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# IBM AICTE PROJECT

# LEARNING AGENT

**Presented By:**

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# OUTLINE

- Problem Statement
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- Wow factor
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- Result
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- Git-hub Link
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- IBM Certifications

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# PROBLEM STATEMENT

**Problem Statement 12-** Students often struggle to identify the right learning path that aligns with their interest and long-term goals. The vast availability of online courses can be overwhelming and most lack personalized guidance based on individual skills or levels or preferences.

Proposed Solution: LearnMate is an **Agentic AI** coach built using **IBM Watsonx** and **Agent Lab**. It interacts with students, understands their- Interest area (e.g., Frontend, UI/UX, Cybersecurity, etc.), Current Skill level and Preferred Learning style. And dynamically generates a **personalized course roadmap** that adapts overtime, helping students reach their goal in a guided and structured way.

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# TECHNOLOGY USED

IBM Cloud Lite Services

IBM Cloud Watsonx AI Studio

IBM Cloud Watsonx AI Runtime

IBM Cloud Agent Lab

IBM Granite Foundation Model (granite-3-3-8b-instruct)

# IBM CLOUD SERVICES USED

- IBM Cloud Watsonx AI Studio
- IBM Cloud Watsonx AI runtime
- IBM Cloud Agent Lab
- IBM Granite foundation model

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## WOW FACTORS

This Agent behaves as an intelligent **AI Learning coach** that dynamically generates course roadmaps based on student instructions. By leveraging **Granite Foundation Models**, LearnMate delivers structured, weekly learning plans that are customized for Interest area, Skill level and Learning style.

LearnMate was created without writing code using **IBM's Agent Lab** to engineer and test prompts with real-time **LLM** outputs.

Built on **IBM Cloud Lite**, the solutions can easily scale into web apps or chatbots for universities, coaching centers or edtech platforms.

# END USERS

## ■ Students & Learners

- School, College and self-taught students seeking guided learning paths in fields like Web Development, Cybersecurity, UI/UX, AI/ML, etc.
- Especially useful for beginners confused about where and how to start.

## ■ Educational Institutions

- Schools, colleges, coaching centers and training providers can use this as AI assistant for Personalized academic advising, Course planning assistant and Curriculum alignment.

## ■ Carrer Changers & Professionals

- Working professionals exploring career transitions or upskilling will benefit from personalized roadmaps suited to their prior knowledge and goals.

# RESULTS

## Tested Output:

The screenshot displays the IBM Watsonx interface for the 'LearnMate Agent'. The chat history is as follows:

- User:** Hi
- LearnMate Agent 11:55 AM:** Hi, I am LearnMate agent - your personalized AI course guide. How can I help you with your learning journey today?  
▶ How did I get this answer?
- User 12:02 PM:** I want start my learning journey in web development at a beginner level. Provide me details about this path and Also provide some resources and link from where I can learn.
- LearnMate Agent 12:03 PM:**

Great choice! Web development is a dynamic and in-demand field. To start, you'll need to learn both front-end and back-end technologies.

For front-end development, you'll focus on HTML, CSS, and JavaScript. These are the building blocks of any website. Here's a basic roadmap:

  - 1. HTML (HyperText Markup Language):** This is the standard markup language for creating web pages. It structures the content on your site.
  - 2. CSS (Cascading Style Sheets):** Once you have your content structured with HTML, CSS lets you style it, controlling layout, colors, fonts, and more.
  - 3. JavaScript:** This adds interactivity to your web pages. You can create dynamic content, control multimedia, and more.

For resources, consider these free platforms:

  - **freeCodeCamp:** Offers interactive coding lessons and projects. (<https://www.freecodecamp.org/>)
  - **Codecademy:** Provides beginner-friendly courses on HTML, CSS, and JavaScript. (<https://www.codecademy.com/>)

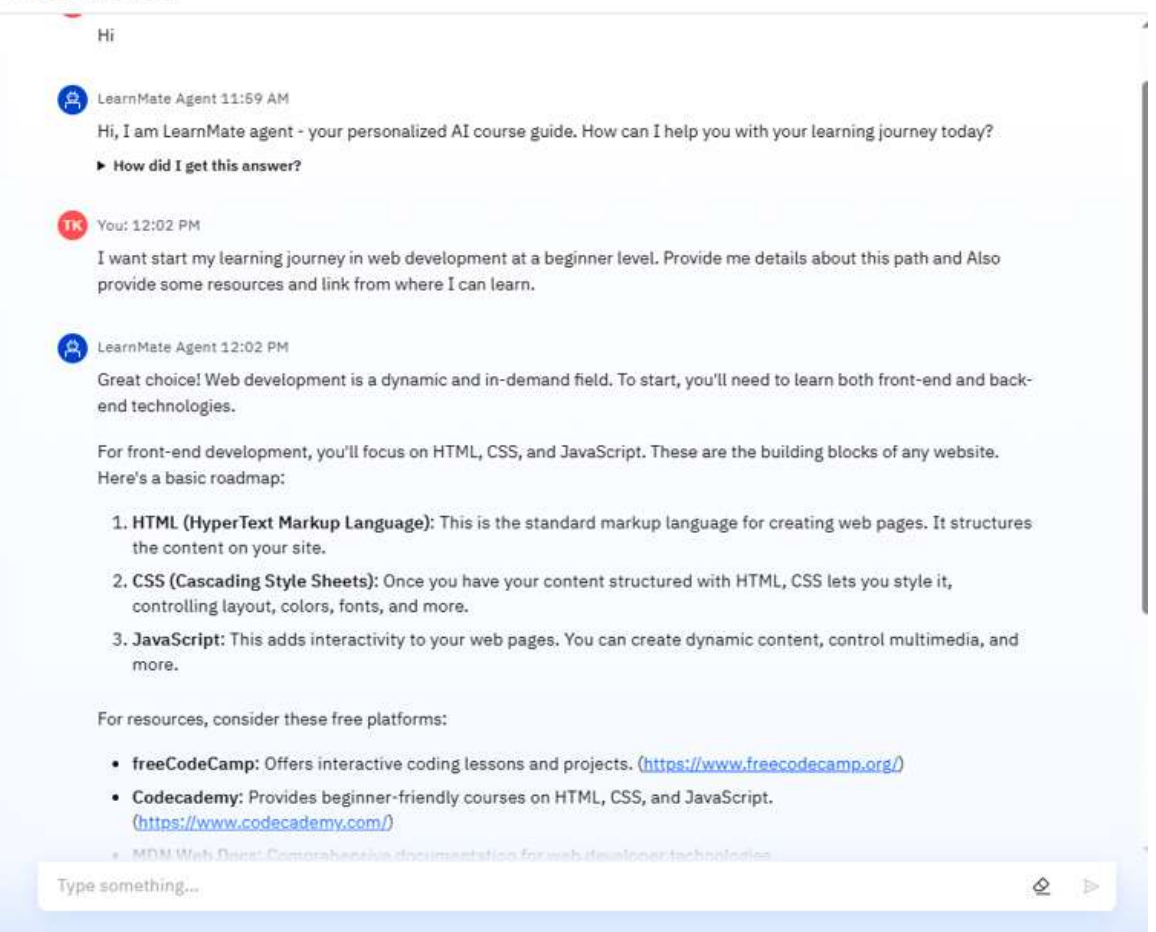
At the bottom, there is a text input field with the placeholder 'Type something...' and a send button.



# RESULTS

- ❑ Accurately identifies the user's goal and current level (e.g., Beginner in Web Development).
- ❑ Recommends Foundation Technologies like HTML, CSS, and JavaScript.
- ❑ Suggest beginner-friendly online platforms.
- ❑ Responds in clear, friendly and human-like manner using Granite model.

## Agent preview



# RESULTS

- ❑ Adapts to different user paths and dynamically generate tailored suggestion.
- ❑ Break down complex topics into beginner-understandable modules.
- ❑ Offers clear step-by-step guidance for getting started in chosen learning domain.
- ❑ Includes clickable external links for direct access to curated learning resources.

I want to start my learning in Backend Development at beginner level. Provide me details about this course.

**LearnGate Agent 12:31 PM**  
Great choice! Backend Development is a crucial part of web development. As a beginner, you'll want to start with foundational concepts. Here's a suggested learning path:

- 1. Learn HTML & CSS:** Although primarily frontend technologies, they provide context for how frontends interact with backends.
  - Resource: [Mozilla Developer Network \(MDN\) Web Docs](#) for HTML and [CSS-Tricks](#) for CSS.
- 2. Understand JavaScript Basics:** JavaScript is essential for both frontend and backend development.
  - Resource: [freeCodeCamp's JavaScript Algorithms and Data Structures Certification](#)
- 3. Dive into Backend Fundamentals:** Start with a beginner-friendly language like Python or JavaScript (Node.js).
  - For Python: [Codercademy's Learn Python 3 course](#)
  - For Node.js: [The Odin Project's Introduction to Node.js](#)
- 4. Learn a Backend Framework:** Once comfortable, learn a framework to streamline development.
  - For Python: [Django's Official Tutorial](#)
  - For Node.js: [Express.js Guide](#)
- 5. Databases:** Understand how to interact with databases using SQL (like PostgreSQL) or NoSQL (like MongoDB).
  - For SQL: [W3Schools SQL Tutorial](#)
  - For MongoDB: [MongoDB University's free courses](#)
- 6. Version Control with Git:** Essential for collaboration and project management.
  - Resource: [Atlassian Git Tutorial](#)
- 7. APIs and RESTful Services:** Learn to create and consume APIs.
  - Resource: [Codercademy's Learn REST APIs course](#)
- 8. Deploying Applications:** Understand how to deploy your applications using platforms like Heroku or AWS.
  - Resource: [Heroku Dev Center](#)

Remember, practice is key. Build small projects as you go through these resources to solidify your understanding. Let me know if you need more details on any of these steps or if you'd like to switch your interest to another topic.

**You 12:32 PM**  
Prepare a roadmap for this course from beginner level to advance level.

**LearnGate Agent 12:32 PM**  
Absolutely, here's an advanced learning roadmap for Backend Development:

**Intermediate Level:**

- 1. Deepen JavaScript Knowledge:**
  - Explore asynchronous programming, closures, prototypes, and ES6+ features.
  - Resource: [You Don't Know JS](#) series by Kyle Simpson.
- 2. Advanced Backend Concepts:**

Type something...

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## CONCLUSION

- This Agent generates personalized course roadmaps, adapting dynamically to student inputs and progress.
- It streamlines academic planning by automating skill assessment, interest matching and curriculum design.
- AI Agents like “**LearnMate**” enhance learning outcomes, engagement and efficiency in student-centered education.

## GITHUB LINK

- GitHub Repository – LearnMate AI-agent
  - Repository URL – <https://github.com/TusharKcode/IBM-Internship-Project>

# FUTURE SCOPE

- Multi-Language Support
  - Extended support for **regional languages** like Hindi, etc. to make learning accessible to a broader audience.
- Domain Expansion
  - Include pathways for other domains such as Cloud Computing, Data Science, DevOps, etc., as well as with **emerging technologies**.
- Dynamic Progress Tracking
  - Integrate **feedback systems** for tracking learner progress and re-tuning AI suggestions accordingly.
- Documentation Integration
  - Auto recommended **official documentation, tutorials** and **GitHub repositories** alongside each week's plan- helping learners not only know what to learn, but how to learn it with the resources.

# IBM CERTIFICATIONS

In recognition of the commitment to achieve  
professional excellence



## Tushar Kumar

Has successfully satisfied the requirements for:

### Getting Started with Artificial Intelligence



Issued on: Jul 16, 2025  
Issued by: IBM SkillsBuild

Verify: <https://www.credly.com/badges/f831c184-cdff-4a64-8824-7d794e99770d>



# IBM CERTIFICATIONS



# IBM CERTIFICATIONS

IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Tushar Kumar

for the completion of

**Lab: Retrieval Augmented Generation with  
LangChain**

(ALM-COURSE\_3824998)

According to the Adobe Learning Manager system of record

**Completion date:** 24 Jul 2025 (GMT)

**Learning hours:** 20 mins





**THANK YOU**