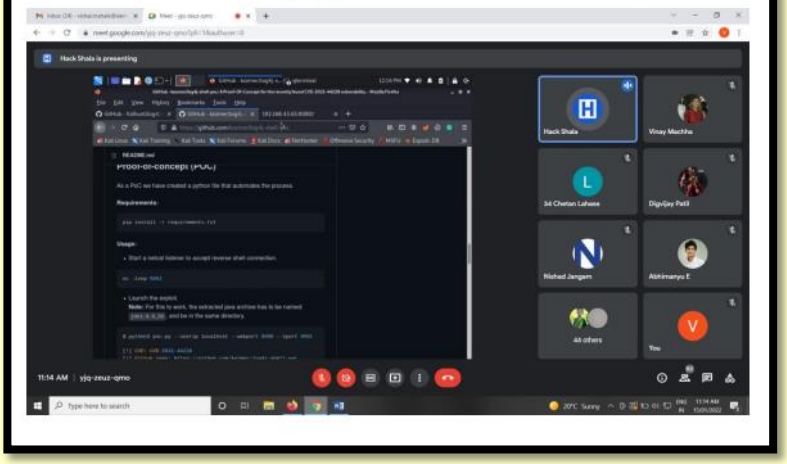












04. Report on Workshop

1. **Event Title** : Online Workshop
2. **Event Date** : 25th May 2021 to 30 May 2021.
3. **Event Conduction Duration** : 10 AM to 05 PM
4. **Event Venue** : Online Platform
5. **Name of Event Coordinator** : Dr. K C Nalavade
6. **Name of Resource Person** : Ms. Sonali Gorade
7. **Expected Audience** : BE(Comp)
8. **Number of students present** : 45
9. **Event Objectives & Outcomes**

Objectives:-

1. To develop the student's knowledge in Web Application Development.
2. To develop the ability to analyze and design the Web Page.
3. To develop an ability to use software tools for analysis and design of Web Pages.

Outcome:-

1. Students will demonstrate knowledge of web page development.
2. Students will demonstrate knowledge of web page design languages.

10.**Event Photographs** :-