

SUMMER INTERNSHIP PROGRAM

at

Department of Medical Health Education, Rajasthan

MDM Hospital, Jodhpur

From 15/05/2025 to 29/07/2025

A REPORT BY

Ayush Saxena

Master of Business Administration

HEALTHCARE ANALYTICS

Roll no: 0003

2024-26

Under the Mentorship of:

Dr. Ritu Vashistha



IIHMR University, Jaipur

Government of Rajasthan

Office of The Superintendent, Mathura Das Mathur Hospital, Jodhpur

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- :S.No.:Gen-1/MDMH/JU/24/ 15910

Dated 29-07-2025

CERTIFICATE

This is to certify that Mr. Ayush Saxena of (batch) of 2024-26, IHMR University, Jaipur has worked with our organization for his/her summer internship from 15th May 2025 to 29th July 2025. The overall performance shown by him/her during the period was good.

Date:-29-7-25

(Dr. Vikas Rajpurohit)

Superintendent

Mathuradas Mathur Hospital, Jodhpur

डॉ. विकास राजपुरोहित
अधीक्षक
मथुरादास माथुर चिकित्सालय
जोधपुर

IIHMR University Faculty Mentor Approval

This is to certify that **Mr. Ayush Saxena** of academic year 2024-26 of **School of Digital Health, IIHMR University, Jaipur, Rajasthan** has prepared a poster with respect to his summer internship held during May-July 2025,

He has carried out work as per the guidelines. His poster is approved for presentation,

A handwritten signature in blue ink, appearing to read 'Ritu'.

Date:

Dr. Ritu Vashistha
Assistant Professor



STRENGTHENING HEALTHCARE DELIVERY: DIGITAL LAB SAMPLE COLLECTION AND REPORTING AT MDM HOSPITAL

Presented By: Ayush Saxena
Batch: MBA HA 01
Roll no.: 0003



University mentor: Dr. Ritu Vashistha Ma'am

Introduction

MDM Hospital in Jodhpur, the largest medical facility in western Rajasthan, has a rich history of serving the community. Opened in 1979 with a modest 200 beds, it has grown exponentially to an impressive 5,154 beds, reflecting its crucial role in regional healthcare.

This vital institution operates under the purview of the S.N. Medical College in Jodhpur, with a dedicated superintendent at the helm who oversees all healthcare services and manages the budget. Patients at MDM Hospital benefit from a wide array of specialized care, with seven super-specialty departments and twelve other essential departments currently in operation.

Beyond its comprehensive medical services, MDM Hospital embraces modern administrative solutions to enhance patient experience. The IHMS portal streamlines patient registration and record-keeping, while the E-Aushadhi system provides real-time information on drug availability. The hospital is committed to accessible healthcare, offering free diagnosis, treatment, and medication distribution. Furthermore, it actively participates in various government health schemes like the MAA Yojana and RGHS, ensuring a wider reach of its benevolent services.

Mission

Provide personalized healthcare that focuses on patient happiness and well-being through optimal, evidence-based medical interventions.

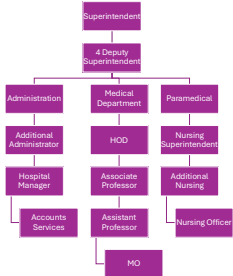
To improve patient outcomes through investments in medical technologies.

To encourage health education and wellness through active engagement in community outreach and public health programs.

Vision

To provide comprehensive healthcare services accessible to all. To become a model and global leader in healthcare, and a research center on health.

Organization structure



About Project

This project focuses on enhancing the Integrated Health Management System (IHMS) at Mathura Das Mathur Hospital by digitizing and streamlining the laboratory sample collection and reporting process. The primary goal is to address critical inefficiencies and improve the overall patient and staff experience.

Objectives

Reduce Inefficiencies: Cut down on delays in sample tracking and the delivery of results.

Minimize Errors: Decrease mistakes that come from manual sample handling.

Improve Experience: Enhance the patient experience and streamline the workflow for hospital staff.

Ensure System Reliability: Strengthen the server infrastructure with a hybrid cloud

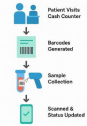
model to prevent frequent downtime and slowdowns.

Enable Sample Tracking: Introduce a barcode system to track samples at every stage, eliminating misplacement and providing status updates to patients.

Enhance Diagnostic Accuracy: Allow lab doctors to securely access patient history within IHMS for more accurate diagnoses

Results

LAB SAMPLE TRACKING WITH IHMS



PROBLEM

• Staff couldn't know the destination

• Lab report missing or mislabeled vials

• Missed sample delivery

• Color coding increases accuracy

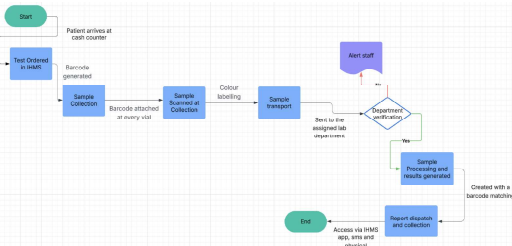
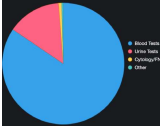
ICE-PACKED, COLOR-CODED LAB VIAL STORAGE

• Minimize setting problems

• Color coding increases accuracy

• Sample collection -> LABS

Distribution of Pathology Tests in April 2023



Organisation mentor: Dr. Vikas Raj purohit sir

Practical Exposure vs Theoretical understanding

Operations Management: Applied process re-engineering principles to design efficient workflows, using barcodes and color-coding to reduce errors and delays.

Health IT Strategy: Addressed system failures by proposing a scalable hybrid cloud architecture to ensure server reliability and uptime.

Data Analytics: Leveraged data visualization by analysing daily sample loads and test distributions to identify key problem areas and inform solutions.

Patient-Centric Design: Focused on improving stakeholder experience by designing solutions to reduce patient wait times and simplify staff tasks

SWOT Analysis

STRENGTH

- Clear project goals
- Existing lab equipment
- Clear Improvement Strategies

WEAKNESSES

- Unreliable structure
- Manual & inefficient process
- Lack of tracking & history

OPPORTUNITIES

- Enhance patient satisfaction
- Leverage proven models
- Address high patient volume

THREATS

- Implementation hurdles
- Illegible prescriptions

Challenges

- The hospital's Outpatient Department (OPD) is struggling with long and persistent waiting times due to the high volume of patients visiting daily.
- Patients often feel lost and confused about how to navigate the OPD to find the services they need.
- When patients are transferred between different units, they are not receiving clear instructions or the necessary documentation for a smooth handover.
- Staff members are overworked, which is causing delays in service delivery and patient care.

Major Learnings

- Gained practical insight into how government hospitals and their administration function, including observing core processes like admissions, discharges, and infection control.
- Applied management concepts like queue management and resource allocation to develop practical solutions for daily challenges such as overcrowding.
- Learned to work on the IHMS digital platform and became familiar with government health schemes like MMA Yojana and RGHS.

Weekly Reporting

Name of the Organization: MDM Hospital, Jodhpur

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 01

From: 15/05/2025 to 22/05/2025

Activity Done	Activity • I visited the various departments of hospital including labs, wards, OPDs and all to get the general view and understanding of hospital. • Collected key data of patient inflow at busy OPDs. 1.Avg. patient waiting time (registration, lab, consultation) 2.Bed occupancy and availability data. • Met with IHMS operator in server and discussed its workings.
Linking theory (Classroom learning) with practice at your organization	Concepts of healthcare analytics and data management were effectively applied in the first week. Real-time data collection on patient flow, waiting times, and bed occupancy helped me understand practical challenges in hospital management.
Gaps identified on the working area.	Gaps were observed in digital record-keeping, delayed data entry, and lack of real-time monitoring, that's why lot of patients were seen in the waiting line. High pendency of data was also noticed at various places in there.
Suggestions for improvement	• Queue management must be applied. • Fixing inconsistencies should be a priority. • Improving pendency should be done effectively and correctly. • Dealing with patients in peak hours must be studied. • Increase in patient windows or medicine windows should be considered.
Plan for the next week	Will go on to learning IHMS server and how its applied in hospital various departments.

Signature of the Student

Approved by the IIHMR University's Mentor

Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 02

From: 23/05/2025 to 29/05/2025

Activity Done	Activity: • Learned how IHMS works and how it links the entire hospital system • Also went ahead and saw how the registration and cash counters work in OPD and how they feed all that data in their servers. • Saw how they manage HER in their server.
Linking theory (Classroom learning) with practice at your organization	Classroom learning on healthcare workflows, data analysis using excel, system and event management by considering principle of management and organization behavior was effectively linked to practice at the organization by applying these concepts to real tasks has been done. Also, ERD structure of patient and services was also studied in here.
Gaps identified on the working area.	Gaps that were identified in this working are: 1. Server is most of the times overloaded. 2. Frequent shutdowns of server. 3. Buffering while feeding data.
Suggestions for improvement	Suggestions for improvement include: 1. Streamlining data access processes, ensuring consistent and accurate record-keeping 2. Enhancing interdepartmental coordination and strengthening communication channels to improve workflow efficiency and overall hospital performance. 3. Improvement in server

Plan for the next week	The plan for next week will be visiting state beneficiary office to get the knowledge on how this scheme works here.
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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 03

From: 30/05/2025 to 06/06/2025

Activity Done	Activity: • Visited Maa Yojana office and studied how govt schemes work here. • Studied how patient registration is done through these schemes. • Got an experience how process flow is like in registration counters of these schemes.
Linking theory (Classroom learning) with practice at your organization	I applied classroom concepts like data sorting, project management, and healthcare operations in real tasks.
Gaps identified on the working area.	Identified gaps: 1. Digital illiteracy among patients. 2. Most of the process is manually done and feed in patient's file.

Suggestions for improvement	Improving inter-departmental communication to ensure smoother workflow and better efficiency. No multiple ids for same patient should be made and the already made one should be merged.
Plan for the next week	I will further do data analysis of Maa yojana data from Jan to May 2025.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 04

From: 07/06/2025 to 13/06/2025

Activity Done	Activity: • This week I collected 4 months of MaaYojana data from office. • I ran analysis on that data and determined relationship b/w various fields. • Established relationship b/w department and high patient inflow in that department and reasons for high submitted claims.
Linking theory (Classroom learning) with practice at your organization	Concepts such as data manipulation, measuring calculation, and report creation were applied while working on this data on Power bi and excel.
Gaps identified on the working area.	Inconsistent data quality standards were very huge void for performing the analysis and the inconsistencies very huge in claim amounts and submitted amounts as in the data points were no standardized.
Suggestions for improvement	There should be regular updates in claim amounts, submitted amounts and rejected amounts as it further differs in analysis.
Plan for the next week	I will be visiting various DDCs and MOIC to get the knowledge of how their work is managed and through which software of system they are working.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 05

From: 14/06/2025 to 20/06/2025

Activity Done	Activity: • I visited various drug distribution centers to study their workflow. • Studied how this E Asaudhi works in hospital and how drug is distributed and feed. • Also visited various MOIC and their online drug feeding systems of medicine. • Note the data on how much time does it normally takes a patient to get their medicine from DDC, both high patient flow DDC and low patient flow DDC.
Linking theory (Classroom learning) with practice at your organization	Concepts like data sorting and cleaning were applied and got to know how digital health makes work easy for staff and patient as well. And then the DDC patient relationship was also study.
Gaps identified on the working area.	The system working here is kind of smooth with less inconsistencies in server, but it's not connected to central IHMS of hospital which may create a headache sometime. And thing with DDCs which was very irregular was that there was high pendency of data.
Suggestions for improvement	Suggestions: • Connect DDC portal with IHMS for streamlined process. • Remove this high pendency of data. • Work on more windows if patient inflow is high particularly DDCs.
Plan for the next week	I will be working on project given by my hospital mentor.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 06

From: 21/06/2025 to 26/06/2025

Activity Done	Activity: • Got a project to work on designing and planning how labs for sample collection and reporting can be automated to ease the long queues in sample collection. • Collected all the necessary data for this like, how many sample collection labs are there in total, total machines in lab, total machines compatible with IHMS. • Got personalized views from lab in charges on what problems they are facing.
Linking theory (Classroom learning) with practice at your organization	Worked on how digital health delivery can ease the patient worries. And how digital health can ensure the timely diagnosis and treatment.
Gaps identified on the working area.	Gaps Identified: • Server problem in IHMS • Long queues in sample collection • Multiple ids of same patient • No real time report tracking which causes misplacement of reports.
Suggestions for improvement	Suggestions for improvement: • Make server offline to offload the load. • Barcode and barcode scanner for timely tracking and to avoid misplacement. • Merging of multiple patient ids. • Online report dispatching on patient's mobile number.
Plan for the next week	I will work on queue management system in OPD registration counters to tackle huge queue.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 07

From: 27/06/2025 to 01/07/2025

Activity Done	Activity: - Met with superintendent sir to get the understanding on how queue management system he thinks hospital requires. - Worked with Prem ji who oversees server room to facilitate the queue management system in hospital. - Initiated queue management system in hospital and told patients how to scan and get the direct appointment registration through their mobile phones.
Linking theory (Classroom learning) with practice at your organization	Theories like how digital health improves patients care and how it ensures timely and accurate delivery of treatment are applied through this queue management system as it connected patients with digital health and saves up their time in case of urgent medical treatment.
Gaps identified on the working area.	Gaps: - Long queues in registration counters. - No management in lines - Digital literacy was a major setback as most of the patients are from rural areas.
Suggestions for improvement	Suggestions for improvement: - Should work on improving digital literacy - Proper management should be done in lines
Plan for the next week	I will further work on projects and tasks. And I will be looking forward to getting new tasks and projects.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 08

From: 02/07/2025 to 08/07/2025

Activity Done	Activity: - Continued my work on my project which is lab automation and barcode scanning in lab sample collection and reporting for accurate and timely delivery of treatment. - Then worked on the beneficiary scheme data and plotted and dashboard.
Linking theory (Classroom learning) with practice at your organization	Concepts like data cleaning, relational modeling, and metric definition previously studied in class proved essential in structuring the data effectively for live dashboard reporting.
Gaps identified on the working area.	Inconsistent data entries across sources, missing values in key fields, and lack of standardized formats, which initially hindered smooth integration with Power BI.
Suggestions for improvement	Maintaining updated documentation on data sources and flow will also streamline future integration efforts. Lastly, periodic training sessions for staff involved in data handling can promote better data hygiene and accuracy.
Plan for the next week	Will further work on project and tasks.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 09

From: 09/07/2025 to 15/07/2025

Activity Done	Activity: • Visited Rajasthan medical fund relief society of hospital. • Got to know how funds are allocated throughout the various departments and infrastructure in the hospital. • Also got to know how funds are collected and if there are any complications while demanding funds as it comes from two sources one is govt. and another is insurance company.
Linking theory (Classroom learning) with practice at your organization	Classroom concepts like management, financial analysis was applied. And how centralized digital platform eases up many complications.
Gaps identified on the working area.	Gaps: • Delayed approval of funds • Pendency in payments
Suggestions for improvement	Suggestions: • Decrease pendency in records and timely payments • Right time approvals should be appreciated • Fast processing of payments and records should be initiated.
Plan for the next week	Will further work on project and tasks.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 10

From: 16/07/2025 to 22/07/2025

Activity Done	Activity: • Worked on my project and reports submission. • Correction in any data I collected or processed. • Studied how sterilization machines work in operation rooms and how much time does it takes them it sterilizes. • Visited bio medical waste department to understand their process and if analysis can be done on it.
Linking theory (Classroom learning) with practice at your organization	Applied classroom concepts of data management, cleaning and analysis.
Gaps identified on the working area.	Incomplete data entries, inconsistent bio medical waste management.
Suggestions for improvement	To enhance data quality and decision-making, it is suggested to ensure complete and consistent data entry across all departments, automate data collection to reduce manual errors.
Plan for the next week	Will further work on post internship work.

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Weekly Reporting

Name of the Organization: MDM HOSPITAL, JODHPUR

Area/ Department/ Project of Summer Internship Program: Digital Healthcare Delivery

Name of the Student: Ayush Saxena

Roll no: 0003

Stream: MBA Healthcare Analytics

Week no: 11

From: 23/07/2025 to 29/07/2025

Activity Done	• Worked on my internship project, poster and reports. • Visited gynae to collect data of June.
Linking theory (Classroom learning) with practice at your organization	Classroom concepts like data management and all.
Gaps identified on the working area.	Manual data entry.
Suggestions for improvement	Everyday data entry should be online, and staff should be efficiently trained in that area.
Plan for the next week	Will further work on post internship work.

Signature of the Student

Approved by the IIHMR University's Mentor

Compiled Report

Name of the Organization: MDM HOSPITAL, JODHPUR

Name of the Student: Ayush Saxena

Area/ Department/ Project of Summer Internship Program:

Digital Healthcare Delivery

Roll no: 0003

Stream: MBA Healthcare Analytics

Activity Done	Introduction During my internship at MBS Hospital, I was involved in a comprehensive data-driven project focused on Patient Flow Analytics and process improvement. Over the course of 10 weeks, I undertook various tasks involving departmental observation, data collection, cleaning, analysis, visualization, and dashboard creation. The internship gave me hands-on experience with hospital information systems, public health data, event coordination, and staff workflow understanding. The following summary outlines the week-by-week activities carried out during the internship. Week 1: • Visited various departments (labs, wards, OPDs) for general understanding. • Collected data: avg. patient waiting time, bed occupancy. • Met with IHMS operator to understand the system. Week 2: • Learned IHMS workings and data flow. • Observed registration and cash counters. Week 3: • Visited Maa Yojana office and studied registration and workflows. Week 4: • Collected and analyzed Maa Yojana data. • Explored relationships between departments and claims. Week 5: • Visited DDCs and observed E-Asaudhi drug systems. Week 6: • Designed project for lab automation and report delivery. Week 7: • Initiated OPD queue management system Week 8: • Continued lab automation and dashboard work Week 9: • Visited Rajasthan Medical Relief Society.
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Week 10:

- Worked on data correction, studied sterilization & biomedical waste.

Week 11:

- Finalized project, poster, and visited gynae for June data.

**Linking theory
(Classroom learning) with
practice at your
organization**

During my 10-week internship, I got a chance to use the healthcare analytics concepts we learned in class. In the first week, I collected real-time data on patient flow, waiting time, and bed usage, which helped me understand how hospitals actually work.

As the weeks went on, I applied what we learned about healthcare workflows, data systems, and analysis to real tasks. I worked on data cleaning, visited departments, and even saw staff hiring in action. I used Excel and Power BI to sort and analyse OPD, IPD, and discharge data.

I also learned how to design dashboards, calculate measures, and show insights in a simple way. Using pivot tables and charts made it easier to understand hospital data and make better decisions. By the end of the internship, I was confident in using tools like, Excel, and Power BI to turn raw hospital data into useful insights. This experience really helped me connect classroom learning with real-world healthcare problems.

Gaps identified on the working area.

Throughout my 10-week internship, I noticed several gaps in the hospital's data handling process. In the early weeks, I observed delays in data entry, missing or incomplete records, and no real-time tracking of patient information.

There were also issues like inconsistent formats, wrong or missing timestamps, and different department names, which made the data confusing and hard to analyze. As I worked more closely with departments, I saw that coordination between them was weak, and data was often not shared properly. Many times, data was entered manually, leading to errors and delays.

There was no standard way to flag delays or track them across systems. These issues made it difficult to use tools like Power BI effectively. Overall, the lack of standardized formats, real-time integration, and use of analytics tools created challenges in getting accurate insights and making timely decisions.

Suggestions improvement	for Over the 10 weeks of my internship, I came across many areas where improvements could really help the hospital run more smoothly. One major suggestion is to implement a centralized digital system for real-time data entry and provide regular training to staff on proper data handling. This would reduce delays and improve accuracy. It's also important to improve communication and coordination between departments, so that workflows become faster and more efficient. As I worked on projects, I saw how critical timestamped data is for tracking patient movement and improving hospital flow. Having a clear plan before building dashboards and keeping documentation updated can save time and reduce confusion. In the later weeks, I felt that automating timestamp collection and syncing IHMS data with tools like Power BI could give real-time insights. Overall, better digital systems, automation, and regular staff training will improve both data quality and hospital decision-making.
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Key Learnings

During my internship, I got a hands-on understanding of how healthcare analytics works in a real hospital setting. I learned how to collect, clean, and analyze real-time patient data, including flow, waiting times, and departmental performance.

Applying classroom concepts like data sorting, pivoting tables, dashboard design, to actual hospital data helped me bridge the gap between theory and practice. I understood the importance of accurate and timely data entry, and how even small inconsistencies in format or naming can impact overall analysis.

Working with tools like Excel and Power BI, I developed dashboards that not only visualized key metrics but also supported better decision-making. I also realized how essential interdepartmental coordination and real-time data integration are for smooth hospital operations. Along the way, I saw how structured data, clear communication, and proper digital systems can bring huge improvements in efficiency.

This experience gave me a much deeper appreciation of data quality, hospital workflows, and the power of analytics in transforming healthcare management.

Signature of the Student

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