# SYNOPSIS

## INDUSTRIAL TRAINING (TR-104)

SCIENCE & TECHNOLOGY ENTREPRENEUR'S PARK

**(2021-2025)**


**SUBMITTED BY:**

NAME: HARLEEN KAUR

UNIVERSITY ROLL NO. 2104112




DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

**GURU NANAK DEV ENGINEERING COLLEGE, GILL PARK, GILL ROAD, LUDHIANA**

# TABLE OF CONTENT

# CONFIRMATION LETTER FROM THE COMPANY

SCIENCE & TECHNOLOGY ENTREPRENEURS' PARK
Approved TBI Under MSME DI
(Promoted by DST, Govt. of India, PSCS & T, Govt. of Punjab & NSET)
GURU NANAK DEV ENGINEERING COLLEGE
AN AUTONOMOUS COLLEGE UNDER UGC ACT - 1956
website : www.stepgndec.com

Ref. No. STEP/24/647 Dated 21/01/2025

## TO WHOM IT MAY CONCERN

We have accepted Ms. Harleen Kaur D/o. Mr. Satinder Singh as a intern for 6 Months internship. The tentative session of the intern is January to June 2025. During that Internship,She will work on **Full Stack with MERN** Technologies.

**Training Co-ordinator**

Sci. & Tech. Enterpreneurs' Park * Guru Nanak Dev Engg. College, Ludhiana *

**Prepared by**

Ph. : 0161-2814748, Mob. +91 78371-00954, 78371-00922, 78371-00924
E-mail : step.gne@gmail.com, step_gne@yahoo.com, Website : www.stepgndec.com

# ABOUT THE COMPANY

The Science and Technology Entrepreneurs' Park (STEP) at Guru Nanak Dev Engineering College (GNDEC), Ludhiana, is a premier organization that fosters innovation, entrepreneurship, and skill development. Established in 1986 under the guidance of the Department of Science and Technology, Government of India, STEP GNDEC is among the pioneering technology parks in India. It has been instrumental in bridging the gap between academia and industry, creating a dynamic ecosystem for nurturing talent and promoting technological advancements. Over the years, the institution has become a catalyst for creating a strong entrepreneurial ecosystem in Punjab and beyond.

STEP GNDEC operates with a mission to empower individuals and businesses by providing world-class training, incubation, and consultancy services. With a focus on practical learning, it collaborates with various industries, government agencies, and academic institutions to deliver skill development programs tailored to the evolving needs of the market. Its commitment to excellence and innovation has made it a hub for aspiring entrepreneurs and professionals seeking to build their careers in technology-driven domains. One of the notable features of STEP GNDEC is its dedication to entrepreneurship. It hosts incubation programs that support startups and budding entrepreneurs by providing mentorship, funding opportunities, and access to an extensive network of industry experts. This focus on entrepreneurship aligns with its vision of contributing to economic development by fostering a culture of innovation.

As a part of the GNDEC ecosystem, STEP benefits from the institute's rich academic heritage, experienced faculty, and strong alumni network. GNDEC itself is one of the oldest and most reputed engineering colleges in northern India, known for its academic excellence and commitment to research and innovation. During my 6-month training in Full Stack Development with MERN at STEP GNDEC, I had the opportunity to gain hands-on experience in modern technologies such as HTML, CSS, JavaScript, Bootstrap, React.js, Node.js, Express and MongoDB. The collaborative and supportive environment, along with regular guidance from mentors, allowed me to improve my technical skills and gain practical exposure to full-stack development.

STEP GNDEC also provided opportunities to interact with other startups and fellow trainees, which helped me understand real-world challenges in software development and entrepreneurship. This dedication innovation makes STEP GNDEC an ideal platform for students, professionals, and entrepreneurs seeking to build a bright and successful future.

# OBJECTIVES OF TRAINING

1. Gain practical knowledge in designing and developing full-stack web applications with the MERN (MongoDB, Express.js, React.js, Node.js) stack, ensuring efficient data flow and responsive user interfaces.

2. Acquire hands-on experience in building RESTful APIs and integrating front-end and back-end functionalities to create dynamic and interactive web solutions.

3. Understand and apply essential web development concepts such as authentication, routing, state management, and database operations for creating scalable and secure applications.

4. Learn to deploy and maintain web applications on cloud platforms while working collaboratively on real-time projects using modern development tools and frameworks, thereby strengthening professional readiness for industry environments.

5. Improve the ability to design user-friendly interfaces and responsive layouts for better user experience across different devices.

# HARDWARE & SOFTWARE TO BE USED

## Hardware

- **Standard Computing Hardware:** Desktops or laptops equipped with modern multi-core processors, 8GB or more RAM, and SSD storage were used to ensure smooth operation of code editors (like VS Code), web browsers, and local servers. This setup allowed efficient development, testing, and execution of full-stack MERN applications.

- **Local Server Environments:** Systems were configured to run Node.js-based backends and MongoDB databases locally, simulating real-world server behavior and enabling offline development and testing of web applications.

## Software

- **Visual Studio Code (VS Code):** A widely used code editor that supported development across technologies like JavaScript, Python, HTML, and CSS, with extensions for Git integration and live server preview.

- **Node.js & Node Package Manager(npm):** Node.js provided the JavaScript runtime for server-side development, and npm was used to manage dependencies essential for building MERN stack applications.

- **MongoDB & MongoDB Compass:** MongoDB served as the NoSQL database used in MERN stack applications, while Compass allowed for visual interaction with the database collections.

- **Express.js:** A backend web framework for Node.js that enabled the creation of RESTful APIs used in full-stack applications.

- **React.js:** A JavaScript library used for building dynamic and responsive front-end interfaces with reusable components.

- **XAMPP:** An open-source web server solution stack package used to create a local server environment for running PHP and MySQL-based projects.

- **MySQL:** A relational database management system used alongside XAMPP for storing and retrieving structured data in backend applications.

- **Django:** A high-level Python web framework used for developing secure and maintainable web applications, often integrated with MySQL or SQLite databases.

- **Postman:** An API testing tool used to send requests and analyze responses, especially helpful

during backend development with Express.js and Django.

- **Git & GitHub:** Used for version control and collaborative development, allowing code management through repositories, branches, and commits.

- **Google Chrome Developer Tools:** Built-in browser tools used for inspecting elements, debugging JavaScript, and testing responsive designs.

- **Deployment Platforms (Render / Vercel / Netlify):** Used to deploy full-stack or front-end applications, enabling live previews and continuous integration with GitHub.

# CONTRIBUTION OF THE PROJECT

The Paw Connect Project, developed during the Full Stack Development training, demonstrates meaningful contributions to both technology and society by leveraging modern web development practices. Its key contributions include:

- **User-Centered Digital Platform:** The project offers a unified platform where users can connect with service providers for pets-related needs such as adoption, healthcare assistance, and supply products. This enhances accessibility and community support through technology.

- **Efficient Full Stack Integration:** By utilizing the MERN (MongoDB, Express.js, React.js, Node.js) stack, the project successfully integrates frontend and backend workflows, ensuring responsive user interfaces and secure, real-time data handling.

- **Scalable Architecture for Future Growth:** The modular design allows for easy expansion of features like chatbot system, appointment scheduling, making the platform future-ready and adaptable to user demands.

- **Database-Driven Interactions:** MongoDB enables dynamic storage and retrieval of user profiles, service listings, and request records, promoting an organized and efficient management system.

- **Community Engagement and Awareness:** The platform supports awareness through informational pages, resource sharing, and contact with relevant organizations, promoting responsible treatment and support for pets in need.

- **Secure Authentication System:** The project incorporates secure user authentication, ensuring data privacy and protecting sensitive information for both users and service providers.

- **Enhanced Frontend Experience:** Built with React.js, the frontend delivers a fast, interactive, and mobile-responsive experience, improving usability for all user types.

- **Social Impact and Inclusivity:** By digitizing support systems and encouraging participation in community-based services, the project fosters inclusivity and social responsibility in animal welfare initiatives.

- **Social Contribution Through Adoption**: The adoption feature promotes responsible ownership and helps connect animals in need of homes with caring individuals or families.

- **Appointment Scheduling System:** Users can seamlessly book appointments with service providers (like vets or groomers), ensuring better time management and personalized support.

- **Scalable and Maintainable Design**: Built using modern technologies like React, Bootstrap, Node.js, Express.js, and MySQL, the system is scalable and can be extended in the future. New venues or user roles can be added easily. It is also maintainable and aligns well with current web development standards.

# THE SCHEDULE OF THE TRAINING

**Morning Schedule**

- **9:00 a.m. to 11:00 a.m.** – The instructor conducted training sessions, during which new concepts were taught and relevant tasks or assignments were given to us for practical learning.

**Afternoon Schedule**

- **11:00 p.m. to 2:00 p.m.** – We focused on working on the assigned tasks independently, applying the concepts learned and completing the project work within the given timeframe.

**Weekly Tasks Performed:**

- **Week 1:** Advanced HTML and introduction to CSS for styling web pages and Bootstrap 5 components.
- **Week 2:** Forms in Bootstrap5, create a website with Bootstrap 5 and introduction to Git and Github.
- **Week 3:** Features of Github and introduction to Javascript variables and constants.
- **Week 4:** Basics of JavaScript: data types, functions, conditions, loops and advanced loops.
- **Week 5:** Javascript operators, events, functions and interactive web page development.
- **Week 6:** Javascript Object Properties and Methods.
- **Week 7:** Discussion and development of ICCT-SD-2025 International Conference Website.
- **Week 8:** Introduction to MongoDB and their operators.
- **Week 9:** Discussion and development of project Leave Management System.
- **Week 10:** Installing Xampp and learned concept of Xampp.
- **Week 11:** Learn about advanced Mongodb concepts.
- **Week 12:** Introduction to PHP, syntax, forms handling, and basic server-side scripting
- **Week 13:** Start developing project Admin panel of project Leave Management System.

- **Week 14:** Introduction to React.js – components, props, state, and JSX ,React hooks, conditional rendering, and form handling in React.
- **Week 15:** Introduction to Node.js and backend development with Express.js.
- **Week 16:** Full-stack mini projects integrating frontend and backend technologies.
- **Week 17:** Start of major project development – planning, design, and database setup.
- **Week 18:** Completion and deployment of the final project with documentation and report preparation.

# ROLE AT THE TRAINING

1. **Learning and Applying Full Stack Development Concepts**

   - **Key Activities:** I actively engaged in learning MERN stack technologies—MongoDB, Express.js, React.js, and Node.js. I built frontend and backend components, integrated databases, and developed APIs to understand the full development lifecycle.

   - **Goal:** To gain practical experience in creating scalable and efficient web applications.

2. **Working on Multiple Projects**

   - **Key Activities:** I contributed to several real-world projects during the training, including:
     - **Job Portal Project:** Implementing job listings, user registrations, apply as recruiter and apply for job.
     - **Donation Hub Project:** Developing features for managing donations, user interactions, and administration.
     - **ICCT-SD-2025 Website:** Contributing to the development of the official website for the International Conference under the guidance of Prof. Parminder Singh; the project is currently ongoing.

   - **Goal:** To apply theoretical knowledge in diverse project environments, enhancing my problem-solving and development skills.

3. **Collaborating and Debugging Code**

   - **Key Activities:** I collaborated with peers and instructors to identify and fix bugs, optimize application performance, and follow best coding practices.

   - **Goal:** To ensure high-quality, maintainable code and improve teamwork and communication skills.