Five days Hands-on workshop on Cutting-Edge Tools in Data Visualization and Software Development

In association with,

unisys

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Bangalore Chapter
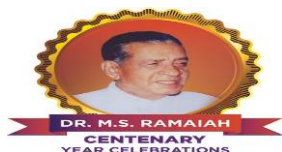
IQAC

Conducted from 26th February to 1st March, 2024

Report On

Five days Hands-on workshop on Cutting-Edge Tools in Data Visualization and Software Development
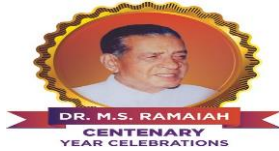
RAMAIAH
Institute of Technology

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DR. M.S. RAMAIAH
CENTENARY
YEAR CELEBRATIONS

Date & Day	Venue	Session 1 (9.30AM – 11.00AM)		Session 2 (11.15 AM to 12.45 PM)		Session 3 (1.30 PM to 3.00 PM)		Session 4 (3.15 PM to 4.30 PM)
Monday 26/02/2024	CRD-405(AI & ML Lab)	Inauguration and Introduction of FDP [Dr. Vijayakumar B P, MSRIT] Introduction to Tableau, TableauTerminologies [**Sachin Shivakalimath, Genpact**]	**Tea Break** **11.00M-11.15AM**	Opening & Closing Tableau Start Page Data Source Page Field Types & Visual Cues-Connecting to Database, [**Sachin Shivakalimath, Genpact**]	**Lunch Break** **12.45PM-1.30PM**	Different types of Tableau Joins & Different types of Tableau Joins. Different Types of File Types, File Extensions, [**Sachin Shivakalimath, Genpact**]	**Tea Break** **3.00PM-3.15PM**	Difference Between Extract & Live Connection, Data Extract Vs Data Source Filter, Tableau Workspace [**Sachin Shivakalimath, Genpact**]
Tuesday 27/02/2024	CRD-405 (AI & ML Lab)	Measure Names & Measure Values, CalculatedFields - Advanced Calculated Fields [**Sachin Shivakalimath, Genpact**]		Charts-Formattingcharts, Normal Filter/ Quick Filter [**Sachin Shivakalimath, Genpact**]		Dashboard- Components of Dashboard, Understanding Howto Place Worksheets in Containers, Action Filters & its Types [**Sachin Shivakalimath, Genpact**]		Introducing Power BI- Parts and the flow of work. PowerBI Desktop Interface-The Report has five main areas [**Sachin Shivakalimath, Genpact**]

Wednesday 28/02/2024	CRD-405 (AI & ML Lab)	Introduction & Plan, Code [**Arjun Adhikari, Aravind Belavadi, Unisys**]	Tea Break **11.00M-11.15AM**	Plan, Code [**Arjun Adhikari, Unisys**]	Lunch Break **12.45PM-1.30 PM**	Key note, CI [**Christopher W Palmer, Ravindra Reddy, Unisys**]	Tea Break **3.00PM-3.15PM**	CI, Test [**Ravindra Reddy, Unisys**]
Thursday 29/02/2024	CRD-405(AI & ML Lab)	Release, Deploy [**Piyush Sohal, Unisys**]		Release, Deploy [**Piyush Sohal, Unisys**]		Monitor and Vulnerability [**Aravind Belavadi, Visagan Santhanam, Unisys**]		Q&A, MSRIT faculty
Friday 01/03/2024	CRD-405(AI & ML Lab)	Querying Data from CSV-Query Editor, Connecting the data from the Excel Source, Clean, Transform the data [**Sachin Shivakalimath, Genpact**]		Calculated Measures Using DAX, Creating of the Measures using DAX [**Sachin Shivakalimath, Genpact**]		Creating Reports & Visualizations- Different types of charts, Formatting charts with Title, Colors [**Sachin Shivakalimath, Genpact**]		Dashboards- Filters in Power BI, Formatting dashboards [**Sachin Shivakalimath, Genpact**]

About the Workshop

This interactive workshop offers participants a practical, hands-on experience in leveraging PowerBI & tableau for data visualization and analysis, alongside implementing DevOps practices for streamlined software development and deployment. Through guided exercises and real-world examples, participants will gain proficiency in harnessing the power of generating insightful data representation. To optimize collaboration, automation, and efficiency within their development workflow, it's essential to grasp the core principles of integrating operations and development seamlessly. This workshop provides a comprehensive roadmap to effective usage of tools and methodologies for achieving data-driven decision-making and operational excellence for both beginners and professionals.

Objectives

- Provide hands-on experience in creating interactive dashboards, reports, and visualizations from diverse data sources.
- Understand foundational knowledge of DevOps principles, methodologies, and practices.
- Learn how to effectively integrate PowerBI with DevOps methodologies, enabling the seamless flow of data-driven insights into the software development lifecycle to enhance decision-making processes.

Day 1 : February 26, 2024

Dr. Vijaya Kumar B P initiated proceedings with an illuminating discourse on the significance of data visualization. Through insightful presentations and engaging discussions, he elucidated the pivotal role of visual representation in deciphering complex datasets, laying a robust groundwork for the ensuing sessions.

Mr. Sachin Shivakalimath, a distinguished expert from Genpact, took centre stage to delve into the essentials of Tableau. Participants were guided through the intricacies of downloading and installing Tableau software, accompanied by a comprehensive overview of data types and the process of establishing connections with servers and saved data sources. The afternoon session delved deeper into the realms of Tableau's capabilities, focusing on advanced techniques in data manipulation and visualization. Through practical demonstrations and hands-on exercises, participants were introduced to the nuances of table joins and various visualization methodologies, including pie charts, bar graphs, line charts, and scaler plots. Furthermore, the session provided insights into leveraging filters effectively, encompassing data source filters, date extract filters, and quick filters, thereby enhancing participants' proficiency in harnessing Tableau for insightful data analysis.
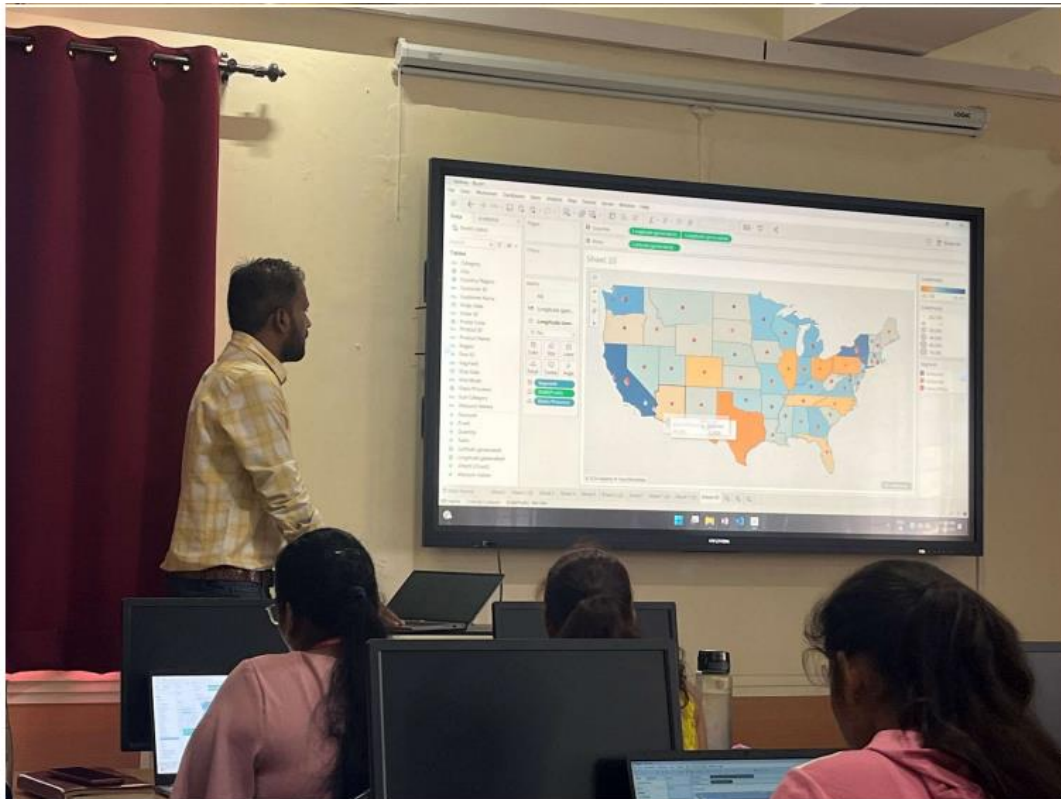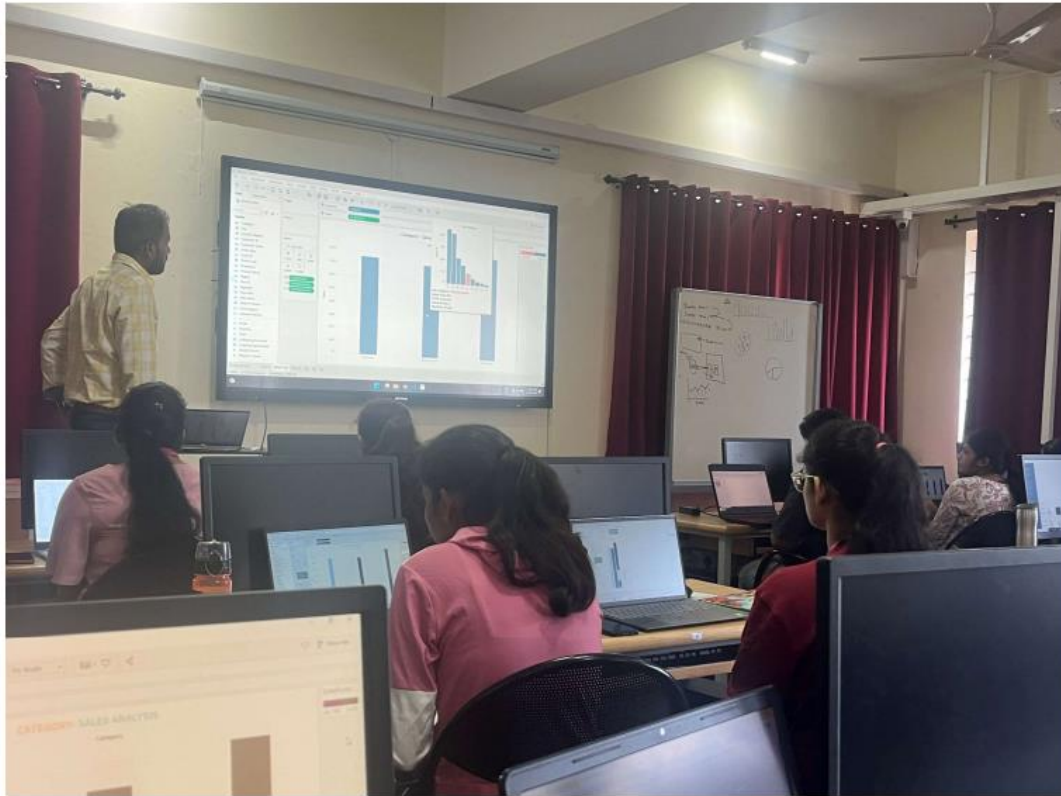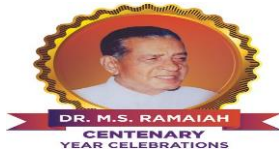
Day 2 : February 27th 2024

The morning session commenced with an in-depth discussion on dual access graphs and the utilization of secondary axes in Tableau. Participants learned how to effectively present data with multiple scales, synchronize axes for coherent visualization, and implement bar-in-bar graphs to convey complex information succinctly.

Following the break, focus shifted towards Gantt bar graphs, a valuable tool for visualizing project schedules and timelines. Participants delved into the intricacies of creating and customizing Gantt charts within Tableau, learning techniques for adding custom shapes to enhance visual representation. Additionally, formatting titles and graphs were explored to ensure clarity and aesthetic appeal in dashboard design.

The afternoon session delved into advanced visualization techniques, including dual axes for pie charts, donut graphs, and highlights. Participants learned to utilize background fill to enhance visual impact and implement tree measures action filters for interactive data exploration. The session concluded with a practical demonstration on how to add completed dashboards to Tableau Public, enabling widespread dissemination and accessibility for stakeholders.
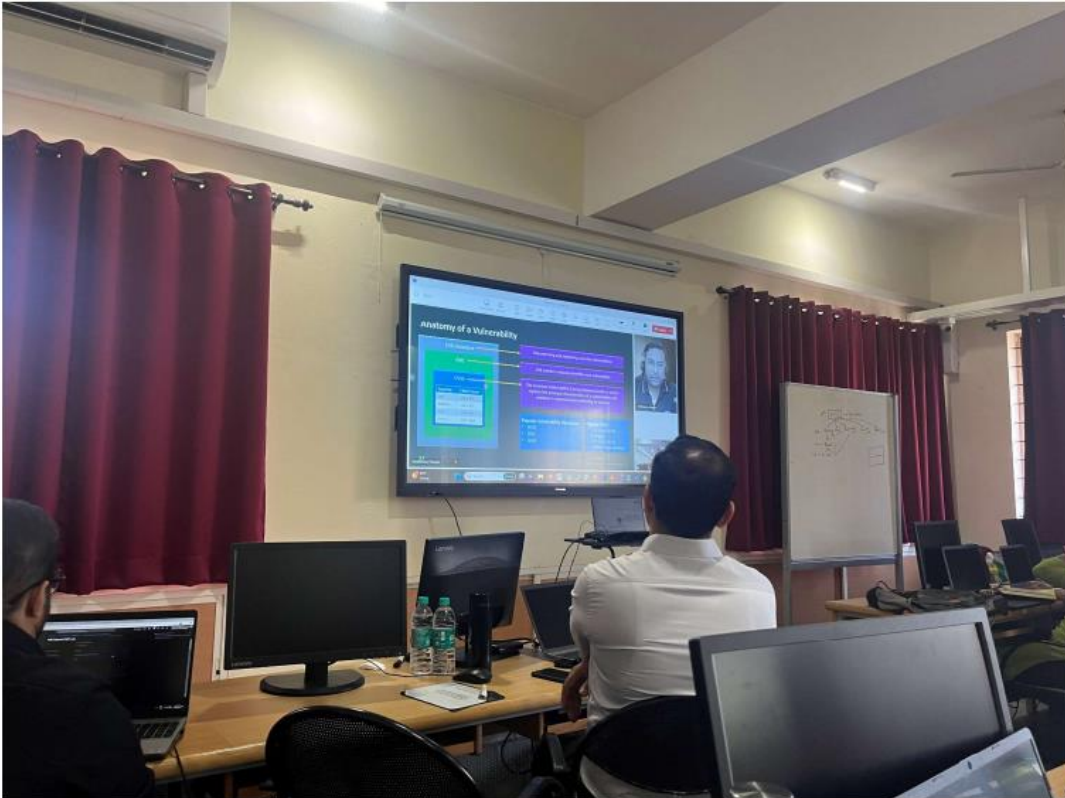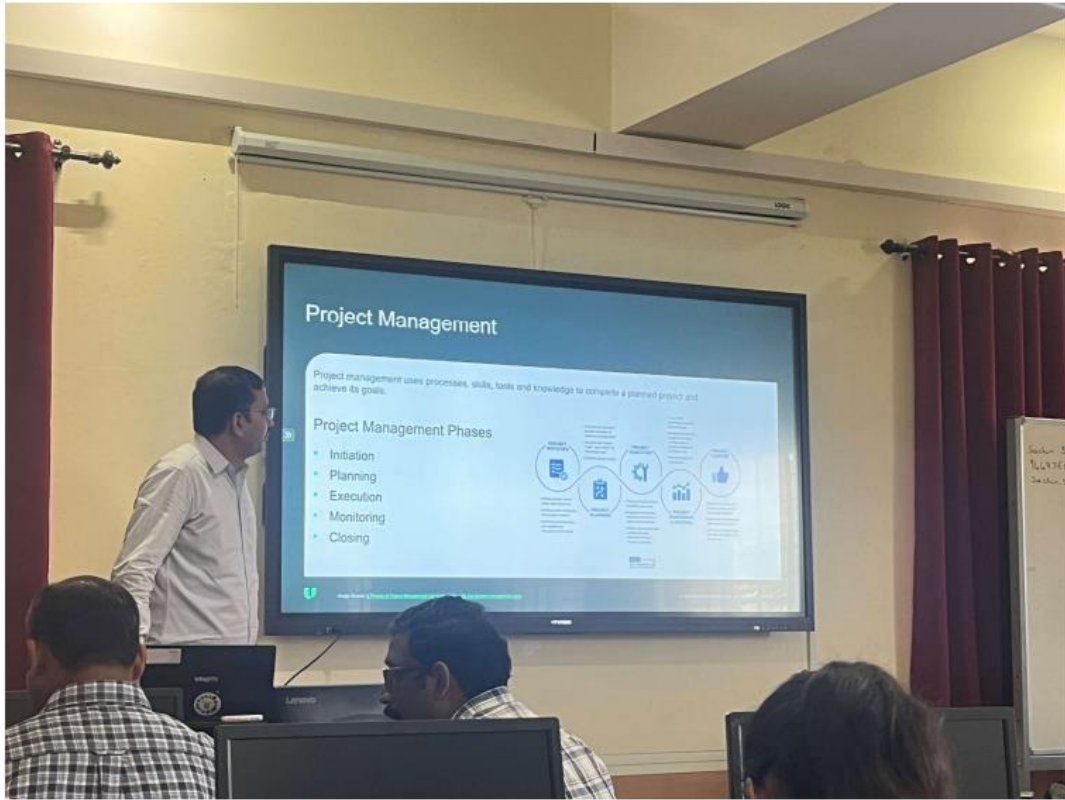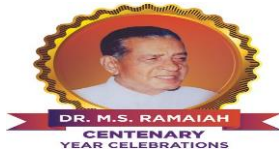
Day 3: February 28th 2024

Day 3 of the workshop marked a deep dive into the world of DevOps, an indispensable methodology bridging the gap between software development and IT operations. Led by industry experts, the sessions encompassed a comprehensive exploration of DevOps principles, security practices, and hands-on exercises aimed at enhancing participants proficiency in this transformative approach to software delivery. The day commenced with an insightful session led by Arjun Adhikari from Unisys, elucidating the fundamentals of DevOps methodology. Topics covered included an overview of the software development life cycle, comparison between traditional models like the Waterfall and Agile, DevOps workflow, and an introduction to DevSecOps. Additionally, participants gained insights into project planning phases and tools such as JIRA for issue tracking and project management.

Aravind Belavadi, also from Unisys, conducted a virtual session focusing on security practices within the DevOps framework. Participants were acquainted with application testing methods, the anatomy of vulnerabilities, vulnerability management strategies, Software Bill of Materials (SBOM), and integrating security seamlessly into the DevOps pipeline.

Christopher W Palmer from Unisys conducted a virtual session, providing an in-depth examination of DevOps principles, best practices, and implementation strategies. Participants gained a deeper understanding of DevOps culture, collaboration, and automation, laying a robust foundation for effective DevOps adoption within their organizations.

Hands-on Session: Git Operations and Azure Integration Ravindra Reddy, an expert from Unisys, led a hands-on session demonstrating essential Git operations such as push, pull, and commit. Participants learned how to create repositories in Microsoft Azure, manage branches, make changes, and connect these repositories to security tools like Snyk for vulnerability scanning.

Day 4: 29th February 2024

Day 4 of the DevOps workshop witnessed a continuation of our exploration into the intricacies of modern software delivery practices. Building upon the foundational knowledge acquired in previous sessions, participants delved deeper into advanced topics, including repository management, pipeline creation, containerization with Docker, Kubernetes, and interactive Q&A sessions.
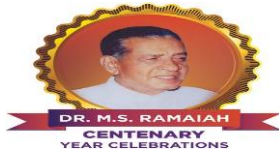
Azure Repository Management and Server Connectivity: The day commenced with a practical session on Azure repository management. Participants learned how to create repositories in the Azure cloud and establish connectivity to servers using IP addresses, laying the groundwork for seamless collaboration and version control.

Agent Creation, Access Token Generation, and Pipeline Configuration: Led by expert facilitators, participants delved into the intricacies of agent creation and personal access token generation within Azure DevOps. Additionally, practical demonstrations on pipeline configuration using YAML files were conducted, empowering participants to automate software delivery processes effectively. a virtual session was conducted where participants were taught about SW testing and devops and were introduced to Kubernetes, its significance in container orchestration, and the creation of pipelines in Kubernetes. This segment expanded participants understanding of containerized application management and deployment strategies.

Docker Containerization, Kubernetes, and Image Creation: Afternoon session focused on Docker containerization, a cornerstone of modern DevOps practices. Participants gained insights into creating Docker images using public repositories and learned how to set up repositories within Docker containers, enabling efficient deployment and management of

applications in containerized environments.

Day 5 – 1ˢᵗ March 2024 , Power BI Mastery

Day 5 of our workshop series marked a transition into the dynamic world of Power BI, a leading business intelligence and analytics tool. Participants embarked on an immersive journey to unlock the full potential of Power BI in harnessing data for informed decisionmaking and actionable insights.

Introduction to Power BI The day commenced with an introductory session on Power BI, led by seasoned experts in the field. Participants were acquainted with the key features and functionalities of Power BI, including data visualization, report creation, and dashboard development. Through practical demonstrations and hands-on exercises, attendees gained a foundational understanding of Power BI's interface and workflow.

Data Import and Transformation: In the subsequent session, participants learned how to import data into Power BI from various sources and perform data transformation tasks to prepare it for analysis. Topics covered included data cleaning, shaping, and Modelling techniques to ensure data accuracy and relevance for insightful analysis.

Advanced Visualization Techniques : The afternoon session focused on advanced visualization techniques in Power BI, aimed at enhancing the effectiveness and impact of data presentation. Participants explored a range of visualization options, including interactive charts, maps, and custom visuals, to convey complex information in a clear and compelling manner.
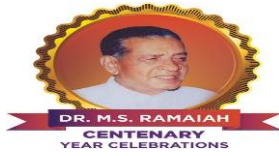
Dashboard Creation and Publishing: In this segment, participants delved into the art of dashboard creation using Power BI. Through practical exercises, attendees learned how to design and customize dashboards to meet specific business requirements. Additionally, insights were provided on best practices for dashboard layout, interactivity, and data-driven storytelling. The session concluded with guidance on publishing and sharing dashboards securely with stakeholders.

Recap and Q&A : The workshop concluded with a comprehensive recap of the day's key takeaways and a dedicated Q&A session. Participants had the opportunity to seek clarification on any lingering questions and engage in discussions with facilitators and peers.

Number of participants : 61