Major Project

Student Engagement Schedule

Submitted By

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Week wise tasks

Week	Task
Week 1	New Hire Orientation Program - During the start of the internship, we had an induction program for all the new joiners. The program mainly emphasized on the description of organization and the functioning of it. Further, we were introduced to the Financial Products of the company and given a brief overview about the areas where company is serving clients.
Week 2	Campus to Corporate Training - It was a classroom learning session with hands-on activities on corporate communication, etiquette, email etiquette, Time management, and Presentation skills.
Week 3	Required Learning - Based on getting the comprehensive overview of the company we were asked to complete the non-technical training on company's portal which is mandatory for all the new joiners. This included operational risk training, Industry Overview, Clients and Products etc.
Week 4	Technical learning was structured based on the Microservices domain and MERN Stack assigned to each intern. A designated learning path was provided, which needed to be followed as part of the training. This learning path covered the tools and technologies used by our team for microservices-based product development.
Week 5	Focused on in-depth research and analysis of IoT-based automated poha handling. I studied existing food handling automation systems and explored IoT integration techniques for real-time monitoring. The research covered key components such as load cells, HX711 amplifiers, NodeMCU ESP8266, and motor drivers. Additionally, I analyzed the workflow of poha collection, weight measurement, and automated transfer using a conveyor system.
Week 6	I worked on finalizing the hardware and software requirements for the system. I selected load sensors, motorized bucket mechanisms, and cloud-based monitoring platforms such as Blynk or Arduino Cloud. I also started designing the system flow diagram, ensuring smooth automation of weight detection, bucket transfer, and unloading. The IoT platform selection was finalized to enable real-time data transmission and remote monitoring.
Week 7	Project – My topic is the Vehicle Rental System. So, I have researched about the requirements of the system and based on that I have shortlisted the features to implement and will also use microservices in the backend for different services. I am preparing the database schema also. Technology that I will use is Node.js (Express.js), MongoDB, RabbitMQ/Kafka, Redis, Razorpay, React.js, and Docker

Week 8	In this week, the focus was on implementing the backend architecture using a microservices approach. The User Authentication Service was developed using JWT-based authentication with bcrypt for password hashing to ensure security. Additionally, a Vehicle Management Microservice was set up to handle CRUD operations for vehicle listings, making the system modular and scalable. To enhance performance, Redis caching was introduced for frequently accessed data such as vehicle availability and pricing. Furthermore, RabbitMQ/Kafka was integrated to enable event-driven communication between microservices, ensuring seamless interaction between different system components.
Week 9	This week was dedicated to developing the payment and booking functionality. The Razorpay payment gateway was integrated to handle transactions securely. A Booking Service was implemented to manage reservations, including real-time vehicle availability checks. To ensure smooth payment processing, webhooks were configured to handle payment success, failure, and refund scenarios. Moreover, transaction consistency was ensured by implementing database transactions and message queues, preventing inconsistencies in case of unexpected failures during the booking or payment process.
Week 10	The primary focus of this week was on the admin panel and optimizing system performance. An Admin Service was built to allow administrators to manage vehicle listings, user data, and booking records efficiently. An API Gateway was introduced to facilitate communication between microservices, ensuring seamless data flow. To enhance security, rate limiting and middleware-based security implementations were applied using tools like Helmet and CORS. Finally, load testing and system performance analysis were conducted to optimize response times and scale the backend efficiently.
Week 11	The final phase of the project was dedicated to deployment and testing. All services were containerized using Docker, making them easier to manage and deploy across different environments. The backend was deployed on AWS/GCP using Kubernetes, ensuring scalability and fault tolerance. End-to-end testing was performed to identify and fix major bugs before deployment. Additionally, final project documentation was prepared, covering architecture, APIs, database schemas, and deployment strategies to ensure maintainability and future enhancements.

Daily Schedule

1. Calls with the manager to discuss the progress
2. Doing technical training based on Microservices architecture fundamentals, react.js and node.js.
3. Learning about my roles of what I have to handle in my team.
4. Participating in informal gaming events , etc.
5. Implementing and testing individual microservices for different functionalities.
6. Optimizing API response times using caching strategies
7. Coordinating with the team for bug fixes & integration testing
8. Reviewing deployment pipelines and CI/CD automation.
9. Preparing for the final project demonstration & presentation.

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