



# NIE INSTITUTE OF TECHNOLOGY

(Approved by AICTE, New Delhi and affiliated to VTU, Belagavi)

No. 50 (part), Hootagalli Industrial Area, Koorgalli, Mysuru – 570018

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Department of Electronics and Communication Engineering

## STUDENTS PROGRESS WEEKLY REPORT

### Research Internship/Industry Internship (21INT82)

Submitted to  
**VISVESVARAYA TECHNOLOGICAL UNIVERSITY**  
Jnana Sangama, Belagavi

In partial fulfilment for the award of degree of  
**Bachelor of Engineering in**



Name of the Student	ADITYA KAUSTAV S		
USN	4NN21EC003		
Semester	VIII	Section:	A
Program	BE IN ELECTRONICS AND COMMUNICATION ENGINEERING		
Mentor Name	Dr. Salila Hegde		
Duration	15 Weeks	Weekly: 5 Days	
Academic Year	2024-25		



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**Department of Electronics and Communication Engineering**

## CERTIFICATE

This is to certify that Mr. ADITYA KAUSTAV S bearing USN 4NN21EC003 of Bachelors of Engineering in Electronics and Communication program is a bonafide students of NIE Institute of Technology , Mysuru. He has carried out Industrial Internship based program from 01/02/2025 to 31/05/2025. He has submitted report prescribed by VTU, Belagavi in partial fulfilment for the award of the Bachelor degree in the above said program

Signature of the  
Course Instructor

Signature of the  
Principal

Signature of the  
HOD

# CONTENTS

Day	Date of Activity	Activity	Page no.	Max. Marks	Marks Obtained	Remarks
1	10/02/25 15/02/25	INTRODUCTION TO SQL, DATABASE & TABLE CREATION.		10		
2	17/02/25 22/02/25	DATA TYPES, CONSTRAINTS, AND BASIC QUERIES.		10		
3	24/02/25 28/02/25	OPERATORS & SPECIAL OPERATORS.		10		
4	03/03/25 08/03/25	SUBQUERIES (SINGLE & MULTIPLE).		10		
5	10/03/25 15/03/25	RELATIONS AND FOREIGN KEY CONCEPTS.		10		
6	17/03/25 22/03/25	MULTI-ROW & SINGLE-ROW FUNCTIONS.		10		
7	24/03/25 28/03/25	SQL FUNCTIONS (AGGREGATE, STRING, DATE, NUMERIC).		10		
8	01/04/25 05/04/25	JOINS (INNER, OUTER, LEFT, RIGHT).		10		
9	07/04/25 12/04/25	EXCEL BASICS & DATA CLEANING.		10		
10	14/04/25 17/04/25	PIVOT TABLES, CHARTS, AND CONDITIONAL FORMATTING.		10		
11	21/04/25 26/04/25	ADVANCED EXCEL FORMULAS & FUNCTIONS.		10		
12	28/05/25 03/05/25	POWER BI INTRODUCTION & DATA VISUALIZATION.		10		
13	05/05/25 10/05/25	CONNECTING SQL & EXCEL TO POWER BI.		10		
14	12/05/25 17/05/25	DASHBOARD CREATION & REPORT GENERATION.		10		
15	19/05/25 24/05/25	PROJECT DEPLOYMENT & HANDOVER.		10		
PPT						
Total Marks:				150		

	Events	Marks Allotted	Marks Obtained	Remarks if any
1	Marks Allotted for dairy	20		
2	Planning and Scheduling the research internship/ industry internship	10		
3	Information/ Data Collection during program	20		
4	Analysis of the information/ data and report writing	30		
5	Final Presentation	20		
Total		100		

# ACTIVITY EVALUATION SHEET

SL no.	Parameters	Excellent	Good	Satisfactory	Unsatisfactory and Fail
	<b>Marks range</b>	<b>(80 to 100)</b>	<b>(60 to 79)</b>	<b>(40 to 59)</b>	<b>(&gt;39)</b>
1.	Punctuality				
2	Conduct and Character				
3	Innovation mind set				
4	Time Management				
5	Ability to work without Supervision				
6	Writing skillfulness and Oral Communication				
7	Judgement and Decision making				
8	Outcomes				
9	Success and Failure experienced				
10.	Feedback and critiques				
Average to Max. 30 marks					

**Mentors Observations and Suggestions**

**Faculty Signature**

**Marks Awarded**

**Signature of the Course Instructor**

# Weekly report on Research Internship /Industry Internship

<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: INTRODUCTION TO SQL, DATABASE &amp; TABLE CREATION</b>	
<b>Weekly Date: From 10/02/25 To 15/02/25</b>		
<b>Learning Aims :</b> <ul style="list-style-type: none"><li>• Understand the basics of SQL and relational databases.</li><li>• Learn how to create a new database and tables for a healthcare inventory system.</li></ul>		

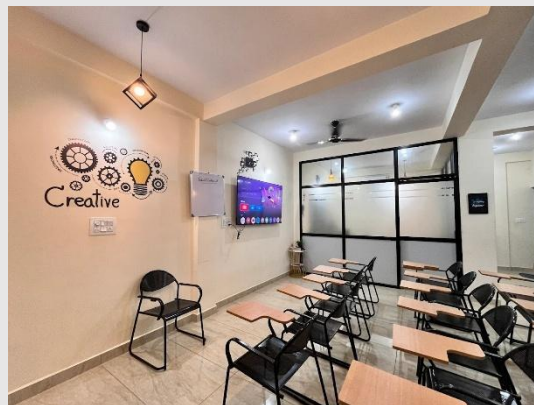
<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Explored relational database structure and its relevance in healthcare.</li><li>• Installed SQL Server and set up the working environment.</li><li>• Designed an entity-relationship model for medical inventory.</li><li>• Created a new SQL database using CREATE DATABASE.</li><li>• Developed basic tables using CREATE TABLE, defining columns with appropriate data types.</li></ul>
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<b>Observations:</b> <p>Gained a clear understanding of how databases help manage healthcare inventory efficiently. Learned how to logically structure tables and define relationships for real-world tracking systems. The process of designing from scratch helped solidify foundational concepts of data storage and schema design. Realized how a well-planned database structure is crucial in building scalable solutions.</p>
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Aiva Solution Integrations



Avia Solutions Integrations



Aiva Solutions Integrations

# Weekly report on Research Internship /Industry Internship

<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: DATA TYPES, CONSTRAINTS, AND BASIC QUERIES</b>	
<b>Weekly Date: From 17/02/25 To 22/02/25</b>		
<b>Learning Aims :</b> <ul style="list-style-type: none"><li>• Learn SQL data types and constraints to maintain data integrity.</li><li>• Practice basic SQL queries for inserting and retrieving data.</li></ul>		

<b>Activities carried out : -</b> <ul style="list-style-type: none"><li>• Studied different SQL data types and their appropriate use cases.</li><li>• Applied constraints like PRIMARY KEY, NOT NULL, UNIQUE, and DEFAULT for data integrity.</li><li>• Inserted sample medical inventory entries using INSERT INTO.</li><li>• Ran basic SELECT queries to fetch inventory data.</li><li>• Experimented with UPDATE and DELETE statements for data manipulation.</li></ul>
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<b>Observations :</b> <p>Understood the importance of choosing appropriate data types for accuracy and performance. Constraints like NOT NULL, UNIQUE, and CHECK helped ensure data reliability. Writing basic queries enhanced my confidence in retrieving data from relational structures. It was insightful to see how these simple elements lay the groundwork for reliable systems.</p>
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# Weekly report on Research Internship /Industry Internship

<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: OPERATORS &amp; SPECIAL OPERATORS</b>	
<b>Weekly Date: From 24/02/25 To 28/02/25</b>		
<b>Learning Aims :</b>  Explore SQL operators and special operators to refine queries.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Used comparison (=, &lt;, &gt;) and logical (AND, OR, NOT) operators in queries.</li><li>• Applied LIKE for pattern matching and BETWEEN to filter ranges (e.g., expiration dates).</li><li>• Filtered suppliers based on region using IN.</li><li>• Practiced combining multiple operators in nested conditions.</li><li>• Created sample reports showcasing filtered outputs.</li></ul>
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<b>Observations:</b>  Learned how SQL operators significantly improve the precision of data retrieval. Using LIKE, IN, and BETWEEN allowed for better filtering and searching of critical inventory metrics. Realized how special operators are essential in building interactive reporting and alert systems, especially in fast-moving healthcare environments where response time matters.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: SUBQUERIES (SINGLE &amp; MULTIPLE).</b>	
<b>Weekly Date: From 03/03/25 To 08/03/25</b>		
<b>Learning Aims :</b>  Use subqueries to extract dependent data from complex datasets.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Developed single-row subqueries to fetch critical thresholds.</li><li>• Implemented multi-row subqueries with IN, ANY, and ALL for conditional logic.</li><li>• Extracted items below reorder level using nested queries.</li><li>• Compared current stock against average demand using subqueries.</li><li>• Validated subquery performance and optimized query structure.</li></ul>
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<b>Observations:</b>  Subqueries allowed a deeper layer of analysis and provided a modular approach to problem-solving. I could identify low-stock items and compare them against reorder thresholds. Subqueries helped simulate real-life decision-making scenarios like stock replenishment, leading to more dynamic and informative queries.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: RELATIONS AND FOREIGN KEY CONCEPTS</b>	
<b>Weekly Date: From 10/03/25 To 15/03/25</b>		
<b>Learning Aims :</b>  Establish relationships between multiple tables using keys.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Normalized tables to eliminate data redundancy.</li><li>• Defined foreign key relationships between inventory, suppliers, and categories.</li><li>• Established referential integrity with FOREIGN KEY constraints.</li><li>• Inserted relational data across multiple tables.</li><li>• Visualized table relationships using SQL diagramming tools.</li></ul>
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<b>Observations:</b>  Establishing foreign keys taught me how relational databases prevent anomalies and maintain integrity. Linking inventory items with suppliers made it easier to track item sources, making the system scalable and audit-friendly. I saw the benefits of normalization firsthand, improving both performance and clarity in reports.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: MULTI-ROW &amp; SINGLE-ROW FUNCTIONS.</b>	
<b>Weekly Date: From 17/03/25 To 22/03/25</b>		
<b>Learning Aims :</b>  Use SQL functions to perform aggregate and row-level calculations.		

Activities carried out: -

- Applied aggregate functions (SUM, AVG, COUNT, MIN, MAX) to analyze stock.
- Used single-row functions like UPPER, LOWER, and ROUND for data transformation.
- Combined row functions to derive key performance indicators (KPIs).
- Created summary queries for monthly inventory snapshots.
- Documented differences in result patterns between SRFs and MRFs.

Observations:

These functions allowed for powerful aggregation and summarization of healthcare inventory data. By calculating averages, totals, and minimums, I could quickly gain a bird's-eye view of the stock situation. It emphasized how decision-making can be simplified by summarizing massive datasets into meaningful figures.

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# Weekly report on Research Internship /Industry Internship

<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: SQL FUNCTIONS (AGGREGATE, STRING, DATE, NUMERIC).</b>	
<b>Weekly Date: From 24/03/25 To 28/03/25</b>		
<b>Learning Aims :</b>  Utilize advanced SQL functions for more precise data operations.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Employed string functions (CONCAT, SUBSTRING, TRIM) for formatting.</li><li>• Applied date functions (DATEDIFF, GETDATE) to find expired/soon-to-expire items.</li><li>• Used numeric functions (CEILING, FLOOR, ABS) in report metrics.</li><li>• Built complex queries integrating multiple function types.</li><li>• Verified query accuracy against manually calculated results.</li></ul>
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<b>Observations:</b> <p>This week provided hands-on experience in data transformation. Functions like DATEDIFF() helped in identifying expired stock, which is critical in healthcare. String and numeric functions enabled better formatting and calculations. The ability to automate such validations helped simulate real-time alert mechanisms for expiry management.</p>
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: JOINS (INNER, OUTER, LEFT, RIGHT).</b>	
<b>Weekly Date: From 01/04/25 To 05/04/25</b>		
<b>Learning Aims :</b>  Learn different types of joins to combine data from multiple tables.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Practiced all types of joins using inventory and supplier data.</li><li>• Demonstrated use of INNER JOIN for matching records and LEFT JOIN for full inventories.</li><li>• Identified unmatched data using RIGHT JOIN and FULL OUTER JOIN.</li><li>• Analyzed which suppliers lacked recent transactions.</li><li>• Generated joined data views for reporting in Excel and Power BI.</li></ul>
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<b>Observations:</b>  Joining tables opened up new dimensions in report generation and analytics. For example, combining supplier data with inventory revealed valuable insights such as which supplier consistently delivered out-of-stock items. Learned how different joins serve different reporting purposes, and how to choose the right one for the context.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: EXCEL BASICS &amp; DATA CLEANING.</b>	
<b>Weekly Date: From 07/04/25 To 12/04/25</b>		
<b>Learning Aims :</b>  Use Excel for data import and preprocessing.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Imported SQL-extracted data into Excel for pre-processing.</li><li>• Identified and removed duplicate records using Remove Duplicates.</li><li>• Used Text to Columns to separate compound fields.</li><li>• Handled missing values through imputation or deletion strategies.</li><li>• Reformatted columns (date, currency, text) for consistency.</li></ul>
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<b>Observations:</b>  Data cleaning emphasized the importance of maintaining hygiene in datasets. Found that minor inconsistencies like spelling errors or duplicates could distort entire dashboards. This task gave me a strong understanding of why pre-processing is critical before any meaningful analysis can take place.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: PIVOT TABLES, CHARTS, AND CONDITIONAL FORMATTING.</b>	
<b>Weekly Date: From 14/04/25 To 17/04/25</b>		
<b>Learning Aims :</b>  Analyze data and detect trends using Excel visual tools.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Created pivot tables to analyze inventory by item category, supplier, and expiry status.</li><li>• Used slicers and filters for interactive segmentation.</li><li>• Built charts (bar, pie, line) to visualize stock trends.</li><li>• Applied conditional formatting to flag low or excess stock.</li><li>• Exported visual summaries to PDF for review.</li></ul>
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<b>Observations:</b>  Excel's pivot tables and conditional formatting were powerful tools for deriving instant insights. I could group items by supplier, category, or expiry status and highlight critical issues visually. These tools helped translate raw data into business-friendly formats, making communication with non-technical stakeholders easier.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: ADVANCED EXCEL FORMULAS &amp; FUNCTIONS.</b>	
<b>Weekly Date: From 21/04/25 To 26/04/25</b>		
<b>Learning Aims :</b>  Apply lookup and reference formulas for advanced reporting.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Used VLOOKUP, HLOOKUP, INDEX, and MATCH for cross-referencing data.</li><li>• Built dynamic range formulas using OFFSET and INDIRECT.</li><li>• Automated summary sheets using nested IF statements.</li><li>• Applied data validation for dropdowns and input control.</li><li>• Developed reusable Excel templates for future use.</li></ul>
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<b>Observations:</b>  Learned how complex formulas can automate repetitive tasks and enhance data interactivity. Using VLOOKUP and IF conditions improved efficiency in cross-referencing supplier and item data. These functions bridged the gap between static data and dynamic insights, which is vital for real-time decision-making.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: POWER BI INTRODUCTION &amp; DATA VISUALIZATION.</b>	
<b>Weekly Date: From 28/04/25 To 03/05/25</b>		
<b>Learning Aims :</b>  Explore Power BI for interactive dashboards and real-time analysis.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Installed and set up Power BI Desktop.</li><li>• Imported cleaned Excel and SQL datasets into Power BI.</li><li>• Built initial bar charts, pie charts, and card visuals.</li><li>• Customized chart properties, legends, tooltips, and filters.</li><li>• Published test dashboards to Power BI service.</li></ul>
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<b>Observations:</b>  Power BI provided a dynamic platform to visualize SQL-driven insights. I appreciated how quickly visual components could reflect updates in the underlying data. Learned the importance of choosing the right visualization for the right audience—such as using bar charts for stock comparison and gauges for threshold alerts.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: CONNECTING SQL &amp; EXCEL TO POWER BI.</b>	
<b>Weekly Date: From 05/05/25 To 10/05/25</b>		
<b>Learning Aims :</b>  Enable real-time data refresh and data source integration.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Connected live SQL Server database to Power BI using DirectQuery.</li><li>• Integrated Excel-based lookups for additional context.</li><li>• Built queries in Power Query Editor for data shaping.</li><li>• Tested refresh schedules and performance of large datasets.</li><li>• Merged data sources to create unified data models.</li></ul>
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<b>Observations:</b> <p>Successfully integrating different data sources was a key takeaway. It demonstrated how backend SQL data and Excel-cleaned sheets could converge into a single visualization layer. The seamless update mechanism created a near real-time monitoring system—a critical need in high-stakes industries like healthcare.</p>
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title Program: DASHBOARD CREATION &amp; REPORT GENERATION.</b>	
<b>Weekly Date: From 12/05/25 To 17/05/25</b>		
<b>Learning Aims :</b>  Create a complete, interactive dashboard and summarize project learnings.		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Designed an interactive dashboard focused on expired and low-stock alerts.</li><li>• Created KPIs for stock levels, reorder frequency, and supplier performance.</li><li>• Added date filters, slicers, and bookmarks for interactivity.</li><li>• Shared reports with mentors and management for feedback.</li><li>• Generated and exported Power BI reports in PDF and PowerPoint formats.</li></ul>
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<b>Observations:</b>  Creating the dashboard was a culmination of all skills learned. It was rewarding to see how individual components—SQL queries, Excel logic, and Power BI visuals—merged into an insightful, interactive tool. The dashboard allowed for real-time tracking of low-stock and expired items, offering immense practical value for inventory management.
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<b>Name of the Candidate:</b>	<b>ADITYA KAUSTAV S</b>	<b>USN: 4NN21EC003</b>
	<b>Title      Program:      PRESENTATION,      FEEDBACK,      AND      WRAP-UP WITH KEY LEARNINGS.</b>	
<b>Weekly Date: From 19/05/25    To    24/05/25</b>		
<b>Learning Aims :</b> <ul style="list-style-type: none"><li>• Consolidate learning from the 14-week internship.</li><li>• Reflect on challenges, growth, and future application of skills.</li></ul>		

<b>Activities carried out: -</b> <ul style="list-style-type: none"><li>• Conducted a final review of the SQL, Excel, and Power BI project.</li><li>• Prepared a detailed presentation showcasing key metrics and insights.</li><li>• Participated in a review session with mentors to receive feedback.</li><li>• Documented project workflows, code, and dashboard user guides.</li><li>• Submitted final reports and knowledge transfer documents</li></ul>
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<b>Observations:</b> <p>This final week helped me look back on the internship journey with clarity and confidence. I realized how much progress I had made—from writing basic SQL queries to building a real-time, interactive dashboard that could genuinely support supply chain decisions in healthcare.</p>
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**NIE INSTITUTE OF TECHNOLOGY**  
DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING



Internship  
Presentation  
On

**“Data Analytics”**

Company name: Aiva Solutions Integrations

Duration: 01/02/2025 to 31/05/2025

**Name:**  
Aditya Kaustav S 4NN21EC003

**Guide**  
Dr. Salila Hegde  
Assistant Professor  
Dept. of ECE NIEIT,  
Mysuru

## **CONTENTS**

- About the company
- Introduction
- Internship timeline
- Project objective
- Project motivation
- Customer churn prediction project
- Applications
- Result
- Conclusion
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## About the company

- Aiva Solutions Integration is a forward-thinking tech company delivering advanced software and hardware solutions.
- It offers custom software development, mobile apps, and scalable cloud platforms tailored to client needs.
- The company also specializes in secure, user-friendly e-commerce solutions that boost sales and loyalty.
- Comprehensive maintenance and support ensure reliability and long-term client satisfaction.
- With deep technical expertise and a client-centric approach, Aiva drives digital transformation and business growth.

## Introduction

Data analytics plays a vital role in the retail sector by enabling businesses to track supply chain operations, optimize inventory levels, and predict demand fluctuations. By integrating data analytics tools and techniques, businesses can enhance decision-making processes, reduce waste, and improve overall efficiency.

## **Internship Timeline: Supply Chain Optimization in Retail**

- Week 1: Introduction to SQL, Database & Table Creation
- Week 2: Data Types, Constraints & Basic Queries
- Week 3: Filtering with Operators (LIKE, IN, BETWEEN)
- Week 4: Subqueries for Stock Analysis
- Week 5: Relations & Foreign Keys
- Week 6: Multi-row & Single-row Functions
- Week 7: Aggregate, Date, String & Numeric Functions
- Week 8: Joins (INNER, OUTER, LEFT, RIGHT) for Data Linking

## **Weeks 9–11: Advanced Excel for Churn Analysis**

- Week 9: Data Cleaning & Formatting
- Week 10: Pivot Tables, Charts & Conditional Formatting
- Week 11: Advanced Formulas (e.g., VLOOKUP for Supplier Info)



## **Weeks 12–14: Power BI for Visualization**

- Week 12: Introduction to Power BI & Data Import
- Week 13: SQL & Excel Integration with Power BI
- Week 14: Dashboard Design, Reporting, and Churn Insights Visualization

## **Project Objective**

The primary objective of the Supply Chain Optimization in Retail project was to leverage data analytics and optimization techniques to enhance the efficiency and responsiveness of the supply chain. By analyzing historical sales data, inventory levels, supplier performance, and demand patterns, the project aimed to identify bottlenecks and inefficiencies. The goal was to deliver actionable insights through interactive dashboards, enabling the company to improve inventory management, reduce operational costs, minimize stockouts and overstocks, and ultimately enhance customer satisfaction and profitability.

## Project Motivation

The supply chain is the backbone of any retail business, and optimizing it can lead to significant improvements in cost efficiency and service levels. This project was selected based on the following motivations:

**Minimizing Stock Shortages and Overstocking:** Excess inventory increases holding costs, while stockouts result in lost sales. The project aimed to balance supply and demand through data analytics.

## Applications

### **Demand Forecasting Accuracy**

Enhances the precision of demand predictions using historical data and trends, leading to better inventory planning and reduced stockouts or overstock situations.

### **Inventory Cost Reduction**

Minimizes holding and shortage costs by optimizing stock levels across warehouses and retail locations, improving overall cost efficiency.

### **Supplier Performance Management**

Identifies underperforming suppliers through data analysis, enabling better negotiation, improved reliability, and stronger supplier relationships.

### **Improved Order Fulfillment**

Streamlines logistics and replenishment processes, resulting in faster order processing, reduced lead times, and increased customer satisfaction.

### **Enhanced Strategic Planning**

Supports long-term decision-making with actionable insights into demand trends, supply chain risks, and capacity planning for future growth.

## Result

### **Identification of Operational Bottlenecks**

Analyzed inventory data, sales trends, and logistics performance to uncover inefficiencies in the supply chain. Pinpointed issues such as delayed replenishment cycles, uneven stock distribution, and supplier delivery inconsistencies.

### **Development of Optimization Models**

Implemented data-driven optimization techniques and algorithms (such as linear programming, time-series forecasting, and clustering) to improve demand forecasting, inventory allocation, and replenishment strategies. Achieved significant improvements in stock availability and cost reduction.

## Conclusion

During my Data Analytics internship at Avia Solutions Integration, I gained valuable exposure to the practical aspects of data-driven decision-making in the retail sector. The internship provided a deep dive into supply chain optimization, focusing on leveraging analytics to enhance operational efficiency. I had the opportunity to work on data collection, cleaning, and analysis, using Python and SQL to extract actionable insights from large datasets. I was involved in a project aimed at optimizing inventory management and predicting demand patterns. By analyzing historical data, identifying key trends, and applying statistical models, I contributed to improving stock levels and reducing waste. The project utilized advanced forecasting techniques and machine learning algorithms to provide real-time insights into supply chain performance.

## Reference

- Customer Churn Analytics – IBM Documentation**

Offers in-depth guidance on churn prediction models and their business applications.

<https://www.ibm.com/docs/en>

- Power BI Official Documentation – Microsoft**

Detailed tutorials and best practices for building interactive dashboards and visualizations.

<https://learn.microsoft.com/en-us/power-bi>

- SQL Tutorial – W3Schools**

A comprehensive resource for learning SQL basics to advanced queries, functions, and joins.

<https://www.w3schools.com/sql>

- Excel for Data Analysis – Microsoft Support**

Official Microsoft documentation covering pivot tables, VLOOKUP, formulas, and data cleaning.

<https://support.microsoft.com/excel>

- Churn Prediction Using Machine Learning – Research Paper**

"Predicting Customer Churn in Telecom Industry using Machine Learning Techniques," IEEE, 2021.

[DOI: 10.1109/ICICCS51141.2021.9432265]

Thank You