RV Educational Institutions

RV Institute of Technology and Management®

Topic	Workshop Report of Technical skill building workshop for 3rd sem students
Date	**1/9/2025 to 15/9/2025**
Time	**10 am to 4 pm**
Resource Person	**Internal and External Resource Persons**
Session Coordinator	**Mrs. Manjusha Kulkarni, Mrs. Bhavya N Javagal, Dr. V R Srividya, Mrs. Padmasree N.**

Week 1 Workshop Report of Technical skill building workshop for 3rd sem students

Sessions & Activities

Day1. Fundamentals and I/O in C Programming, Control Structures and Hands-on Session was conducted by Mrs. V. R. Srividhya, Dr. Hema M. S

Student Development Program (SDP) for 3rd semester Computer Science and Engineering students commenced on September 1, 2025. The opening sessions of the program aimed to lay a strong foundation in the fundamentals of the C programming language and develop the students' confidence in basic coding constructs. The day began with the session on *Fundamentals and I/O in C Programming* conducted by **Mrs. V. R. Srividhya**. She provided a structured introduction to the syntax of C, the process of compiling and executing programs, and the significance of variables, constants, and data types. Emphasis was given to how input and output operations form the backbone of interaction between the user and the computer. Real-world analogies were used to make the concepts more relatable. The students were engaged through quick quizzes and simple programs that demonstrated the use of scanf() and printf().

Following this, the second session was delivered by **Dr. Hema M. S** on *Control Structures*. This segment was crucial, as control flow forms the logical core of any program. Students were introduced to decision-making constructs such as if, if-else, and switch, followed by iterative structures including for, while, and do-while loops. Dr. Hema highlighted common errors encountered by beginners, such as infinite loops and logical fallacies, and guided the students through practical examples. Case studies on calculating factorials, generating prime numbers, and implementing menu-driven programs were discussed, which provided clarity on how control structures are used in problem-solving.

In the afternoon, the first hands-on session of the SDP was conducted by **Mrs. Namratha B**. Students actively participated in coding exercises where they implemented programs based on concepts taught earlier in the day. The hands-on nature of the session ensured that students transitioned from theoretical learning to actual coding practice. The lab environment allowed them to experiment, debug, and interact with the faculty for doubt clarification. Problems of varying difficulty levels were provided, which motivated students to think critically and apply logical reasoning. The faculty encouraged peer-to-peer discussion, enabling collaborative learning.

By the end of Day 1, students were able to clearly differentiate between syntax-level understanding and logic building. They gained confidence in writing simple C programs, applying control statements, and debugging their errors. The structured learning, coupled with practical exposure, provided a solid start to the Student Development Program. This initial momentum generated enthusiasm among students, preparing them for the more advanced topics scheduled for the following days. The day concluded with positive feedback from the

participants, who appreciated the interactive teaching style and the seamless integration of theory with practice.

Day2. Arrays, Control Strings and Hands-on Session was conducted by Mrs. Savitha G., Dr. Prabhavathi K and Dr. Shashidhar V

The second day of the Student Development Program focused on strengthening students' understanding of data representation and string manipulation, which are essential for developing efficient and versatile programs. The sessions covered Arrays and Strings, complemented by an interactive hands-on lab session in the afternoon.

The day began with a session on *Arrays* by **Dr. Savitha G**. Arrays were introduced as structured collections of elements of the same type, allowing students to manage large volumes of data efficiently. The session started with single-dimensional arrays, where real-world analogies, such as storing student marks or temperatures recorded over a week, were used to make the topic relatable. Dr. Savitha then moved to two-dimensional arrays, explaining their role in representing matrices and tabular data. Advanced applications, such as searching and sorting, were highlighted, and students were guided through step-by-step program implementations. Special emphasis was placed on the importance of array indexing, memory representation, and boundary checks, as errors in these areas often cause logical mistakes in programs.

The second session of the day, on *Strings*, was delivered by **Dr. Prabhavathi K**. She began by establishing the connection between strings and character arrays, explaining how text data is stored and manipulated in C. Students were introduced to standard library functions like strlen(), strcpy(), strcmp(), and strcat(), which provide powerful operations on strings. Examples included reversing a string, checking for palindromes, and implementing basic encryption schemes. Students appreciated the practical relevance of strings, particularly in applications involving user input, data storage, and text processing. Dr. Prabhavathi also explained how improper handling of strings could lead to buffer overflows, highlighting the importance of careful programming practices.

In the afternoon, the *Hands-on* session was facilitated by **Dr. Shashidhar V**. Students implemented array-based programs such as sorting numbers, finding the largest and smallest elements, and performing matrix addition and multiplication. For the string section, they wrote code for reversing strings, checking for palindromes, and concatenating multiple strings. The faculty provided worksheets with progressively challenging problems, ensuring that students developed strong logical reasoning skills. Dr. Shashidhar also emphasized debugging techniques, teaching students how to interpret compiler errors and correct their mistakes efficiently.

By the end of Day 2, students had gained strong conceptual and practical skills in handling arrays and strings. They were able to store and process data effectively, manipulate textual content, and apply standard library functions confidently. The learning environment was highly engaging, and students showed noticeable improvement in their problem-solving efficiency. The second day of the SDP thus deepened their programming skills while preparing them for advanced concepts in subsequent sessions

Day2. *Functions and Recursion, Pointers and Memory* and *Hands-on Session* **was conducted by Dr. Mallanagouda Patil**, **Mrs. Nisha Wilvicta J** and **Mrs. Bhavya N. Javagal**

The third day of the Student Development Program focused on advanced concepts, including *Functions and Recursion* and *Pointers and Memory Management*. These topics play a vital role in writing efficient, modular, and reusable code.

The morning began with a session on *Functions and Recursion* delivered by **Dr. Mallanagouda Patil**. The importance of modular programming was emphasized, highlighting how functions promote code reusability and readability. Students learned about function prototypes, parameter passing (both call by value and call by reference), and return values. Practical examples included writing functions for mathematical operations, menu-driven structures, and structured program design. Dr. Patil then introduced the concept of recursion, demonstrating how complex problems could be solved elegantly by breaking them down into smaller sub-problems. Classic examples such as factorial computation, Fibonacci sequence generation, and the Tower of Hanoi problem captured the students' attention. The recursive approach helped them understand problem

decomposition, although they were also cautioned about excessive recursion leading to stack overflow.

The second session, on *Pointers and Memory*, was conducted by **Mrs. Nisha Wilvicta J**. Pointers are often perceived as challenging by students, and the session was carefully designed to build their confidence. Mrs. Nisha explained the concept of memory addresses, pointer variables, and dereferencing, using diagrams to illustrate pointer operations. Students learned about pointer arithmetic, arrays and pointers, and pointers to functions. A significant portion of the session focused on dynamic memory allocation using malloc(), calloc(), realloc(), and free(), enabling students to handle memory efficiently. Real-world examples, such as managing large datasets and implementing linked structures, were discussed to show the practical utility of pointers.

The afternoon *Hands-on* session was conducted by **Mrs. Bhavya N. Javagal**. Students practiced writing modular programs using functions and recursive solutions to mathematical problems. Later, they experimented with pointer-based programs, including swapping values using pointers, accessing array elements, and allocating memory dynamically. This session was particularly interactive, as students initially struggled but gradually developed a strong understanding through trial, error, and faculty guidance. Mrs. Bhavya encouraged peer collaboration and problem-solving in groups, which created a highly productive lab atmosphere.

By the end of Day 3, students had mastered two of the most critical aspects of C programming. They could now design programs with modular structures, implement recursion for problem decomposition, and manage memory dynamically using pointers. Although challenging, the day's sessions significantly enhanced their analytical thinking and coding confidence.

Day2. *Structures File Handling and Memory* and *Hands-on Session* **was conducted by Mrs. Pallavi K. N**, **Prof. Samatha R. Swamy** and **Mrs. Pallavi K. N**

The fourth day of the Student Development Program focused on two advanced concepts in C programming: *Structures* and *File Handling*. These concepts are crucial for data organization and long-term storage, bridging the gap between theoretical programming and real-world applications.

The morning began with a session on *Structures* by **Mrs. Pallavi K. N**. She introduced structures as user-defined data types that allow grouping of different data elements under a single name. Practical examples, such as creating a student record containing roll number, name, and marks, helped students appreciate their usefulness in real applications. The session also covered nested structures, arrays of structures, and pointers to structures. Students were introduced to the concept of using structures in designing complex applications such as library management systems, employee databases, and inventory tracking. The interactive discussion helped students recognize how structures provide flexibility in handling diverse datasets.

The second session, on *File Handling*, was delivered by **Prof. Samatha R. Swamy**. This session highlighted the importance of persistent data storage, a critical requirement in modern applications. Students learned about file types (text and binary), file operations (fopen(), fclose(), fprintf(), fscanf(), etc.), and error-handling mechanisms. Prof. Samatha demonstrated programs for writing data to files, reading from files, and appending new records. Advanced topics such as random access to files using fseek() and working with binary files were also introduced. Real-world applications, including log file generation, student record storage, and configuration file handling, provided students with clear insights into the role of file handling in software development.

In the afternoon, the *Hands-on* session was conducted by **Mrs. Pallavi K. N**. Students practiced creating programs that utilized structures to store and process multiple student records. They then developed programs for file handling, including creating text files, reading contents, and updating data. This session was highly engaging, as students could directly see the results of file operations and understand their practical implications. Faculty provided continuous guidance, ensuring that each student could implement file handling with confidence.

By the end of Day 4, students had developed the ability to design structured applications and store data persistently using files. The hands-on experience provided them with practical exposure to data organization and long-term storage, skills that are essential for advanced courses and real-world software development. The

day concluded with positive feedback, as students appreciated the practical relevance of the topics covered.

The Student Development Program provided 3rd semester CSE students with a strong foundation in C programming through a balanced approach of theory and practice. The sessions were highly interactive and beneficial, ensuring active participation from students. The department extends gratitude to all faculty members who contributed to the success of this program.

Week 2 Workshop Report of Technical skill building workshop for 3rd Sem students

The workshop was organized to provide participants with foundational knowledge in programming, artificial intelligence, machine learning, and collaborative tools. It aimed to blend theory with practical sessions to enhance problem-solving skills, technical knowledge, and project-building capabilities.

Day1. Python Programming for Problem Solving session was conducted by Dr Surbhi Agarwal and Mrs Nayana

- Topics Covered: Basics of Python, syntax, variables, data types, control structures, and functions.
- Activities: Logic handling and hands-on coding exercises were conducted to strengthen participants' problem-solving abilities.
- Outcome: Participants gained confidence in writing simple Python programs and applying logical structures.

Day2. Git and GitHub for Beginners session was conducted by Ms Shreshtha, Mrs Uppin Rashmi and Mr Manjunath

- Topics Covered: Introduction to version control, basic Git commands, and collaborative coding practices.
- Activities: Hands-on demonstrations on creating repositories, committing changes, branching, and collaborating on GitHub.
- Outcome: Participants understood the importance of version control and learned practical ways of working on collaborative coding projects.

Day3. Introduction to AI and ML session was conducted by Dr Surbhi, Dr Hema M S and Mrs Nayana

- Topics Covered: Fundamentals of Artificial Intelligence and Machine Learning, applications, and current trends.
- Activities:
    - Quiz & Hands-on: Interactive quiz sessions were conducted to reinforce learning.
    - Practical exercises in data handling and preprocessing, followed by an introduction to ML model building.
- Outcome: Participants gained awareness of AI/ML concepts and experienced the initial steps of building ML models.

Day4. AI Tools and Platforms introduction session was conducted by Ms Shambhavi Naik and Mr Abhay

- Topics Covered: Exploration of no-code and low-code platforms for building AI applications.
- Activities: Demonstration of tools such as Canva (for documentation and design), Trello (for project management), and selected AI platforms for rapid prototyping.
- Outcome: Participants learned how to leverage modern tools for documentation, collaboration, and quick AI solution development.

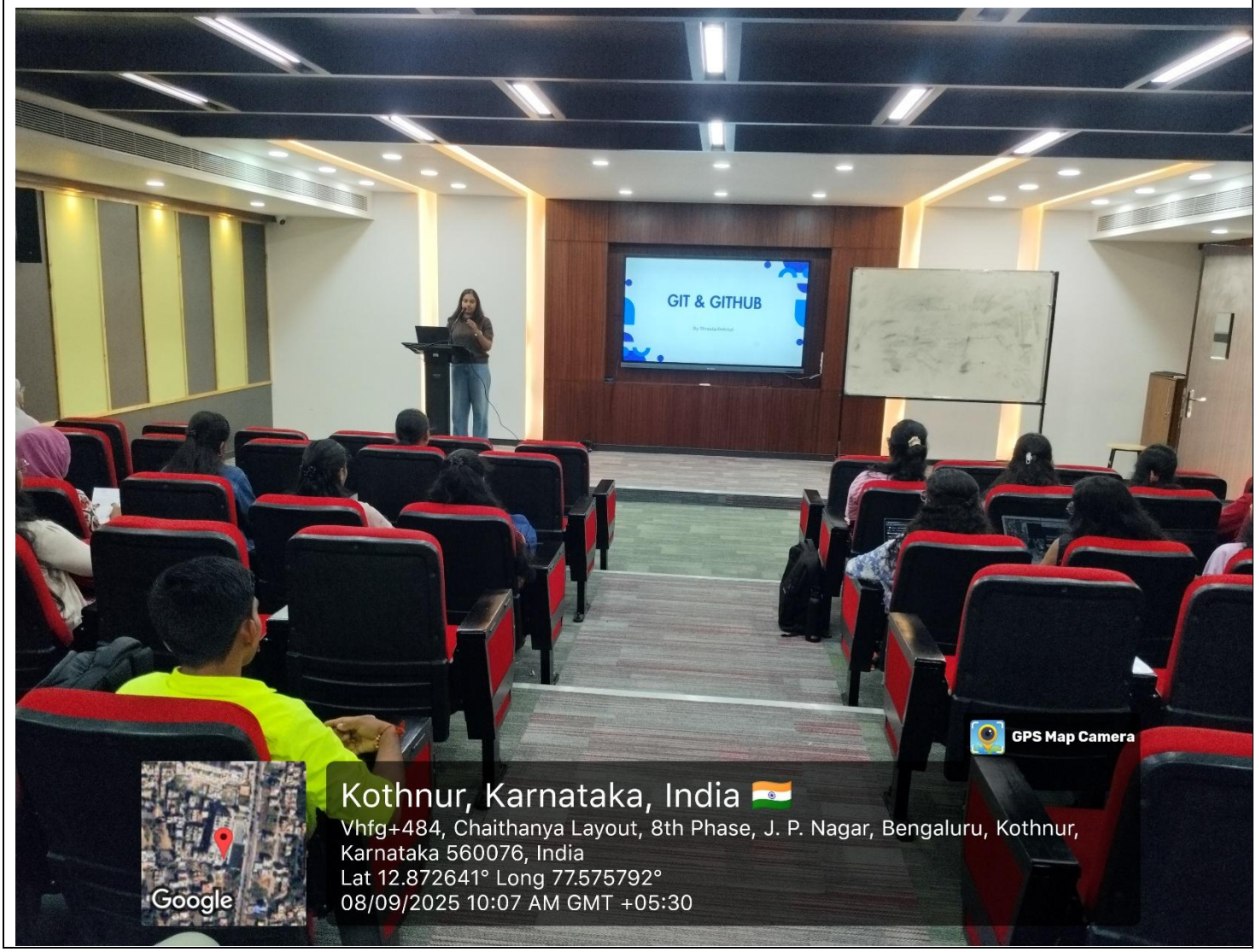
Day5. Project Building & Evaluation was done by Mr Rahul Bhardwaj

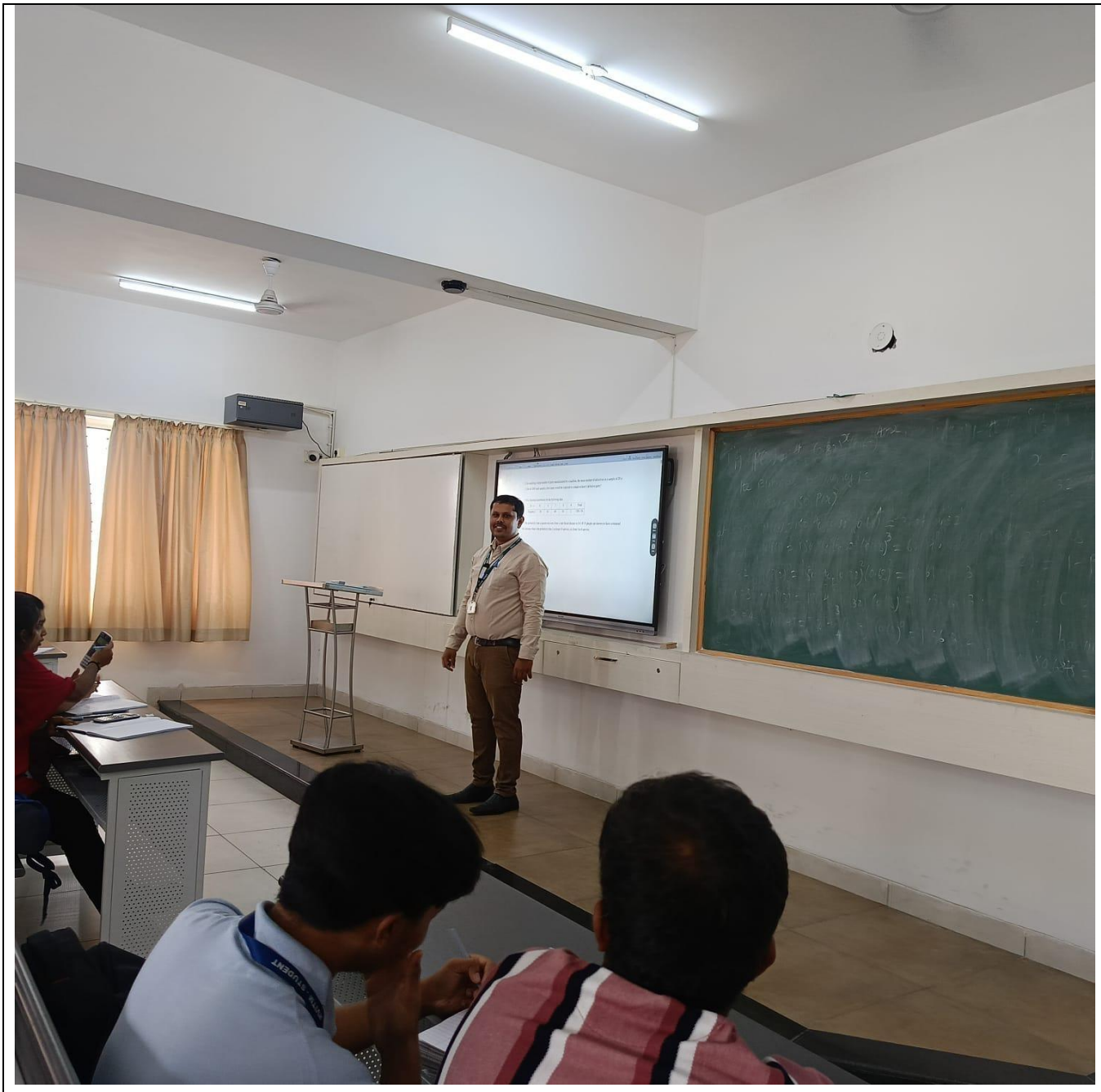
- Activities:
    - Participants formed groups to design and implement mini-projects integrating Python, AI/ML concepts, and collaborative tools.
    - Projects were evaluated on criteria such as innovation, technical accuracy, teamwork, and presentation.

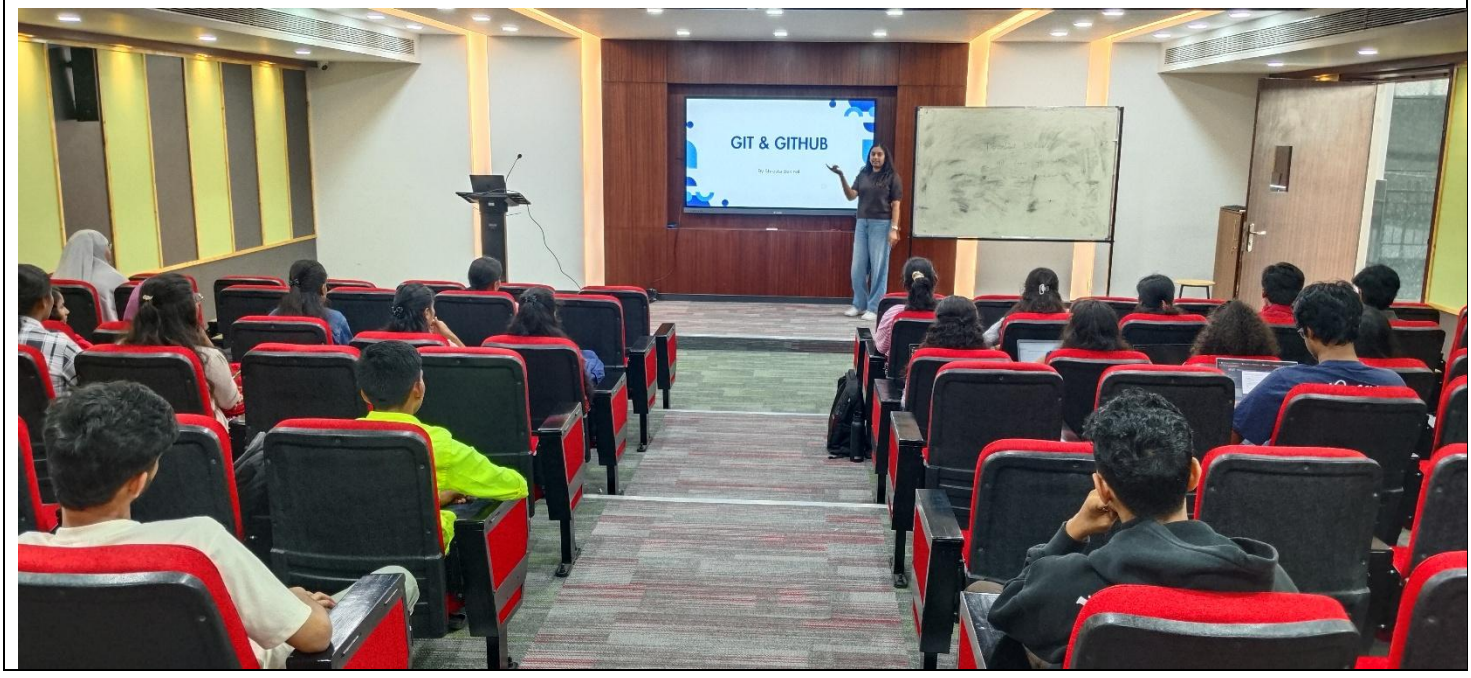
- Winners were announced and recognized for their outstanding contributions.

- Outcome: This session encouraged creativity, teamwork, and application of the knowledge gained throughout the workshop.

The workshop successfully introduced participants to Python programming, version control with Git/GitHub, AI/ML fundamentals, and modern tools for project management and design. The blend of theory, hands-on activities, quizzes, and project work ensured active learning and skill development. The event concluded with project presentations and winner announcements, leaving participants motivated to further explore programming and AI-driven solutions.



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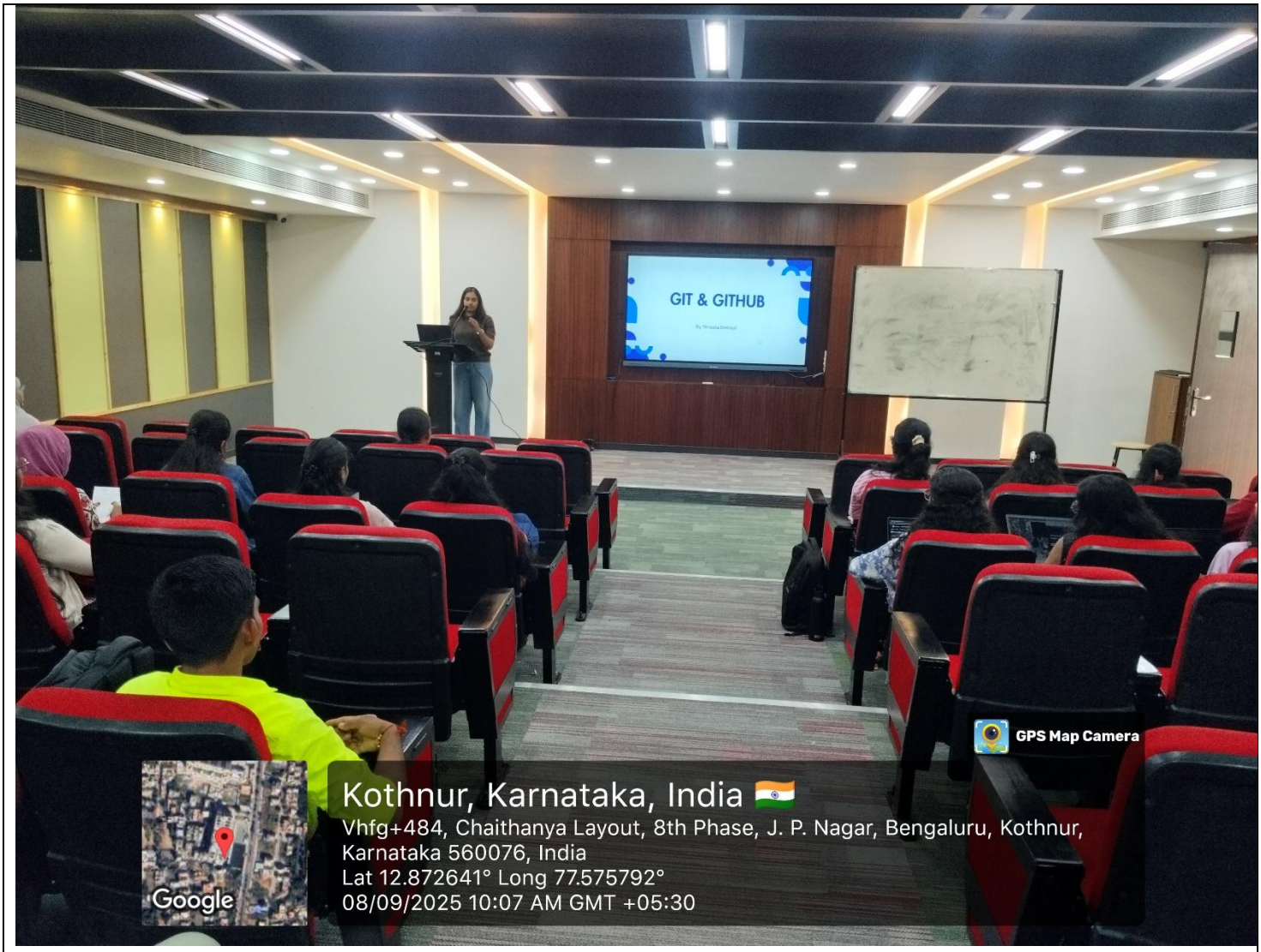
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