

# **Student Experiential Learning**

Report submitted to the

**VIT Bhopal University**

**Bachelor of Technology**

**in**

**Computer Science Engineering**

***Submitted by***

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# **Declaration**

I, Pradyumna Garg, bearing the Registration Number 21BCE11685 hereby declare that this report of “*Experiential Learning*” represents my original work carried out as a undergraduate student at VIT Bhopal University. To the best of my knowledge, it contains no material previously published or written by another person, nor any material presented for the award of any other degree of VIT Bhopal University or any other institution. Any contribution made to this report by others, with whom I have worked at VIT Bhopal University or elsewhere, is explicitly acknowledged in the report.

Date - 25<sup>th</sup> September 2023

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# Acknowledgment

We would like to express our heartfelt gratitude to all those who made our Experiential Learning Program, focusing on the vibrant cities of Hyderabad and Pune, a truly enriching and memorable experience. This journey would not have been possible without the unwavering support and contributions of various individuals and organizations.

First and foremost, we extend our sincere thanks to our program coordinators and faculty advisors, whose guidance and expertise were instrumental in shaping our learning experience. Their dedication to our education and unwavering commitment to providing us with a holistic learning experience have been invaluable.

Our heartfelt appreciation goes out to the numerous industry experts, business leaders, and professionals who took time out of their busy schedules to interact with us during our visits to various organizations. Their willingness to share their experiences and expertise allowed us to gain practical insights and a deeper understanding of real-world challenges and opportunities.

Additionally, we want to express our gratitude to our fellow participants, whose enthusiasm, camaraderie, and collaborative spirit made this journey a truly enjoyable one. The friendships formed during this program will undoubtedly be cherished for years to come.

Last but not least, we would like to thank our families and loved ones for their unwavering support and encouragement throughout this program. Their belief in us and understanding of the importance of experiential learning have been a constant source of motivation.

In conclusion, this Experiential Learning Program has been a transformative experience, and it would not have been possible without the collective efforts of all those mentioned above. We are truly appreciative of the opportunities provided to us and the knowledge gained during our visits to Hyderabad and Pune. This program has not only broadened our horizons but has also instilled in us a deeper appreciation for the diverse cultures and dynamic environments that exist within our country.

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# **Summary of Your Experiential Learning**

Our Experiential Learning Program encompassed a remarkable journey through the vibrant cities of Hyderabad and Pune, offering us a diverse and enriching set of experiences. In Hyderabad, we were privileged to visit several renowned institutions and organizations.

Our first stop was at BSNL, where we gained insights into the telecommunications industry and its role in shaping modern communication. We delved into the latest advancements in the field of Artificial Intelligence during an engaging session at ExcelR, followed by an immersive visit to L&T Metro, where we witnessed firsthand the marvels of urban transportation infrastructure.

At INCOIS (Indian National Centre for Ocean Information Services), we were enlightened about the critical work being done in the field of ocean information services, further deepening our understanding of environmental science and its global implications. Our visit to NRC-ISRO Outreach Centre allowed us to explore the wonders of space science and technology, broadening our horizons even further.

In Pune, our experiences were equally captivating. We embarked on a city tour that included visits to the historic Shaniwar Wada and the culturally rich Raja Dinkar Kelkar Museum. An IoT session in Pune furthered our knowledge of cutting-edge technology trends, while an AR/VR session immersed us in the world of augmented and virtual reality.

The pinnacle of our learning journey was a session led by Mr. Milind Dattar, the co-founder of Cane Bot, on the final day. His insights into entrepreneurship and innovation left an indelible mark on our minds and served as a fitting conclusion to our program.

Throughout our time in both Hyderabad and Pune, we were embraced by warm hospitality, enriching discussions, and the spirit of exploration. This Experiential Learning Program not only broadened our knowledge base but also fostered personal growth, cultural understanding, and a deeper appreciation for the complexities and opportunities of the modern world.

Our gratitude extends to all those who made this journey possible, from our program coordinators and educators to the organizations and individuals who generously shared their knowledge and experiences. We return with not only memories but also a renewed enthusiasm for learning and a commitment to apply these valuable insights to our future endeavors.

Keywords: Experience, Entrepreneurship, IOT, AR/VR

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**City Choice – 1**  
**Hyderabad**

## **Day – 1 Report**

1.1.1 Industry Name - 4<sup>th</sup> sept. 2023 Bharat Sanchar Nigam Limited (BSNL) Regional Telecom Training Centre, RTTC, Hyderabad.

1.1.2 Objectives -

The visit to Bharat Sanchar Nigam Limited (BSNL) Regional Telecom Training Centre (RTTC) in Hyderabad was an integral part of our Experiential Learning Program. The objectives of our visit to BSNL RTTC in Hyderabad were as follows:

1. **Understanding Telecommunications Infrastructure** - To gain a comprehensive understanding of the telecommunications industry, including its infrastructure, technologies, and the role it plays in modern communication systems.
2. **Practical Insight into Telecommunication Equipment** - To observe and familiarize ourselves with the latest telecommunication equipment, systems, and technologies used in the field.
3. **Networking and Industry Interaction** - To establish connections and network with professionals in the telecommunications field, fostering potential opportunities for future collaborations and internships.
4. **Telecom Training and Skill Development** - To explore the training programs and skill development initiatives conducted by BSNL RTTC, aimed at enhancing the competencies of telecom professionals.
5. **Operational Processes** - To learn about the operational processes, maintenance, and troubleshooting techniques involved in managing and ensuring the uninterrupted flow of telecommunications services.
6. **Digital Transformation and Emerging Technologies** - To discover how BSNL is adapting to the digital transformation and integrating emerging technologies like 5G, IoT, and AI into their telecommunications services.
7. **Government Telecommunications Initiatives** - To gain insights into the role of BSNL in supporting government initiatives related to digital inclusion, connectivity in rural areas, and national security through telecommunications infrastructure.

**8. Environmental and Ethical Considerations** - To explore BSNL's efforts in sustainable and ethical practices within the telecommunications industry, including initiatives related to reducing environmental impact and promoting responsible use of technology.

**9. Career Opportunities** - To learn about potential career opportunities within the telecommunications sector, including job prospects, skill requirements, and the evolving nature of telecom-related professions.

**10. Enhancing Academic Knowledge** - To bridge the gap between theoretical knowledge acquired in our academic studies and the practical applications and challenges faced in the telecommunications sector.

Our visit to BSNL RTTC in Hyderabad provided us with valuable insights into the telecommunications industry and its significance in the modern world. It contributed to our overall learning experience and broadened our horizons regarding the evolving technologies and practices in the field of telecommunications.

#### 1.1.3 Learning outcome -

The visit to Bharat Sanchar Nigam Limited (BSNL) Regional Telecom Training Centre (RTTC) in Hyderabad provided us with a wealth of knowledge and insights into the telecommunications industry. The key learning outcomes from our visit to BSNL RTTC, Hyderabad, include:

**Comprehensive Understanding of Telecommunications:** We gained a comprehensive understanding of the telecommunications industry, including its historical development and its pivotal role in global communication networks. This knowledge enriched our appreciation of the industry's significance.

**Hands-On Experience with Telecom Equipment:** The visit offered a hands-on experience with various telecommunication equipment and systems. This practical exposure allowed us to grasp the operational aspects of telecom infrastructure, enhancing our technical skills.

**Networking and Industry Interaction:** Interactions with industry professionals and experts created opportunities for networking and gaining valuable insights into real-world challenges and opportunities within the telecommunications sector. These connections can be instrumental in future endeavors.

**Enhanced Technical Knowledge:** We acquired technical knowledge related to the functioning, maintenance, and troubleshooting of telecom equipment and systems. This hands-on experience contributed to our technical skill development.

**Awareness of Emerging Technologies:** BSNL RTTC exposed us to the integration of emerging technologies such as 5G, IoT, and AI in the telecommunications industry. This expanded our awareness of the latest technology trends shaping the industry's future.

**Understanding Government Initiatives:** We learned about the role of the telecommunications industry in supporting government initiatives related to digital inclusion, rural connectivity, and national security. This broadened our understanding of the industry's societal impact.

**Sustainable and Ethical Practices:** Our visit emphasized the importance of sustainable and ethical practices within the telecommunications sector. This included considerations for environmental sustainability and responsible technology usage.

**Career Opportunities in Telecom:** Information about the diverse career opportunities within the telecommunications sector provided valuable insights for participants, helping them explore potential career paths and skill requirements.

**Academic and Practical Synergy:** The visit bridged the gap between academic knowledge and practical applications, enabling us to recognize the real-world relevance of our studies. This synergy enhances the value of our education.

**Cultural and Collaborative Exposure:** Beyond technical knowledge, the visit provided cultural exposure and fostered collaborative learning. It encouraged a spirit of collaboration and open-mindedness among participants.

**Personal Growth:** The visit contributed to personal growth by promoting adaptability, problem-solving skills, and the ability to navigate within a dynamic and rapidly evolving industry.

**Inspiration and Motivation:** Meeting professionals and witnessing the telecommunications industry in action inspired us to consider careers in technology and telecommunications. It also motivated us to stay updated on industry developments.

In summary, the visit to BSNL RTTC, Hyderabad, was a transformative experience that enriched our knowledge, skills, and perspectives. It aligned seamlessly with the objectives of our Experiential Learning Program, providing a holistic learning experience that extended beyond the confines of a traditional classroom setting.

#### 1.1.4 Photographs -







### 1.1.5 Feedback of the day – 1

Our visit to the Bharat Sanchar Nigam Limited (BSNL) Regional Telecom Training Centre (RTTC) in Hyderabad was indeed an enlightening and enjoyable experience. It provided us with a unique opportunity to dive deep into the intricacies of the telecommunications industry and gain a firsthand understanding of how telecommunication networks operate.

One of the standout aspects of the day was the warmth and politeness of the faculty and staff at BSNL RTTC. They not only welcomed us with open arms but also patiently answered all our queries, making sure that we grasped the concepts and processes related to telecommunications. Their willingness to share their expertise and knowledge left a lasting impression on us and enhanced the overall learning experience.

Moreover, the visit allowed us to witness the practical side of telecommunications through hands-on experiences with various telecom equipment and systems. This hands-on exposure significantly enriched our understanding of the subject matter, as it's one thing to learn about it in theory, but quite another to see it in action.

The day was well-structured and informative, covering a wide range of topics from the basics of telecommunications to emerging technologies like 5G and IoT. This diversity in content broadened our horizons and exposed us to the dynamic nature of the telecom industry.

In summary, our visit to BSNL RTTC was a great experience. It not only provided us with valuable insights into the telecommunications industry but also showcased the dedication and professionalism of the BSNL team. We left with a newfound appreciation for the world of telecommunications and a deeper curiosity to explore this ever-evolving field further.

## **Day – 2 Report**

1.2.1 Industry Name – 5<sup>th</sup> sept. 2023 EXCEL R (IOT SEESION AT AUDITORIUM) in Hightech City Hyderabad.

1.2.2 Objectives -

1. **Introduction to IoT:** To introduce participants to the fundamental concepts of the Internet of Things (IoT), including its definition, history, and significance in the modern technological landscape.
2. **IoT Ecosystem:** To provide a holistic view of the IoT ecosystem, encompassing devices, sensors, connectivity protocols, data processing, and applications.
3. **IoT Applications:** To showcase a wide range of practical IoT applications across various industries, highlighting how IoT is driving innovation and efficiency.
4. **Case Studies:** To present real-world case studies and success stories that illustrate the transformative power of IoT in solving complex problems and improving processes.
5. **IoT Technologies:** To explore the key technologies underpinning IoT, including sensor technology, data analytics, cloud computing, and machine learning.
6. **Data Security and Privacy:** To discuss the importance of data security and privacy in IoT deployments and provide insights into best practices and measures to safeguard sensitive information.
7. **Hands-on Demonstration:** To offer a hands-on demonstration of IoT devices and sensors, allowing participants to interact with and understand the hardware and software components involved.
8. **IoT Challenges:** To identify and discuss common challenges and bottlenecks in IoT implementation, along with strategies to overcome them. Future Trends: To delve into emerging trends in IoT, such as edge computing, 5G connectivity, and the integration of IoT with Artificial Intelligence and Augmented Reality.Career and Learning Opportunities: To inform about the career prospects and learning pathways in the field of IoT, including certifications and skill development. Networking: To provide opportunities for participants to network with professionals and experts from EXCEL R, enabling them to build valuable industry connections.

### 1.2.3 Learning outcome -

**Fundamental Knowledge:** We have gain a solid understanding of the core concepts and principles of the Internet of Things (IoT), enabling them to explain its significance and applications.

**Ecosystem Awareness:** We are able to describe the components and workings of the IoT ecosystem, including devices, sensors, connectivity protocols, and data processing.

**Real-World Application Understanding:** We got practical applications of IoT across various sectors, appreciating how IoT is revolutionizing industries and daily life.

**Case Study Comprehension:** We analyzed and discuss real-world case studies, demonstrating the ability to identify how IoT solutions address complex challenges.

**Technological Literacy:** Familiar with the key technologies supporting IoT, including sensors, data analytics, cloud computing, and machine learning.

**Data Security and Privacy Awareness:** We have understand the importance of data security and privacy in IoT deployments, demonstrating an awareness of best practices.

**Hands-On Experience:** We have interacted with IoT devices and sensors during hands-on demonstrations, gaining practical insights into IoT hardware and software.

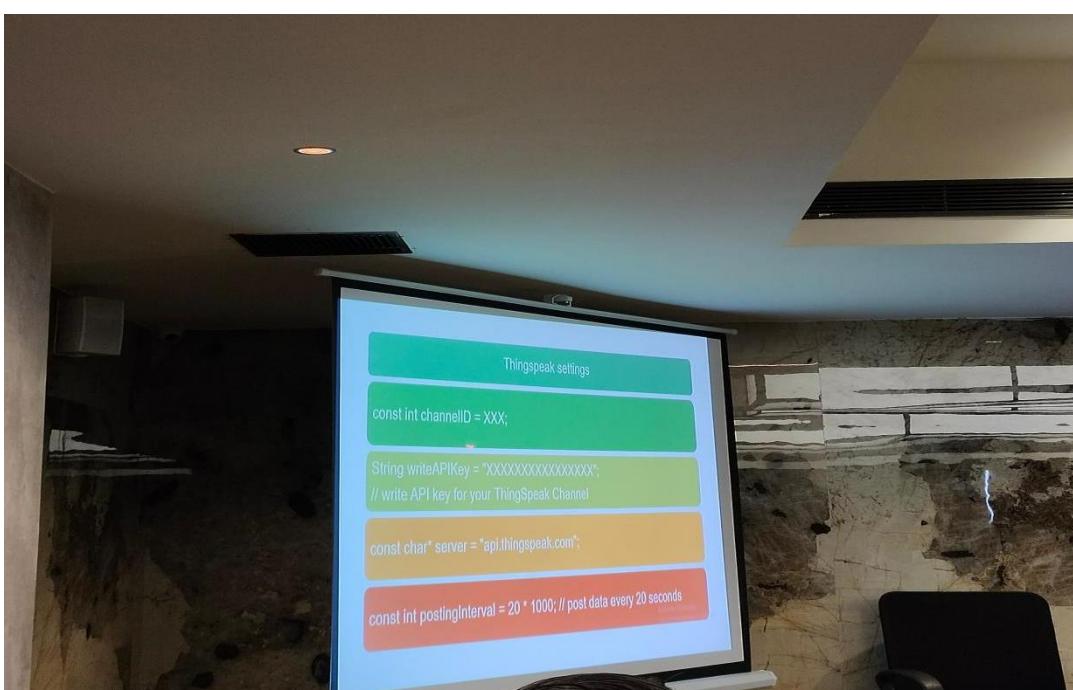
**Problem-Solving Skills:** We have identify and discuss common challenges in IoT implementation and propose potential solutions and strategies.

**Emerging Trends Knowledge :** We have been informed about emerging IoT trends such as edge computing, 5G connectivity, and AI integration.

**Engagement and Interaction:** We have actively engage in discussions, ask questions, and interact with the presenters and peers, fostering a dynamic learning environment.

**Networking Skills:** We got the opportunity to network with industry professionals and experts, building valuable connections for future career opportunities and collaborations.

#### 1.2.4 Photographs -







### 1.2.5 Feedback of the day – 2 -

The Excel R session was undeniably a valuable experience. Both the facilitators, sir and ma'am, conducted the session exceptionally well. Their expertise and guidance were evident, and they made the learning process enjoyable and engaging.

One highlight of the session was the opportunity to work on Tinkercad, which brought back fond memories of hands-on experimentation after a considerable period. It was not only a fun exercise but also a great way to practically apply the concepts we had learned during the session. However, it's essential to consider the overarching objective of an industry visit.

While the Excel R session was undoubtedly informative and enjoyable, it's valid to question whether it aligns seamlessly with the core goals of an industry visit. If there are alternative industry visits that offer a more direct connection to our program's objectives or provide insights into specific industries or technologies, they may be worth exploring.

In conclusion, the Excel R session was a fantastic experience in itself, but it's crucial to evaluate whether it serves the primary purpose of an industry visit. This reflection can help ensure that our program's industry visits are optimally aligned with our learning objectives and overall goals.

## **Day – 3 Report**

1.3.1 Industry Name – 6<sup>th</sup> sept. 2023 NRSC - ISRO Training and Outreach Facility, Hyderabad.

1.3.2 Objectives –

1. **Introduction to ISRO:** To provide us with an overview of the Indian Space Research Organisation (ISRO) and its significant contributions to space exploration and satellite technology.
2. **Understanding Remote Sensing:** To explain the principles and applications of remote sensing technology, emphasizing its role in environmental monitoring, disaster management, agriculture, and more.
3. **Satellite Technology:** To familiarize us with satellite technology, including satellite types, orbits, and their functions in collecting data for Earth observation.
4. **Hands-On Experience:** To offer us a hands-on experience with remote sensing equipment or software, enabling us to explore how satellite imagery is processed and utilized.
5. **Earth Observation Data:** To introduce us to the vast datasets generated by Earth-observing satellites, showcasing how this data is valuable for scientific research and decision-making.
6. **Environmental and Agricultural Applications:** To highlight specific applications of remote sensing in areas such as environmental conservation, land-use planning, and precision agriculture.
7. **Disaster Management:** To discuss how remote sensing technology plays a crucial role in disaster management, including early warning systems and post-disaster assessment.
8. **Space Exploration:** To provide insights into ISRO's achievements in space exploration, including missions to the Moon, Mars, and beyond, and their significance in the global context.
9. **Career and Educational Opportunities:** To inform us about potential career paths in the space and remote sensing sector, as well as educational programs and internships offered by ISRO.
10. **Inspiration and Awareness:** To inspire us by showcasing the potential for innovation and scientific discovery in the field of space technology and remote sensing.
11. **Q&A and Interaction:** To encourage active participation through a question-and-answer session, allowing us to engage with ISRO experts and clarify our doubts.

**12. Networking:** To provide opportunities for us to connect with professionals and researchers at NRSC-ISRO, fostering potential collaborations and career connections.

By addressing these objectives, the visit to NRSC-ISRO Training and Outreach Facility aims to enhance our knowledge of space technology, remote sensing, and ISRO's significant contributions while inspiring us to explore potential career opportunities and applications of this cutting-edge technology in various fields.

### 1.3.3 Learning outcome -

Our visit to the NRSC-ISRO Training and Outreach Facility was a transformative experience that yielded several significant learning outcomes, enhancing our understanding of space technology, remote sensing, and the remarkable contributions of ISRO. The following learning outcomes encapsulate the knowledge and insights we gained during this educational endeavor:

**Comprehensive Understanding of ISRO:** We acquired a comprehensive understanding of the Indian Space Research Organisation (ISRO), its mission, objectives, and its pivotal role in advancing space technology and exploration on a global scale.

**Proficiency in Remote Sensing:** We developed proficiency in remote sensing technology, including its principles, applications, and the pivotal role it plays in environmental monitoring, disaster management, agriculture, and more.

**Satellite Technology Familiarity:** We became familiar with various aspects of satellite technology, including the diverse types of satellites, their orbits, and their vital functions in collecting data for Earth observation and scientific research.

**Hands-On Expertise:** We gained hands-on expertise through practical demonstrations with remote sensing equipment and software, enabling us to engage with the intricate processes involved in satellite imagery processing and utilization.

**Data Utilization Skills:** We learned to harness the vast datasets generated by Earth-observing satellites, recognizing their immense value in scientific research, decision-making, and innovative applications.

**Application in Diverse Fields:** We grasped the diverse applications of remote sensing technology, extending from environmental conservation and land-use planning to precision agriculture and disaster management.

**Space Exploration Insights:** We acquired insights into ISRO's remarkable achievements in space exploration, including its pioneering missions to the Moon, Mars, and other celestial bodies, comprehending their profound significance on the global stage.

**Career and Educational Guidance:** We received guidance on potential career pathways in the space and remote sensing sector, as well as insights into the educational programs and internships offered by ISRO to nurture future talent.

**Inspirational Vision:** We were inspired by the potential for innovation and scientific discovery in the field of space technology and remote sensing, igniting a sense of curiosity and aspiration within us.

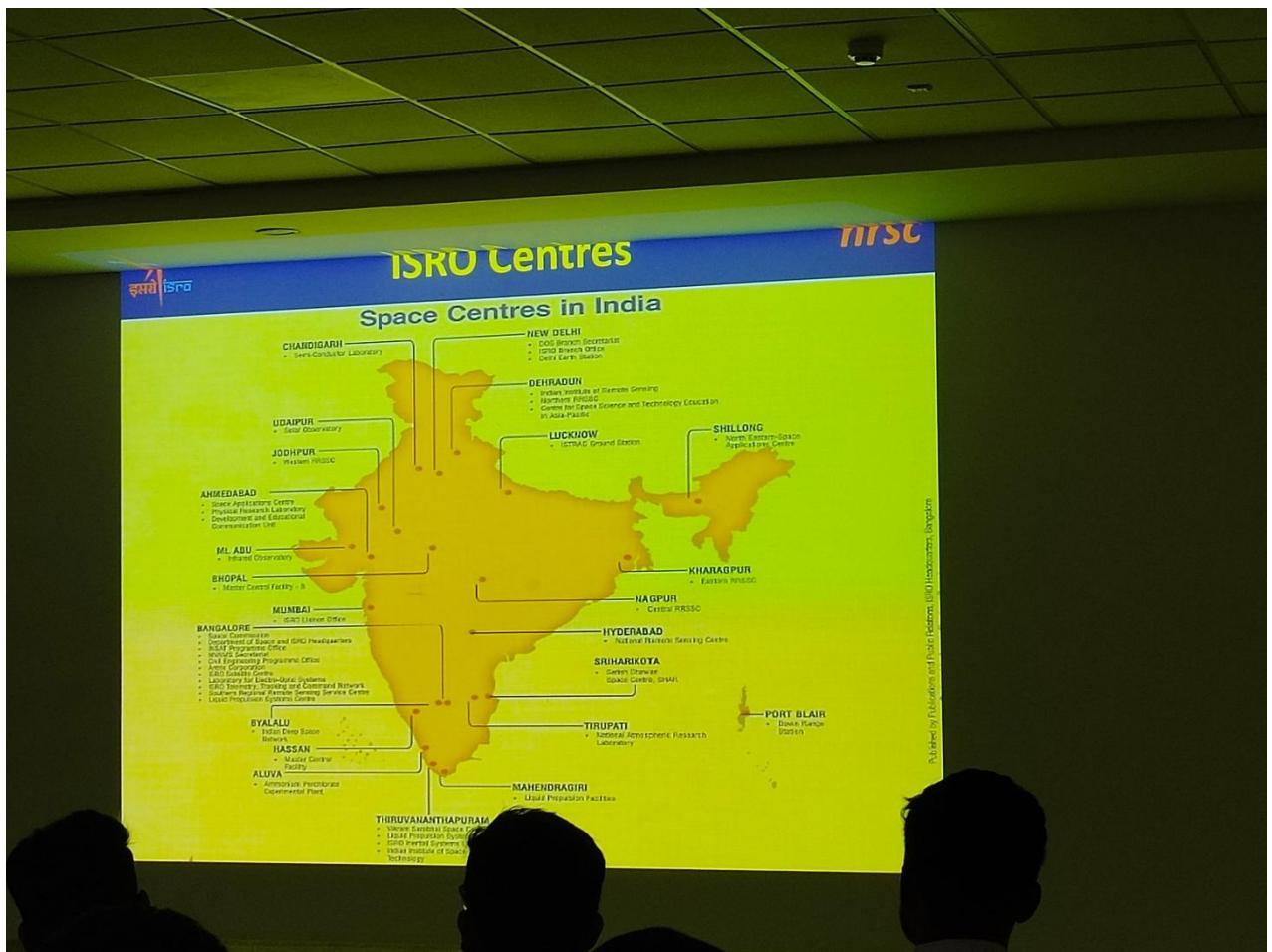
**Active Participation and Interaction:** We actively engaged in discussions, posed questions, and interacted with ISRO experts, furthering our understanding and creating a dynamic learning environment.

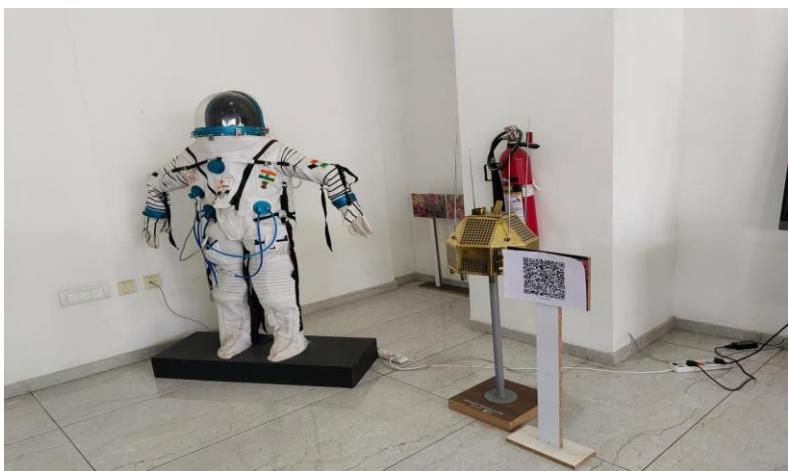
**Networking and Collaboration:** We had the opportunity to network with professionals and researchers at NRSC-ISRO, fostering potential collaborations and connections that may shape our future endeavors.

#### 1.3.4 Photographs –











### 1.3.5 Feedback of the day – 3

The visit to NRSC ISRO was an absolutely phenomenal experience. It provided us with a unique opportunity to delve into the fascinating world of space technology and satellite operations. The day was packed with invaluable insights and learning moments.

One of the standout takeaways from our visit was gaining a comprehensive understanding of how satellites function and their pivotal role in various applications, including surveillance and environmental monitoring. The knowledge imparted during the visit was not only enlightening but also inspiring, as it showcased the incredible advancements made by ISRO in space exploration.

Moreover, the visit was exceptionally well-organized, and everything went seamlessly. The ISRO team's hospitality and willingness to share their expertise were commendable. They patiently answered our questions and provided a wealth of information, making the learning experience both enjoyable and informative.

In summary, the visit to NRSC ISRO was an incredible day that left us with a profound appreciation for the remarkable work undertaken by ISRO in the field of space technology. It was a day of learning, inspiration, and awe, and we couldn't have asked for a better experience.

## Day – 4 Report

1.4.1 Industry Name – 7<sup>th</sup> sept. 2023 L&T Metro, Uppal Depot, Nagole, Hyderabad

1.4.2 Objectives -

1. **Understanding Metro Operations:** To gain insight into the comprehensive operations and management of the Hyderabad Metro, including its scope, scale, and significance in the city's public transportation system.
2. **Infrastructure Overview:** To familiarize ourselves with the physical infrastructure of the Hyderabad Metro, encompassing stations, tracks, signaling systems, and maintenance facilities.
3. **Operational Processes:** To understand the operational processes involved in running a modern metro system, such as ticketing, scheduling, safety protocols, and emergency response procedures.
4. **Technological Advancements:** To explore the technological advancements and innovations implemented in the Hyderabad Metro, including smart card systems, real-time tracking, and communication systems.
5. **Safety and Security:** To learn about the safety measures and security protocols in place to ensure the well-being of passengers and the efficient operation of the metro system.
6. **Sustainability Initiatives:** To discover the sustainability initiatives and environmental considerations integrated into the Hyderabad Metro's design and operations, promoting eco-friendly transportation.
7. **Integration with Urban Planning:** To understand how the metro system integrates with urban planning and development, contributing to reduced traffic congestion and enhanced connectivity in Hyderabad.
8. **Passenger Experience:** To evaluate the passenger experience, including amenities, accessibility for differently-abled individuals, and efforts to enhance commuter satisfaction.
9. **Community Engagement:** To explore the role of L&T Metro in community engagement and outreach programs, understanding how they contribute to the well-being of the local community.

10. **Future Expansions:** To inquire about future expansion plans and the role of the Hyderabad Metro in shaping the city's future transportation landscape.
11. **Career and Industry Insights:** To gain insights into career opportunities within the metro and transportation industry, including the skills and qualifications required for various roles.
12. **Networking Opportunities:** To create networking opportunities with professionals and experts in the field of metro operations, potentially leading to future collaborations or career prospects.

By addressing these objectives, our visit to the L&T Metro Main Office in Hyderabad aimed to provide us with a holistic understanding of metro operations, technological advancements, safety considerations, and the broader impact of the metro system on urban development and sustainability in the city.

#### 1.4.3 Learning outcome -

Our visit to the L&T Metro Main Office in Hyderabad on September 7 provided us with a wealth of knowledge and insights into the intricate operations of the Hyderabad Metro. The diverse areas explored during this visit yielded several comprehensive learning outcomes:

**Metro Operations Proficiency:** We gained a profound understanding of the Hyderabad Metro's day-to-day operations, including the simulator lab's role in training staff to operate in both automatic and manual modes. This exposure to the control systems, such as CBTC (Communication-Based Train Control), enhanced our grasp of the technology governing metro operations.

**Efficient Monitoring and Signaling:** We learned about the meticulous monitoring and signaling systems in place. Notably, we discovered that the metro system has the capability to automatically adjust train timings in response to delays, ensuring punctuality in reaching destinations.

**Rolling Stock and Personnel Roles:** We delved into the concept of rolling stock, understanding it as the collective term for trains. Additionally, we gained insight into the roles of key personnel, including traffic controllers, TPC (Traction Path Controller) officers, and building management system (BMS) operators who oversee critical aspects like wind speed.

**Comprehensive Facility Tour:** Our visit extended to various facilities within the metro office, such as the Simulator Lab, Gallery, and AFC Lab (Automatic Fare Collection). We were introduced to station token systems, ticket vending machines, and card-based QR tokens, deepening our knowledge of fare collection processes and technologies.

**Software Proficiency:** We were exposed to a range of programming languages, including C, C++, Java, .NET, and SQL, used for transaction-related operations in the metro. This insight into the software systems used in the metro's functioning broadened our technical knowledge.

**Card-Based Systems:** Understanding the mechanisms behind card-based systems, such as CIM (Card Insertion Machine) and TIM (Token Insertion Machine), enriched our comprehension of how passenger transactions and card authentication processes are executed.

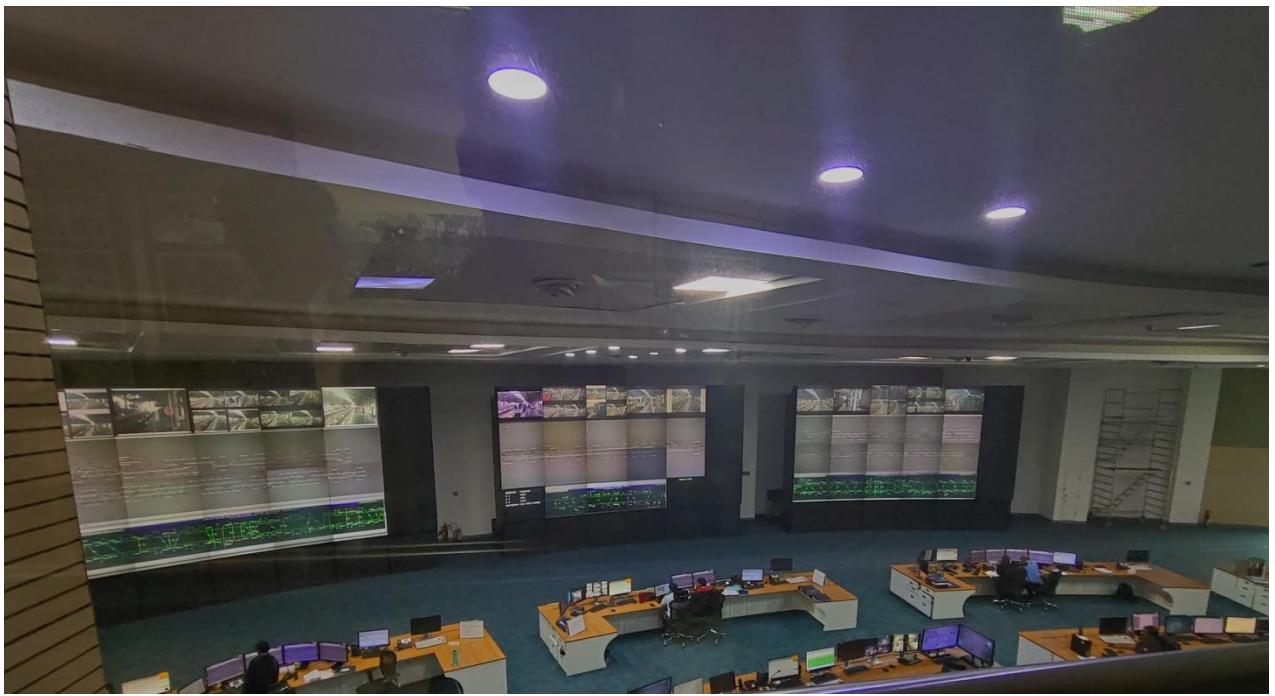
**Cargo and Platform Levels:** We explored the multi-level infrastructure of the metro, encompassing cargo, street, and platform levels. This hands-on experience deepened our awareness of the metro's complex layout and the need for efficient management across various levels.

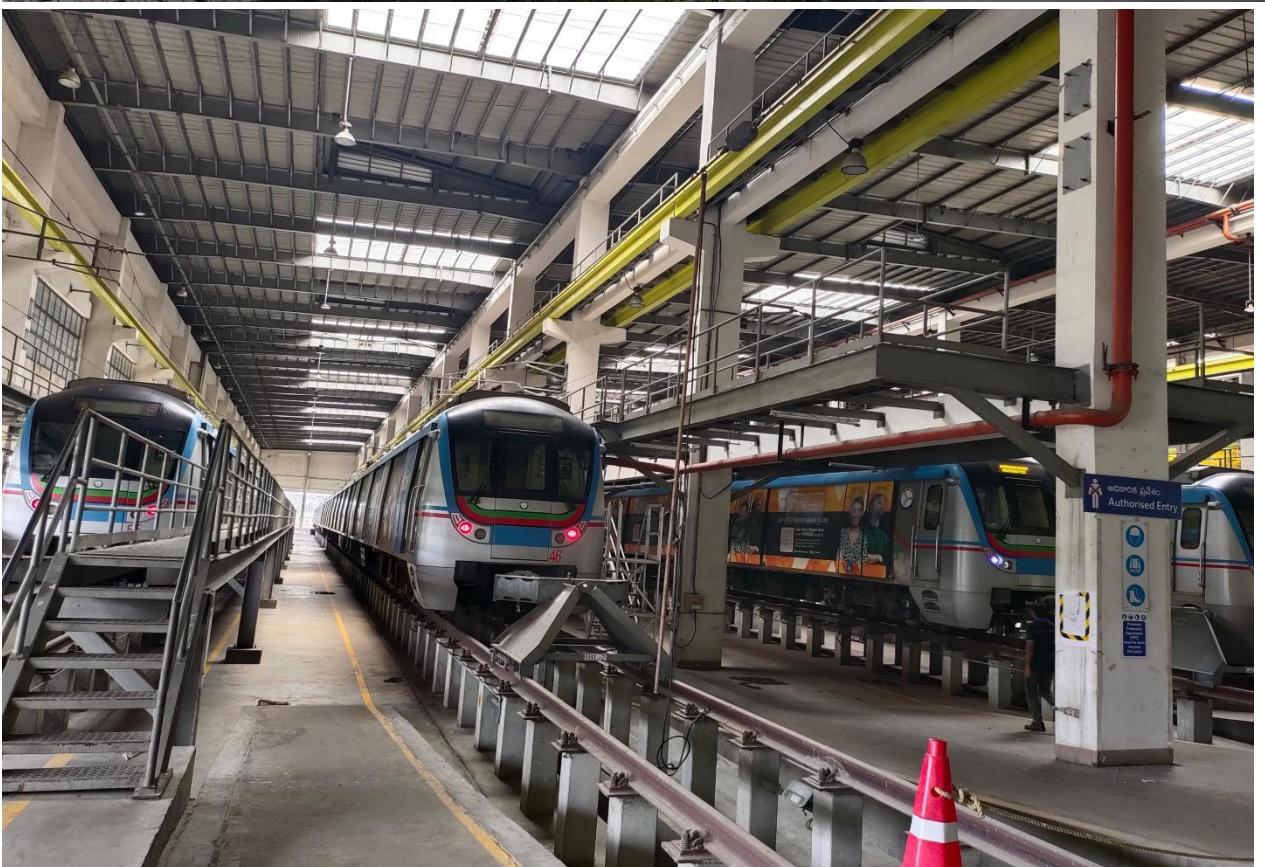
These learning outcomes collectively reflect our enriched understanding of L&T Metro's operational intricacies, ranging from technology-driven control systems to personnel roles and fare collection methods. Additionally, our exposure to the metro's multi-level infrastructure provided insights into the spatial and logistical aspects of urban transportation management. This visit not only expanded our knowledge but also heightened our appreciation for the meticulous planning and execution that goes into ensuring a seamless metro experience for Hyderabad's residents and visitors.

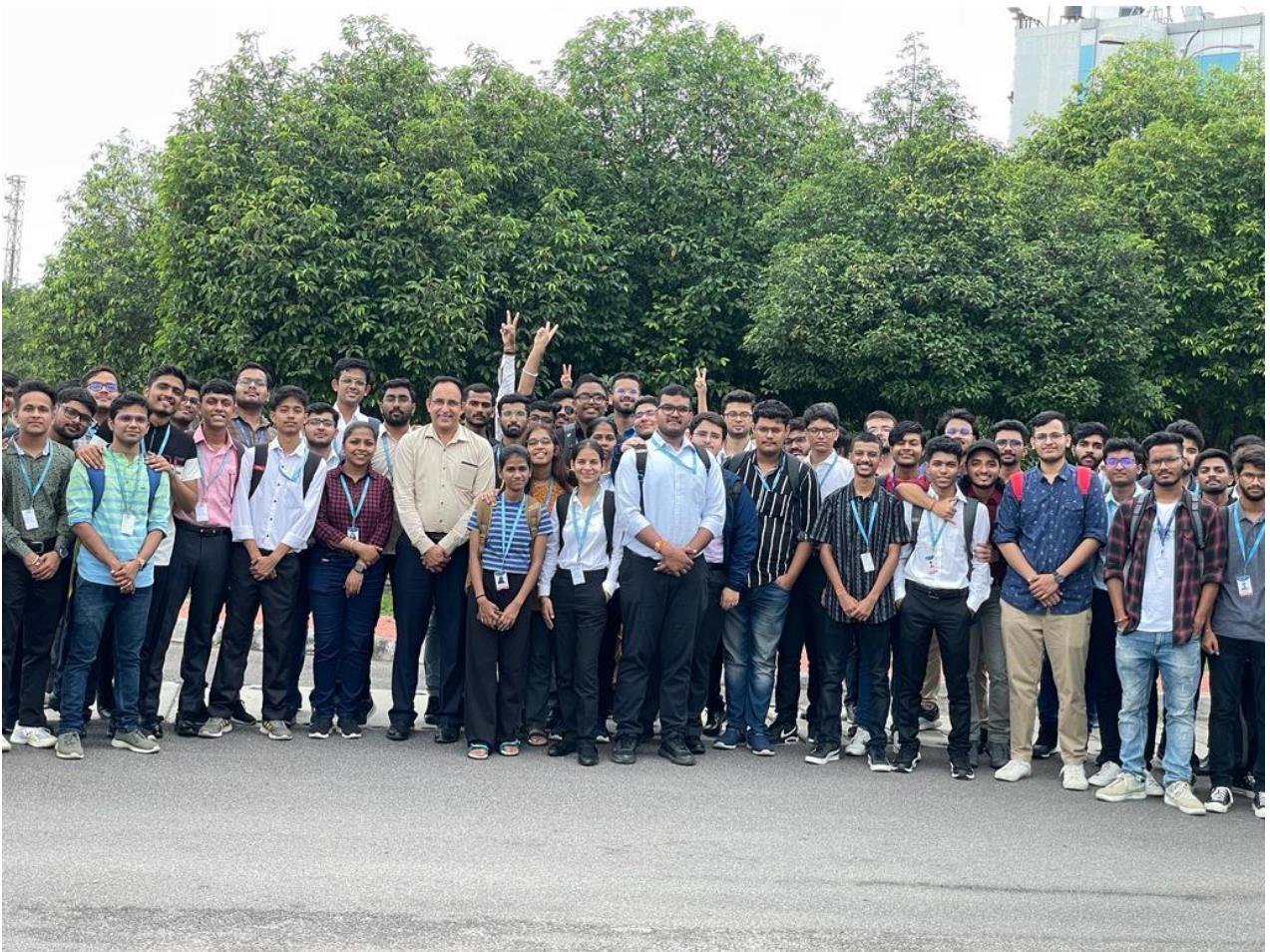
#### 1.4.4 Photographs –











#### 1.4.5 Feedback of the day – 4

The visit to L&T Metro was an exceptional and well-rounded experience that left a lasting impression on all of us. The day was filled with insightful sessions and engaging activities that contributed to our understanding of metro operations and L&T's role in this domain.

The session conducted was particularly enlightening. The expertise and in-depth knowledge of L&T's operations in the metro sector were evident, and the session was delivered with clarity and enthusiasm. It was a valuable opportunity to learn directly from an industry expert.

The office visit to L&T Metro provided us with a glimpse into the inner workings of the organization. We got to witness firsthand the sophisticated infrastructure and technology that powers metro operations in Hyderabad. It was eye-opening to see the meticulous planning and execution required to ensure smooth and efficient public transportation.

The campus visit led by Mr. Narendra Kumar was a highlight of the day. His humility and willingness to share his insights and experiences were truly inspiring. Walking through the campus and understanding the training and development initiatives at L&T Metro was both informative and motivational.

The day was not only about learning but also about camaraderie and bonding. Lunch and the group photo session provided us with an opportunity to interact with fellow participants and reflect on the day's learnings in a relaxed setting.

In conclusion, the visit to L&T Metro was a memorable and enriching experience. It deepened our understanding of metro operations, allowed us to learn from industry experts, and left us inspired by the commitment and professionalism demonstrated by L&T Metro. It was, indeed, a good day filled with valuable insights and meaningful interactions.

## **Day – 5 Report**

1.5.1 Industry Name – 8<sup>th</sup> sept. 2023 Indian National Centre For Ocean Information Services (INCOIS), Hyderabad.

1.5.2 Objectives -

1. **Understanding INCOIS's Mission:** To gain insight into the mission and objectives of INCOIS and its role in providing ocean-related information and services to India and the global community.

2. **Ocean Information Services:** To learn about the various information services offered by INCOIS, including ocean data, forecasts, and advisory services, and how they contribute to marine safety, research, and sustainable ocean management.

3. **Operational Processes:** To understand the operational processes involved in collecting, analyzing, and disseminating oceanographic data, including data acquisition methods and quality control procedures.

4. **Advanced Technologies:** To explore the advanced technologies and tools used by INCOIS for ocean monitoring, including satellite-based remote sensing, ocean modeling, and data assimilation techniques.

5. **Environmental Monitoring:** To comprehend how INCOIS monitors and assesses the state of the marine environment, including factors such as sea-level rise, ocean circulation, and the impact of climate change on coastal regions.

6. **Early Warning Systems:** To learn about the development and implementation of early warning systems for ocean-related hazards, including tsunamis, cyclones, and storm surges, and the crucial role they play in disaster preparedness and mitigation.

7. **Research and Collaboration:** To explore INCOIS's research initiatives, collaborations with national and international organizations, and contributions to ocean science and technology.

8. **Capacity Building:** To understand how INCOIS supports capacity-building efforts by providing training and educational programs in oceanography, benefiting students, researchers, and coastal communities.

9. **Sustainable Ocean Management:** To gain insights into INCOIS's contributions to sustainable ocean management and its efforts to raise awareness about the importance of preserving marine ecosystems.

**10. Career and Educational Opportunities:** To inquire about potential career pathways and educational opportunities in the field of oceanography and ocean information services, including internships and research fellowships.

**11. Networking and Collaboration:** To create opportunities for networking and potential collaborations with experts and professionals at INCOIS, fostering connections for future research and projects.

**12. Awareness and Outreach:** To appreciate the role of INCOIS in public awareness and outreach programs, including its efforts to educate coastal communities and stakeholders about ocean-related issues.

#### 1.5.3 Learning outcome -

Our visit to INCOIS on September 8, 2023, provided us with a comprehensive understanding of ocean information services, marine monitoring, and the critical role INCOIS plays in these domains. The following learning outcomes encapsulate the knowledge and insights gained during this enlightening visit:

**INCOIS's Multifaceted Role:** We gained a profound understanding of INCOIS's multifaceted role as the Indian National Centre for Ocean Information Services. This encompassed its mission, objectives, and contributions to oceanographic research, marine safety, and environmental management.

**Remote Sensing and Marine Observation:** We discovered the significance of remote sensing in ocean observation. Understanding that sight, hearing, and smell are forms of remote sensing helped us appreciate the diverse methods used in collecting oceanographic data.

**Marine Ecosystem Awareness:** Our visit deepened our awareness of the marine ecosystem, with a particular focus on Sardine fish and their relevance in the context of oceanography and fisheries.

**Ocean-Atmosphere Interactions:** We learned about the fascinating phenomenon of dust storms originating from Oman and impacting Gujarat, highlighting the interconnectedness of ocean and atmospheric systems.

**Satellite Evolution:** We gained insights into the evolution of satellite technology since 1957 and its pivotal role in ocean observation, data collection, and environmental monitoring.

**Tsunami Early Warning Center:** Our visit to the Indian National Tsunami Early Warning Center (NTWC) within INCOIS enlightened us about its international reach, tsunami magnitude

assessments, distance support systems, and the dissemination of NTWC Public Bulletins and Threat Maps.

**Operational Ocean Services:** We comprehended the array of operational ocean services offered by INCOIS, including PFZ (Potential Fishing Zone) Advisory services, Ocean State Forecast products, marine search and rescue operations, oil spill trajectory predictions, and the use of cutting-edge ICT tools like the GEMINI device.

**Application of Satellite Navigation:** We explored the application of satellite navigation systems like GAGAN (GPS-Aided Geo Augmented Navigation) and NAVIC in enhancing marine safety, navigation, and communication.

These learning outcomes collectively reflect our enriched understanding of INCOIS's contributions to marine science, safety, and environmental preservation. Furthermore, our exposure to the organization's advanced technologies and operational processes enhanced our knowledge of the role of technology in ocean monitoring and management. This visit not only expanded our horizons but also emphasized the critical importance of ocean information services in sustaining marine ecosystems and ensuring the safety of coastal communities

#### 1.5.4 Photographs -









### 1.5.5 Feedback of the day – 5 -

The visit to INCOIS (Indian National Centre for Ocean Information Services) was an exceptional and enlightening experience that enriched our knowledge about the critical role India plays in ocean-related services and disaster management. The day was marked by engaging sessions and insightful discussions that shed light on INCOIS's diverse functions and its contributions to both national and global initiatives.

The session provided by the experts at INCOIS was not only informative but also captivating. We were able to grasp the significance of ocean-based data and services, particularly in disaster management. Learning about how INCOIS serves as a vital hub for providing early warnings and real-time information to 29 different countries for events like storms and tsunamis was truly impressive. It emphasized the remarkable impact of India's expertise in this field on a global scale. The visit also allowed us to gain insights into fascinating aspects of oceanography and marine science. Understanding how the Machuara (a type of fishing vessel) fleet operates to catch fish, and the role of ocean data in aiding their operations, was both educational and eye-opening. Learning about disease detection in coastal areas through oceanographic data further underscored the importance of INCOIS's work in safeguarding public health.

Overall, the visit to INCOIS was a great day that left us with a profound appreciation for the organization's commitment to ocean information services, disaster management, and environmental monitoring. It was a day filled with valuable knowledge and insights that will undoubtedly stay with us as we continue to explore the intricate relationship between oceans and society.

**Choice – 2**

**Pune**

## **Day – 1 Report**

2.1.1 Industry Name - 14<sup>th</sup> sept. 2023 City Tour, Shaniwar Wada, Raja Dinkar Kelkar Meuseum

2.1.2 Objectives -

1. **Problem Identification:** To closely observe and interact with visitors and staff at Raja Dinkar Kelkar Museum and Shaniwar Wada to identify the challenges and issues faced by people during their visits.
2. **Understanding Visitor Experience:** To gain insights into the overall visitor experience, including factors such as accessibility, signage, crowd management, and the availability of information.
3. **Cultural Preservation:** To assess the measures in place for the preservation of historical and cultural artifacts at both locations and identify any challenges related to conservation and maintenance.
4. **Infrastructure and Accessibility:** To evaluate the infrastructure, including pathways, ramps, seating arrangements, and restrooms, with a focus on accessibility for all, including differently-abled individuals and elderly visitors.
5. **Safety and Security:** To analyze the safety and security measures in place, including crowd control, emergency exits, and the protection of heritage structures and exhibits.
6. **Information Dissemination:** To understand how information is disseminated to visitors, including the availability of brochures, guided tours, audio guides, and digital resources, and to assess their effectiveness.
7. **Visitor Engagement:** To explore the level of visitor engagement through interactive exhibits, educational programs, and interpretive displays, and identify areas for improvement.
8. **Cultural Awareness:** To gauge the extent to which the museums promote cultural awareness and historical understanding among visitors, including school groups and tourists.
9. **Local Community Impact:** To examine the impact of these cultural institutions on the local community, including economic benefits, educational outreach, and community involvement.
10. **Ideation and Problem Statement Creation:** To synthesize the gathered insights and collaboratively brainstorm potential solutions to the identified challenges, culminating in the creation of problem statements and objectives for improvement.

11. **Collaboration Opportunities:** To explore opportunities for collaboration between the museums, local authorities, and the community to address the identified challenges and enhance the overall visitor experience.
12. **Documentation and Reporting:** To document findings, observations, and proposed objectives in a comprehensive report that can serve as a basis for future initiatives and improvements at Raja Dinkar Kelkar Museum and Shaniwar Wada.

These objectives were designed to facilitate a thorough assessment of the visitor experience, preservation efforts, accessibility, and community impact at both cultural institutions. The ultimate goal was to ideate and create meaningful objectives for addressing the identified challenges, thereby enhancing the cultural and historical significance of these sites for all visitors.

### 2.1.3 Learning outcome -

#### **Learning Outcomes for Shaniwar Wada:**

**Understanding Ticket Pricing:** Visitors gained an understanding of the ticket pricing structure at Shaniwar Wada, with Rs. 25 for Indian nationals and Rs. 300 for foreigners. This information ensures transparency in admission fees.

**Exploring Timings:** Visitors became aware of Shaniwar Wada's operating hours from 09:30 AM to 05:30 PM. Knowing the timings is crucial for planning a visit.

**Estimated Visit Duration:** Visitors learned that it typically takes around 1 hour to complete a visit to Shaniwar Wada. This information aids in time management.

**Identifying Restrictions:** Visitors discovered that there were no specific restrictions at Shaniwar Wada, making it accessible to all.

#### **Challenges Identified at Shaniwar Wada:**

**Lack of Online Ticket Booking:** The absence of an online ticket booking option was identified as a challenge, which may have resulted in longer waiting times for visitors.

**Parking Space Shortage:** The limited parking space posed a challenge for visitors who arrived by private vehicles, potentially causing inconvenience.

**Lack of Guides:** The absence of guides may have hindered visitors' ability to gain deeper insights into the historical and cultural significance of Shaniwar Wada.

**Information Boards Insufficiency:** The insufficiency of information boards may have left visitors without a comprehensive understanding of the site's history and structure.

**Structure Understanding:** Visitors may have faced challenges in comprehending the layout and historical significance of Shaniwar Wada due to the lack of adequate information.

#### **Proposed Solutions for Shaniwar Wada:**

**Official Website and App:** Creating an official website and a dedicated mobile app for Shaniwar Wada can provide visitors with essential information about the fort's history, visiting hours, ticket prices, and available services. This digital platform can also include an online payment portal for ticket purchases and guided tours.

**Mobile Payment Options:** Integrating well-known mobile payment options such as PhonePe and Paytm can enhance visitor convenience by simplifying the ticket purchasing process.

**Interactive Touchscreen Displays:** Installing interactive touchscreen displays near information boards can offer visitors in-depth historical content, virtual tours, videos, and an immersive experience.

**QR Codes for Digital Content:** Placing QR codes on information boards that link to digital content like audio guides, videos, or augmented reality experiences can enrich the visitor experience and provide additional historical context.

**AR and VR Technology:** Implementing augmented reality (AR) and virtual reality (VR) technology can allow visitors to experience Shaniwar Wada as it was in its original state, adding a new dimension to the visit.

#### **Learning Outcomes for Raja Dinkar Kelkar Museum:**

**Understanding Ticket Pricing:** Visitors gained an understanding of the ticket pricing at Raja Dinkar Kelkar Museum, which is Rs. 100 for everyone.

**Exploring Timings:** Visitors learned that the museum operates from 10:00 AM to 05:30 PM, helping them plan their visit accordingly.

**Estimated Visit Duration:** Visitors were informed that it typically takes around 1.5 hours to complete a visit to the museum.

**Restrictions:** Visitors learned about the additional Rs. 100 charge for using a camera inside the museum.

#### **Challenges Identified at Raja Dinkar Kelkar Museum:**

**Insufficient Information Boards:** The lack of comprehensive information boards was identified as a challenge, affecting visitors' understanding of the historical artifacts.

#### **Proposed Solutions for Raja Dinkar Kelkar Museum:**

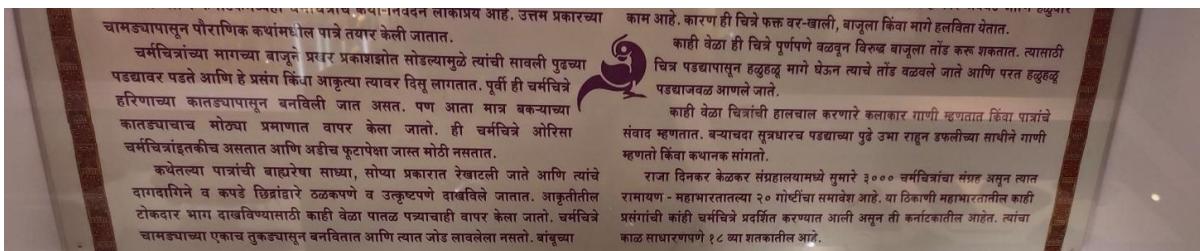
**AR Technology for Visualization:** Introducing augmented reality (AR) technology through a Smart Heritage App can offer visitors visualizations and historical background information for artifacts, enhancing their understanding and engagement.

**QR Codes for AR Animations:** Placing QR codes near artifacts can redirect visitors to AR animations that provide a deeper understanding of the object's functionality and historical significance.

By implementing these solutions, both Shaniwar Wada and Raja Dinkar Kelkar Museum can significantly enhance the visitor experience, improve accessibility, and provide valuable historical and cultural insights. These outcomes contribute to a more enriching and educational experience for all visitors.

#### 2.1.4 Photographs –









### 2.1.5 Feedback of the day -

The city tour, which encompassed visits to Shaniwar Wada and Raja Dinkar Kelkar Museum in Pune, was a delightful and culturally enriching experience. It allowed us to explore the historical and artistic treasures of Pune, providing valuable insights into the city's heritage and cultural significance.

The visit to Shaniwar Wada, a historic fort and palace, was a journey through time. The grandeur and architectural brilliance of this iconic site left us awestruck. Learning about its history and the significant events that unfolded within its walls provided a deeper understanding of Pune's rich past.

Our exploration continued at Raja Dinkar Kelkar Museum, where we encountered a diverse collection of artifacts and artworks. However, what stood out were the challenges we identified during our visit. The lack of comprehensive information boards and the additional fee for using cameras inside the museum were points of concern. These observations served as valuable insights into areas where improvements could be made to enhance the visitor experience.

On the positive side, the city tour provided us with a platform for ideation and problem-solving. We identified these challenges as opportunities for enhancing the visitor experience at cultural institutions like museums, which can benefit from the integration of modern technology, such as Augmented Reality (AR). Using AR technology to provide detailed information and interactive experiences related to artifacts and historical contexts could significantly improve the visitor's understanding and engagement.

In conclusion, the city tour in Pune was a day of exploration, discovery, and reflection. It allowed us to appreciate the historical and cultural significance of the city while identifying areas where technological advancements can enhance the visitor experience at cultural institutions. This experience served as a reminder of the importance of preserving and showcasing our cultural heritage for generations to come.

## Day – 2 Report

2.2.1 Industry Name - 12<sup>th</sup> sept. 2023 Ankushrao Langde Natyagruha Auditorium IoT session by Infinity X.

2.2.2 Objectives -

1. **Understanding IoT Concepts:** The primary objective of attending the IoT session was to gain a comprehensive understanding of Internet of Things (IoT) concepts, including its applications and relevance in today's technology-driven world.
2. **Hands-On Learning:** To acquire practical knowledge and skills related to IoT by actively participating in the creation of a home automation project. This objective aimed to bridge the gap between theoretical learning and practical implementation.
3. **Project Development:** To collaboratively develop a home automation project during the session, which involved integrating various IoT components such as sensors, actuators, and a microcontroller to automate household tasks and enhance convenience.
4. **Problem Solving:** To foster problem-solving abilities by identifying real-life scenarios where IoT automation can provide solutions. This involved considering challenges faced in daily life and developing innovative IoT-based solutions.
5. **Integration of IoT Technologies:** To explore the integration of IoT technologies, including sensors for environmental monitoring, communication protocols, and data processing, into a unified and functional system.
6. **User-Friendly Interface:** To design a user-friendly interface for controlling and monitoring the home automation system. This included developing a mobile app or a web-based dashboard for easy accessibility.
7. **Efficiency and Sustainability:** To focus on creating an IoT home automation project that promotes energy efficiency, sustainability, and resource conservation, aligning with contemporary environmental concerns.
8. **Data Security:** To consider the importance of data security and privacy in IoT systems, exploring encryption and authentication methods to protect sensitive information.
9. **Presentation Skills:** To enhance presentation skills by explaining the home automation project to fellow attendees, highlighting its features, functionality, and potential real-world applications.
10. **Networking and Collaboration:** To establish connections and network with fellow participants, sharing ideas, experiences, and potential future collaboration opportunities in the field of IoT.

### 2.2.3 Learning outcome -

**Comprehensive IoT Understanding:** After participating in the IoT session and developing the home automation project, I have gained a comprehensive understanding of Internet of Things (IoT) concepts, encompassing its principles, applications, and relevance in contemporary technology landscapes.

**Practical IoT Proficiency:** Through hands-on experience during the session, I have acquired practical proficiency in IoT, where I actively applied theoretical knowledge to build a functional home automation project, bridging the gap between theory and practice.

**Project Development Skills:** My ability to develop and execute IoT projects has significantly improved as I successfully collaborated with peers to create a sophisticated home automation system, demonstrating proficiency in integrating various IoT components.

**Innovative Problem Solving:** I have honed my problem-solving skills by identifying real-world challenges and devising innovative IoT-based solutions to address them, highlighting my capacity to apply IoT technology in practical scenarios.

**IoT Technology Integration:** My knowledge of IoT technologies, encompassing sensor integration, communication protocols, and data processing, has expanded, enabling me to construct a cohesive and functional IoT ecosystem.

**User-Centric Design:** I have acquired expertise in designing user-friendly interfaces for IoT systems, emphasizing usability and accessibility. This includes creating mobile applications and web dashboards to control and monitor the home automation project.

**Sustainability Awareness:** My understanding of sustainability has deepened as I focused on developing an energy-efficient and sustainable home automation system, aligning with current environmental concerns and responsible technology usage.

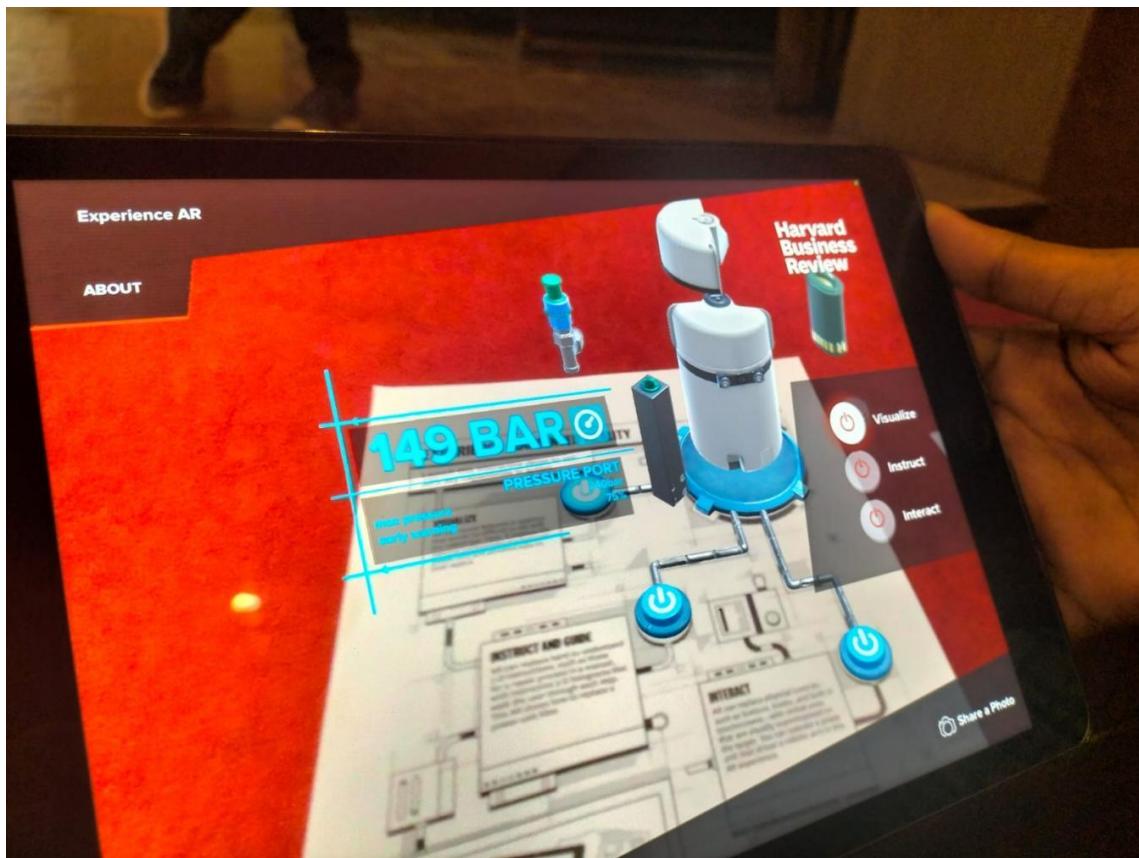
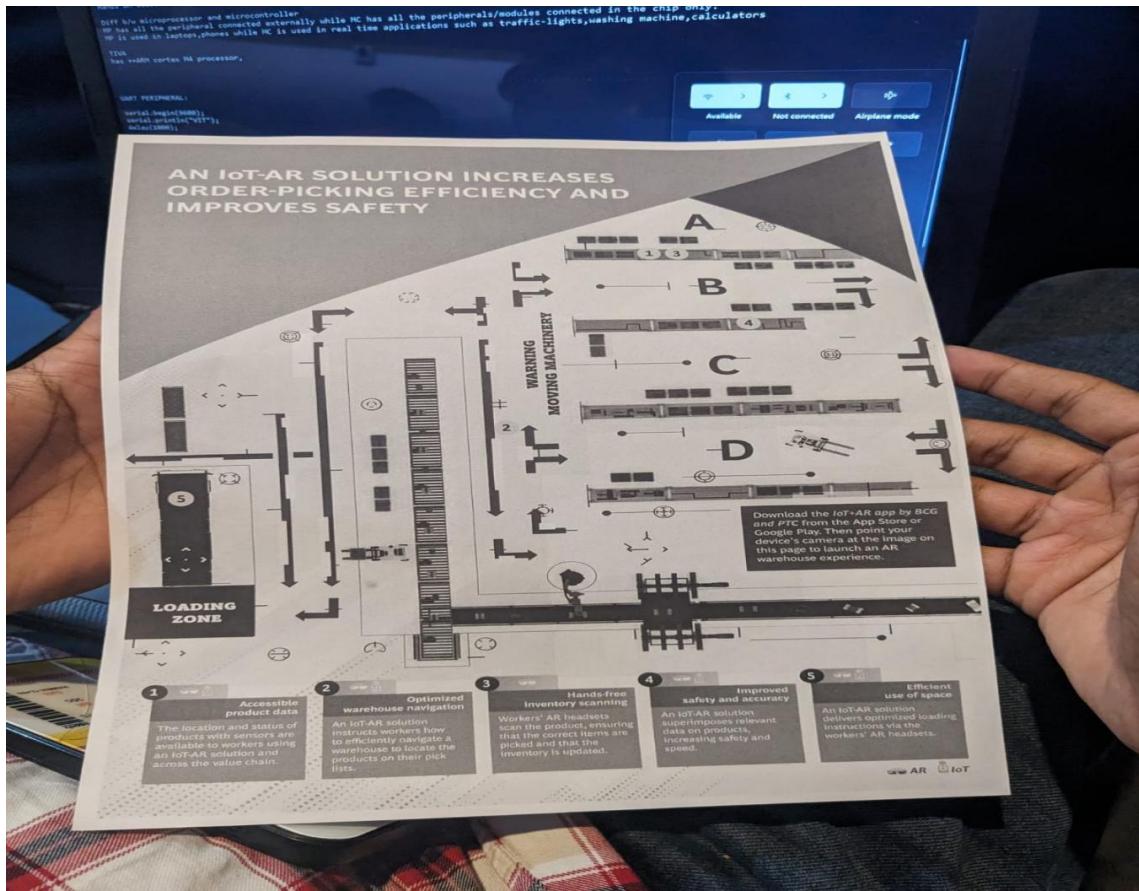
**Data Security Competence:** I am now well-versed in the importance of data security and privacy within IoT systems, having explored encryption and authentication methods to safeguard sensitive information, ensuring data integrity and user privacy.

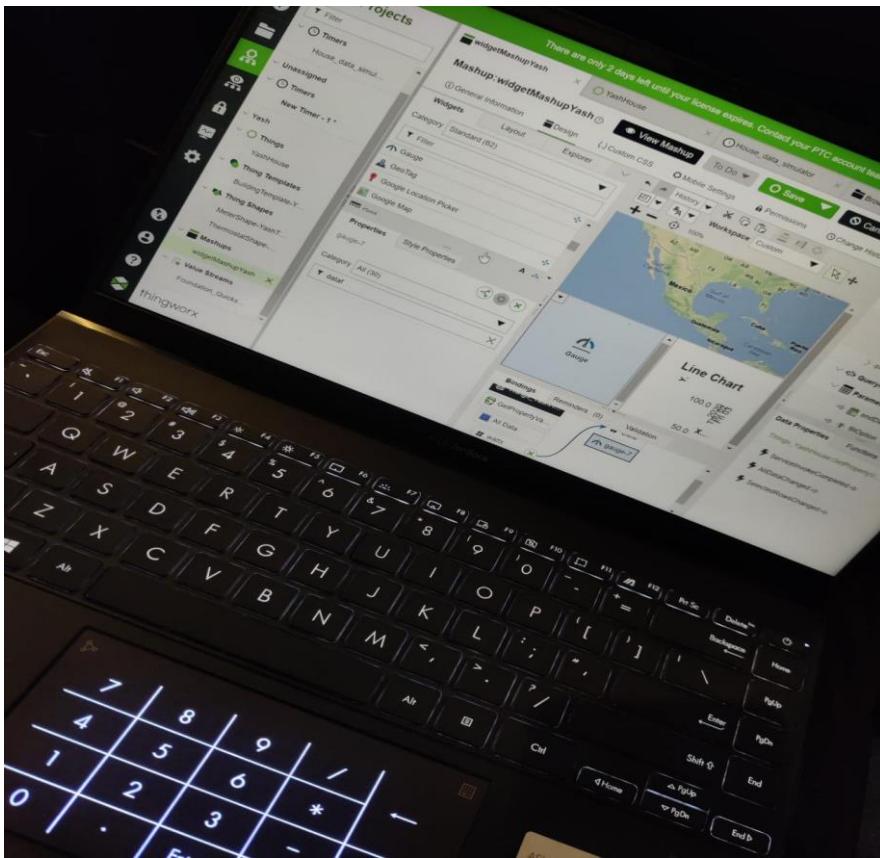
**Effective Presentation Skills:** My ability to communicate complex technical concepts has improved significantly. I can effectively present the home automation project, highlighting its features, functionality, and real-world applicability to diverse audiences.

**Networking and Collaboration:** Through active participation in the IoT session, I have expanded my network and established valuable connections with peers who share similar interests in IoT technology. This fosters opportunities for future collaborations and shared endeavors in the IoT field.

#### 2.2.4 Photographs -







### 2.2.5 Feedback of the day -

The IoT session on Day 2 in Pune was an engaging and enlightening experience that broadened our horizons on the Internet of Things and its real-world applications. It was a day filled with valuable insights and hands-on learning that left a lasting impact. The session's structure and content were exceptionally well-organized, thanks to the expertise of the instructors. Their clear explanations and practical demonstrations made complex IoT concepts accessible and comprehensible. This approach fostered a deeper understanding of how IoT technology can transform industries and improve our daily lives.

The highlight of the session was undoubtedly the opportunity to create a home automation project using IoT. This hands-on experience allowed us to apply our newfound knowledge to a real-world project. Building and configuring the project not only reinforced our theoretical understanding but also ignited our creativity in harnessing IoT for practical solutions. Moreover, the session's focus on tinkering with IoT components, such as sensors and microcontrollers, was both exciting and educational. It empowered us to explore the possibilities of IoT beyond the classroom setting.

The IoT session also underscored the relevance of IoT in addressing real-world challenges, from improving energy efficiency to enhancing security and convenience in our homes and workplaces. In conclusion, the IoT session on Day 2 was a remarkable learning experience that blended theory with hands-on practice. It provided us with the knowledge and skills necessary to appreciate the transformative potential of IoT technology. The engaging format of the session, coupled with the practical project, made it a standout moment in our experiential learning journey.

## **Day – 3 Report**

2.3.1 Industry name - 13<sup>th</sup> sept. 2023 Natsamrat Nilu Phule Natyagruh for AR/VR session.

2.3.2 Objective -

1. **Understanding AR and VR Fundamentals:** To develop a solid understanding of the fundamental concepts of Augmented Reality (AR) and Virtual Reality (VR) technologies, including their differences, similarities, and core principles.
2. **Applications and Use Cases:** To explore the diverse applications and use cases of AR and VR technologies across various industries, such as gaming, healthcare, education, and enterprise solutions.
3. **Immersive Experience Design:** To learn about the principles and best practices of designing immersive experiences in AR and VR, with a focus on user interface (UI) and user experience (UX) design.
4. **Hardware and Software Insights:** To gain insights into the hardware and software components essential for AR and VR development, including devices, sensors, and programming languages or platforms.
5. **Interaction and User Engagement:** To understand how users interact with AR and VR environments, including gestures, controllers, and voice commands, and how to optimize user engagement in immersive experiences.
6. **Real-World Implementations:** To explore real-world case studies and examples of successful AR and VR implementations, demonstrating the practical impact and benefits of these technologies.
7. **Challenges and Limitations:** To identify the challenges and limitations associated with AR and VR technologies, including technical constraints, ethical considerations, and potential barriers to adoption.
8. **Creating AR and VR Content:** To gain hands-on experience in creating basic AR and VR content, such as 3D models or AR applications, providing a foundation for further exploration and development.
9. **Future Trends and Innovations:** To stay updated on current trends and emerging innovations in the AR and VR industry, preparing for future developments and opportunities.

### 2.3.3 Learning outcome -

**Understanding AR and VR:** Gain a solid understanding of Augmented Reality (AR) and Virtual Reality (VR) technologies, including their applications, differences, and significance in the tech industry.

**In-Depth Knowledge of Infinity X:** Acquire insights into the products, services, and expertise offered by Infinity X Company in the AR/VR domain, and understand their role in the AR/VR ecosystem.

**Unity App Proficiency:** Develop proficiency in using the Unity development platform, focusing on its applications in creating AR/VR experiences.

**Creation of Interactive Objects:** Learn the fundamental principles of creating interactive objects within Unity, with a specific focus on developing a virtual gun as a hands-on project.

**AR/VR Design Principles:** Familiarize oneself with design principles unique to AR and VR environments, including considerations for user experience, immersion, and interactivity.

**Scripting and Programming:** Develop scripting and programming skills necessary for implementing interactions, animations, and functionalities within the Unity app.

**Optimization for Performance:** Learn techniques for optimizing AR/VR applications for performance, ensuring smooth and immersive experiences for users.

**User Interface Design:** Gain proficiency in designing user interfaces (UI) within AR/VR environments, focusing on creating intuitive and visually appealing interfaces for the virtual gun project.

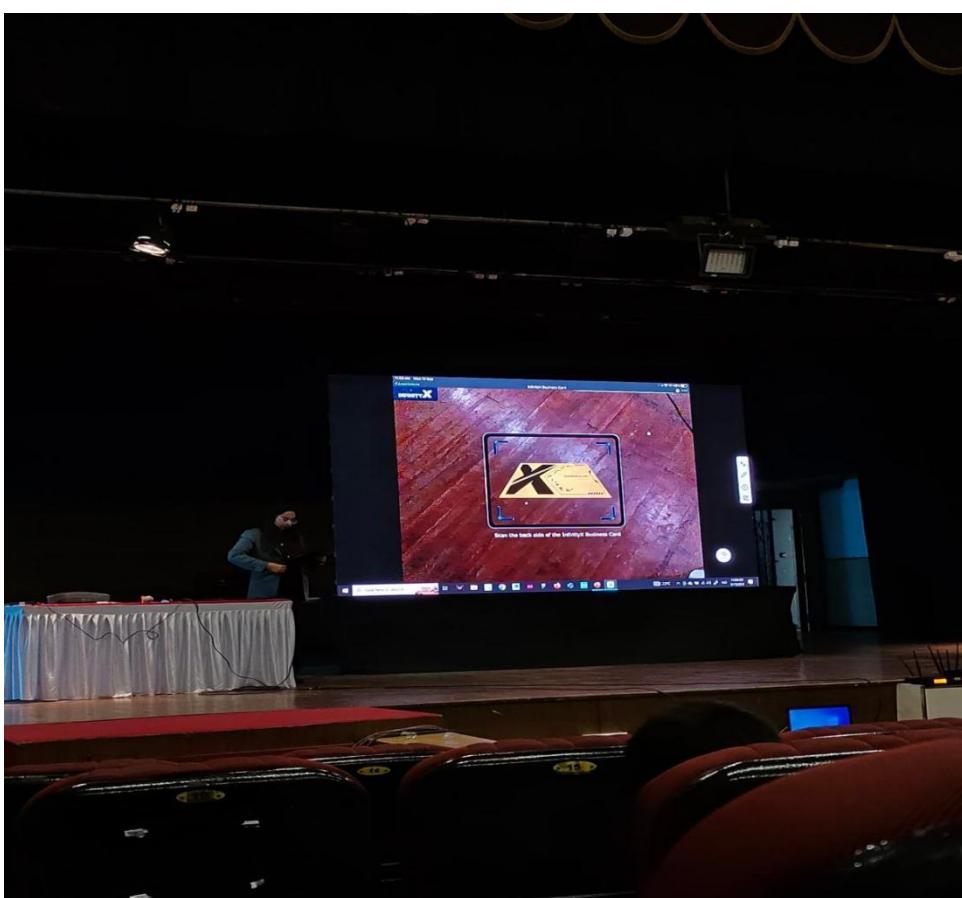
**Interactivity and Realism:** Understand how to add interactivity and realism to the virtual gun project through realistic physics simulations, sound effects, and visual feedback.

**Testing and Debugging:** Learn effective testing and debugging strategies for AR/VR applications, ensuring that the virtual gun functions seamlessly and without errors.

**Collaborative Development:** Explore the collaborative aspect of AR/VR development, including teamwork, communication, and version control when working on projects in Unity.

**Project Completion:** Successfully complete the creation of the virtual gun within Unity, demonstrating the ability to bring an AR/VR concept to fruition.

### 2.3.4 Photographs –





### 2.3.5 Feedback of the day -

The AR/VR session on Day 3 was an exceptionally engaging and enlightening experience that deepened our understanding of augmented reality and virtual reality technologies. The day was filled with hands-on activities and interactive learning that allowed us to explore the immersive world of AR and VR.

One of the highlights of the session was the in-depth explanation of augmented reality by the PMC company employee. Their expertise in the field was evident, and they provided a comprehensive overview of how AR technology is used in various industries, including education, healthcare, and gaming. This knowledge expanded our horizons and left us inspired by the endless possibilities of AR.

The hands-on experience with virtual reality was equally captivating. Being able to wear VR headsets and immerse ourselves in virtual environments was not only exciting but also educational. It provided us with insights into the potential applications of VR technology, from gaming to training simulations and beyond.

The second part of the session, which involved hands-on experience with CREO, was another valuable aspect. It allowed us to apply our knowledge to practical tasks, such as designing an engine and creating a virtual environment for a mobile application. These activities showcased the real-world relevance of CAD software and its importance in various industries.

In summary, the AR/VR session on Day 3 was a dynamic and immersive experience. It deepened our understanding of these transformative technologies and their applications in diverse fields. The hands-on activities and expert guidance provided a well-rounded learning experience, leaving us inspired and eager to explore the ever-evolving world of AR, VR, and CAD further.

## Day – 4 Report

2.4.1 Industry name - 14<sup>th</sup> sept. 2023 Ar/Vr session by Infinity X at Natsamrat Nilu Phule Natyagruh.

2.4.2 Objective -

- 1 **Understanding AR and VR Fundamentals:** To develop a solid understanding of the fundamental concepts of Augmented Reality (AR) and Virtual Reality (VR) technologies, including their differences, similarities, and core principles.
- 2 **Applications and Use Cases:** To explore the diverse applications and use cases of AR and VR technologies across various industries, such as gaming, healthcare, education, and enterprise solutions.
- 3 **Immersive Experience Design:** To learn about the principles and best practices of designing immersive experiences in AR and VR, with a focus on user interface (UI) and user experience (UX) design.
- 4 **Hardware and Software Insights:** To gain insights into the hardware and software components essential for AR and VR development, including devices, sensors, and programming languages or platforms.
- 5 **Real-World Implementations:** To explore real-world case studies and examples of successful AR and VR implementations, demonstrating the practical impact and benefits of these technologies.
- 6 **Challenges and Limitations:** To identify the challenges and limitations associated with AR and VR technologies, including technical constraints, ethical considerations, and potential barriers to adoption.
- 7 **Creating AR and VR Content:** To gain hands-on experience in creating basic AR and VR content, such as 3D models or AR applications, providing a foundation for further exploration and development.
- 8 **Future Trends and Innovations:** To stay updated on current trends and emerging innovations in the AR and VR industry, preparing for future developments and opportunities.

2.4.3 Learning outcome -

**Comprehensive Understanding of AR and VR:** Following the AR/VR session facilitated by Infinity X company employees, I have gained a thorough understanding of Augmented Reality (AR) and Virtual Reality (VR) technologies. This knowledge encompasses their concepts, applications, and their significance in immersive digital experiences.

**Virtual Reality Expertise:** Through a dedicated VR session conducted by PMC company employees, I have delved deeply into the world of Virtual Reality. This includes learning about

VR hardware, software, and practical applications, equipping me with specialized knowledge in this emerging field.

**Hands-On VR Experience:** My hands-on experience with Virtual Reality during the session allowed me to explore VR environments, interact with 3D objects, and navigate through simulated scenarios, enhancing my practical proficiency in utilizing VR technology.

**CREO Platform Proficiency:** During the second session, I have developed proficiency in using the CREO platform. I successfully applied CREO's tools and features to create a detailed design of an engine and a virtual environment for a mobile application, showcasing my ability to use CAD software effectively.

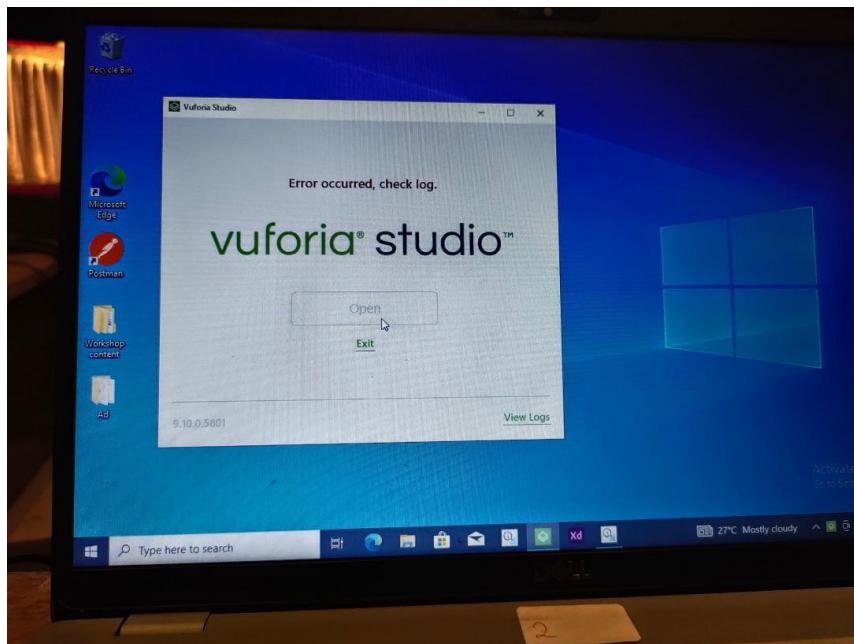
**Engine Design Skills:** By completing the task of designing an engine using CREO, I have acquired skills in 3D modeling, assembly, and detailing, gaining competence in engineering design principles and CAD software application.

**Mobile Application Virtual Environment Creation:** My hands-on experience in creating a virtual environment for a mobile application using CREO has honed my ability to simulate real-world scenarios and design interactive digital spaces, making me proficient in designing for immersive user experiences.

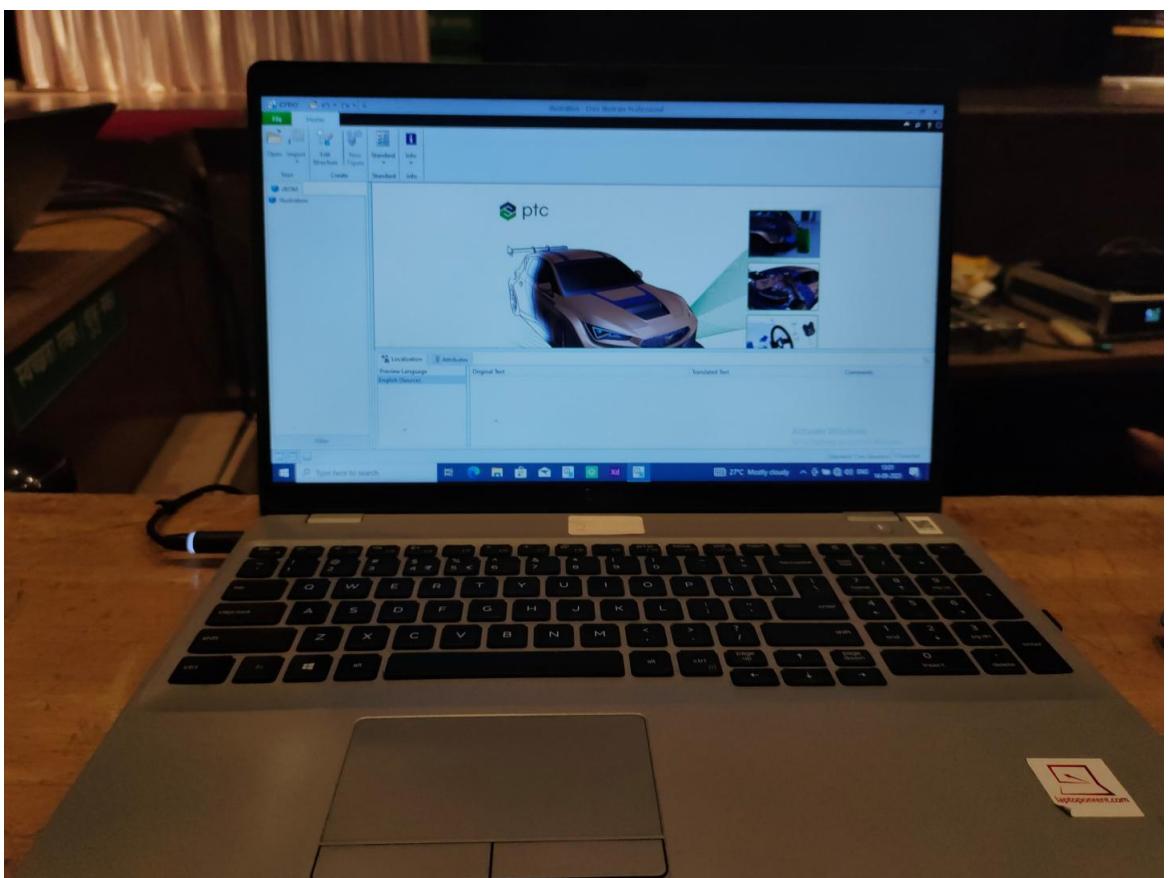
**Task Completion:** Having successfully completed all the assigned tasks during the sessions demonstrates my dedication to learning and my ability to apply newly acquired knowledge and skills effectively.

These learning outcomes reflect the significant knowledge and practical expertise I have gained from the AR/VR and CREO platform sessions. They underscore my readiness to engage in and contribute to the fields of augmented reality, virtual reality, and computer-aided design, making me well-prepared for future endeavors in these domains.

#### 2.4.4 Photographs –







#### 2.4.5 Feedback of the day -

The AR/VR session on Day 4 in Pune was an immersive and intellectually stimulating experience. It provided us with hands-on exposure to cutting-edge technologies and allowed us to explore the creative and practical applications of AR and VR.

Working with Vuforia Studio was a highlight of the session. It allowed us to delve into the world of augmented reality, enabling us to create a mobile application. This hands-on experience was not only exciting but also highly educational, as it exposed us to the tools and techniques required to develop AR applications.

Building a mobile application using Vuforia Studio was a unique opportunity to apply our knowledge in a real-world context. It required us to think critically, solve problems, and collaborate effectively, all of which are essential skills in today's technology-driven landscape. Additionally, the session's focus on designing an engine further enriched our understanding of CAD software and its practical applications. It allowed us to explore the intricacies of engineering design and gain insights into the process of creating complex machinery.

Overall, Day 4's AR/VR session was a dynamic and enriching experience that bridged the gap between theory and practice. It equipped us with valuable skills and knowledge, making us better prepared to navigate the evolving world of technology and innovation.

## **Day – 5 Report**

2.5.1 Industry name - 15<sup>th</sup> sept. 2023 Acharya Atre Rang Mandi Session by Mr. Millind Dattar Co-Founder Canebot.

2.5.2 Objectives -

1. **Entrepreneurship Journey:** Gain insights into the entrepreneurial journey of Mr. Millind Dattar and his co-founder, with a focus on the challenges, milestones, and key decisions that shaped their path from ideation to execution.
2. **Innovative Business Models:** Understand the innovative business models explored by CaneBot, particularly the transition from selling sugarcane juice in bottles to deploying automated juice machines, and the rationale behind this strategic shift.
3. **Adapting to Market Changes:** Explore how CaneBot adapted to changing market conditions, including their experience on Shark Tank India and the impact it had on their business strategy and product offerings.
4. **Market Expansion:** Learn about CaneBot's efforts to expand their market reach and customer base, including securing their first order for the World Cup 2023 at Vishakhapatnam Stadium, and the challenges and opportunities associated with large-scale events.
5. **Innovation and Ideation:** Discover the various ideas and concepts that CaneBot explored since 2012 before settling on their current business model in 2019. Understand the importance of experimentation and iteration in entrepreneurship.
6. **Pivoting Amidst Challenges:** Discuss the challenges posed by the COVID-19 pandemic and how CaneBot responded by pivoting their business strategy. Explore the lessons learned from adapting to unforeseen challenges.
7. **Corporate Partnerships:** Examine CaneBot's experience in partnering with corporate clients and the dynamics of B2B relationships in the food and beverage industry.
8. **Sustainability and Automation:** Gain insights into CaneBot's commitment to sustainability and efficiency through the use of automated sugarcane juice machines. Understand the environmental and operational benefits of this approach.
9. **Resilience and Entrepreneurial Spirit:** Explore the resilience and determination required to navigate the ups and downs of entrepreneurship, including dealing with setbacks and disruptions in the business landscape.
10. **Future Endeavors:** Discuss CaneBot's future plans, potential areas of growth, and the lessons learned that will shape their entrepreneurial journey moving forward.

By addressing these learning objectives, participants can gain a comprehensive understanding of the entrepreneurial journey of CaneBot, the challenges and opportunities encountered, and the strategic decisions made to adapt and thrive in a dynamic market environment.

### 2.5.3 Learning outcome -

**Entrepreneurial Resilience:** Participants will gain a profound understanding of the resilience required in entrepreneurship, particularly when faced with unexpected challenges like the COVID-19 pandemic, and learn how to adapt and innovate in response.

**Pivoting Strategies:** Discover the art of strategic pivoting in business. Learn how CaneBot successfully transitioned from a bottle juice model to an automated sugarcane juice machine model, and understand the strategic considerations that drove this transformation.

**Shark Tank Insights:** Gain exclusive insights into the world of entrepreneurship as seen through the lens of Shark Tank India. Understand the impact of participating in such platforms on business strategies and brand visibility.

**Innovative Sustainability:** Explore how CaneBot combines sustainability with innovation by employing automated sugarcane juice machines, reducing environmental impact while maintaining operational efficiency.

**Ideation to Execution:** Learn from CaneBot's journey of nurturing more than 12 ideas from 2012 before finally launching in 2019. Understand the process of idea generation, refinement, and execution.

**Event-Centric Entrepreneurship:** Discover the dynamics of catering to large-scale events such as the World Cup 2023 at Vishakhapatnam Stadium. Understand the opportunities and challenges associated with event-based business strategies.

**Corporate Partnerships:** Gain insights into building and sustaining corporate partnerships in the food and beverage industry, and the strategies used by CaneBot to serve corporate clients directly.

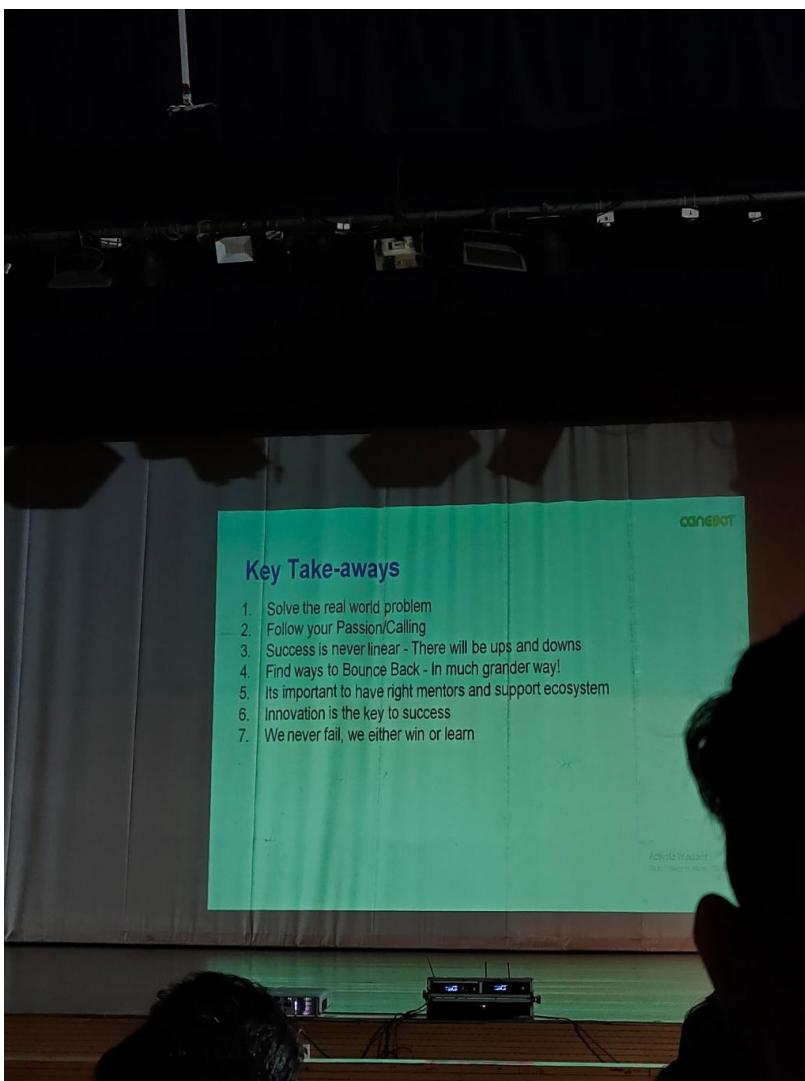
**COVID-19 Adaptability:** Understand how businesses can adapt and thrive in the face of adversity by exploring how CaneBot responded to the unique challenges posed by the global pandemic.

**Strategic Decision-Making:** Develop skills in strategic decision-making by analyzing the factors that influenced CaneBot's transition from one business model to another, and the impact of these decisions on the company's trajectory.

**Entrepreneurial Mindset:** Cultivate an entrepreneurial mindset characterized by flexibility, creativity, and a growth-oriented approach to problem-solving and innovation.

#### 2.5.4 Photographs -





### 2.5.5 Feedback of the day -

The session conducted by Mr. Millind Dattar, Co-Founder of CaneBot, was nothing short of a masterclass in entrepreneurship and resilience. It left us not only inspired but also equipped with invaluable insights that are truly unique in the world of business. One of the standout aspects of Mr. Dattar's presentation was the sheer audacity of innovation. The decision to transition from selling bottled sugarcane juice to employing automated juice machines showcased an unparalleled entrepreneurial spirit. This bold pivot highlighted the importance of adaptability and the ability to seize new opportunities, even when faced with significant challenges.

Moreover, the journey from ideating more than 12 business concepts in 2012 to finally realizing the CaneBot vision in 2019 demonstrated the power of persistence and strategic refinement. Mr. Dattar's willingness to experiment and learn from each idea's success or failure was a testament to the iterative nature of entrepreneurship. The impact of participating in Shark Tank India on CaneBot's journey was a revelation. It underscored the significance of platforms like Shark Tank in providing exposure and shaping business strategies. This unique insight into the world of televised entrepreneurship competitions was both enlightening and thought-provoking.

The ability to secure an order for the World Cup 2023 at Vishakhapatnam Stadium was a testament to CaneBot's adaptability and readiness to seize opportunities in high-stakes scenarios. It highlighted the importance of being event-centric and aligning business strategies with significant occasions. Furthermore, the session shed light on the profound impact of the COVID-19 pandemic on businesses. Mr. Dattar's candid discussion about how CaneBot navigated the challenges posed by the pandemic, leading to a shift in business focus, was a valuable lesson in adaptability and resilience.

In conclusion, Mr. Millind Dattar's session was a unique blend of innovation, adaptability, and entrepreneurial wisdom. It provided us with an exclusive peek into the world of CaneBot's journey, a journey marked by strategic pivots, unwavering persistence, and the ability to turn challenges into opportunities. It was a truly exceptional learning experience that will stay with us as we embark on our own entrepreneurial endeavors.

## **Conclusions**

### **Enhancing Digital Accessibility in Cultural Institutions:**

In the experiential learning program that involved visits to cultural institutions such as museums and historical sites, we observed a significant challenge related to digital accessibility. Many of these institutions lacked user-friendly digital interfaces, mobile apps, or websites that provide comprehensive information and engagement opportunities for visitors. This digital divide hinders the accessibility of historical and cultural content, limiting the experience for diverse audiences, including differently-abled individuals and tech-savvy visitors. The problem statement, therefore, revolves around finding innovative solutions to enhance digital accessibility and engagement in cultural institutions, ensuring that the rich cultural heritage is accessible and enjoyable for all.

### **Sustainable Urban Mobility and Public Transportation:**

Our experiential learning program included visits to metro offices and public transportation facilities, where we encountered challenges related to sustainable urban mobility. In Hyderabad and Pune, we observed issues such as inadequate parking facilities, limited public transportation options, and traffic congestion. These challenges impact the environment, urban infrastructure, and the daily lives of residents. The problem statement focuses on devising sustainable solutions to improve urban mobility, reduce traffic congestion, and promote eco-friendly public transportation options in these cities.

### **Bridging the Gap in STEM Education Outreach:**

During our experiential learning program, we visited educational and research institutions such as ISRO training centers and IoT sessions. We identified a gap in STEM (Science, Technology, Engineering, and Mathematics) education outreach to local communities. Many of these institutions had limited engagement with nearby schools and communities, hindering opportunities for students to explore STEM fields. The problem statement centers on creating effective strategies to bridge the gap in STEM education outreach, fostering collaboration between educational institutions and local communities to inspire and educate the next generation of scientists, engineers, and innovators.

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