

IBM AICTE PROJECT

COURSE CONTENT SIMPLIFICATION AGENT

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OUTLINE

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PROBLEM STATEMENT

Educational materials often vary in complexity and are not always accessible to learners with different levels of prior knowledge. Students may struggle to grasp key concepts due to jargon-heavy or overly advanced explanations in faculty notes and textbooks. The challenge is to develop an AI-powered agent that can intelligently analyze academic content and reframe explanations based on the learner's current proficiency—ranging from beginner to expert. This would support more inclusive learning and personalized education delivery at scale.

Proposed Solution:

An **AI Course Content Simplification Agent**, built using IBM Granite models on watsonx.ai. This agent will leverage Natural Language Processing (NLP) and Retrieval-Augmented Generation (RAG) to intelligently analyze academic content from an indexed knowledge base.

TECHNOLOGY USED

IBM cloud lite services

Natural Language Processing (NLP)

IBM Granite model

IBM CLOUD SERVICES USED

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

WOW FACTORS

This agent boosts student comprehension and reduces study time by personalizing complex educational material for any learning level. It offers targeted support for students while helping educators manage diverse classroom needs.

Unique features:

Multi-Level Explanations: Instantly adapts any text for Beginner, Intermediate, or Expert understanding.

Factual & Grounded: Uses RAG to ensure answers are based only on the uploaded course documents, preventing errors.

Analogy & Jargon Engine: Creates simple analogies for abstract topics and defines technical terms on demand.


Auto-Quizzing: Generates questions from the content to reinforce and test knowledge.

END USERS

- University & College Students
- Professionals in Training
- Curriculum Developers
- Corporate Learning & Development (L&D) Departments

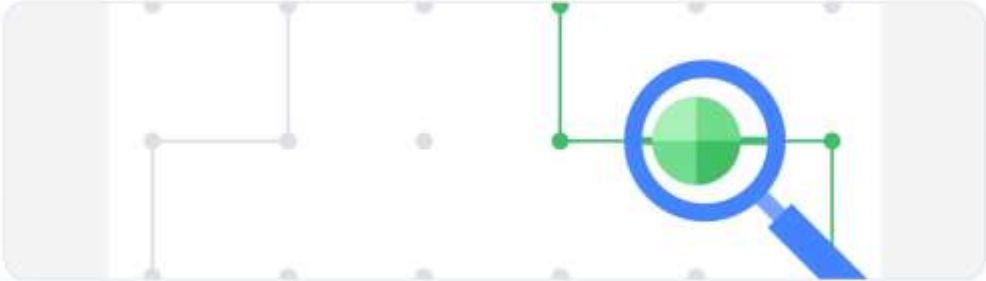
RESULTS

Agent preview

 Concept_simplifier 10:33 PM

Welcome to Concept_simplifier

Complex academic content into simple, personalized explanations tailored to your knowledge level.



Type something...

RESULTS

Agent preview

AA You: 10:34 PM

What is python?

Concept_simplifier 10:34 PM

Python is a high-level, interpreted programming language that is widely used for various purposes such as web development, scientific computing, data analysis, artificial intelligence, and more. It was created in the late 1980s by Guido van Rossum and was first released in 1991.

Here's a brief overview of Python:

Key Features

- **Easy to learn:** Python has a simple syntax and is relatively easy to read and write, making it a great language for beginners.
- **High-level language:** Python abstracts away many low-level details, allowing developers to focus on the logic of their program without worrying about memory management and other details.
- **Interpreted language:** Python code is executed line-by-line by an interpreter at runtime, rather than being compiled into machine code beforehand.
- **Object-oriented:** Python supports object-oriented programming (OOP) concepts such as classes, objects, inheritance, polymorphism, and encapsulation.
- **Large standard library:** Python has a vast collection of libraries and modules that make it suitable for various tasks such as file I/O, networking, data structures,

and more.

Uses

Python can be applied in numerous domains including:

- Web Development
- Scientific Computing & Data Analysis
- Artificial Intelligence & Machine Learning
- Automation

Type something...



Agent preview

code. To use a module, you typically import it with

6. **Lists and List Comprehensions:** Lists are used to store multiple items in a single variable. List comprehensions provide a concise way to create lists based on existing lists.

For a comprehensive understanding, consider using online resources like Codecademy, Coursera, or the official Python documentation. Practice is key in learning programming, so try solving problems on platforms like HackerRank or LeetCode.

► How did I get this answer?

AA You: 10:51 PM

Give me chicken recipe

Concept_simplifier 10:51 PM

As a concept simplifier, I'm designed to explain academic and study-related topics. I don't provide recipes, but I can tell you that learning to cook, like learning to code, often involves understanding basic techniques and then experimenting with different ingredients. For a simple chicken recipe, you might start with a basic roast chicken;

1. Preheat your oven to 425°F (220°C).
2. Rinse a whole chicken and pat it dry. Season the inside and outside with salt and pepper.
3. Place the chicken in a roasting pan, breast side up.
4. Add some chopped vegetables (like carrots, onions, and celery) to the pan for flavor.
5. Roast the chicken in the preheated oven for about 20 minutes per pound, or until a meat thermometer inserted into the thickest part reaches 165°F (74°C).
6. Let the chicken rest for a few minutes before carving.

Remember, this is a very basic recipe. Cooking often involves creativity and adjusting to taste. For detailed instructions and variations, consider using cooking websites, books, or video tutorials.

► How did I get this answer?

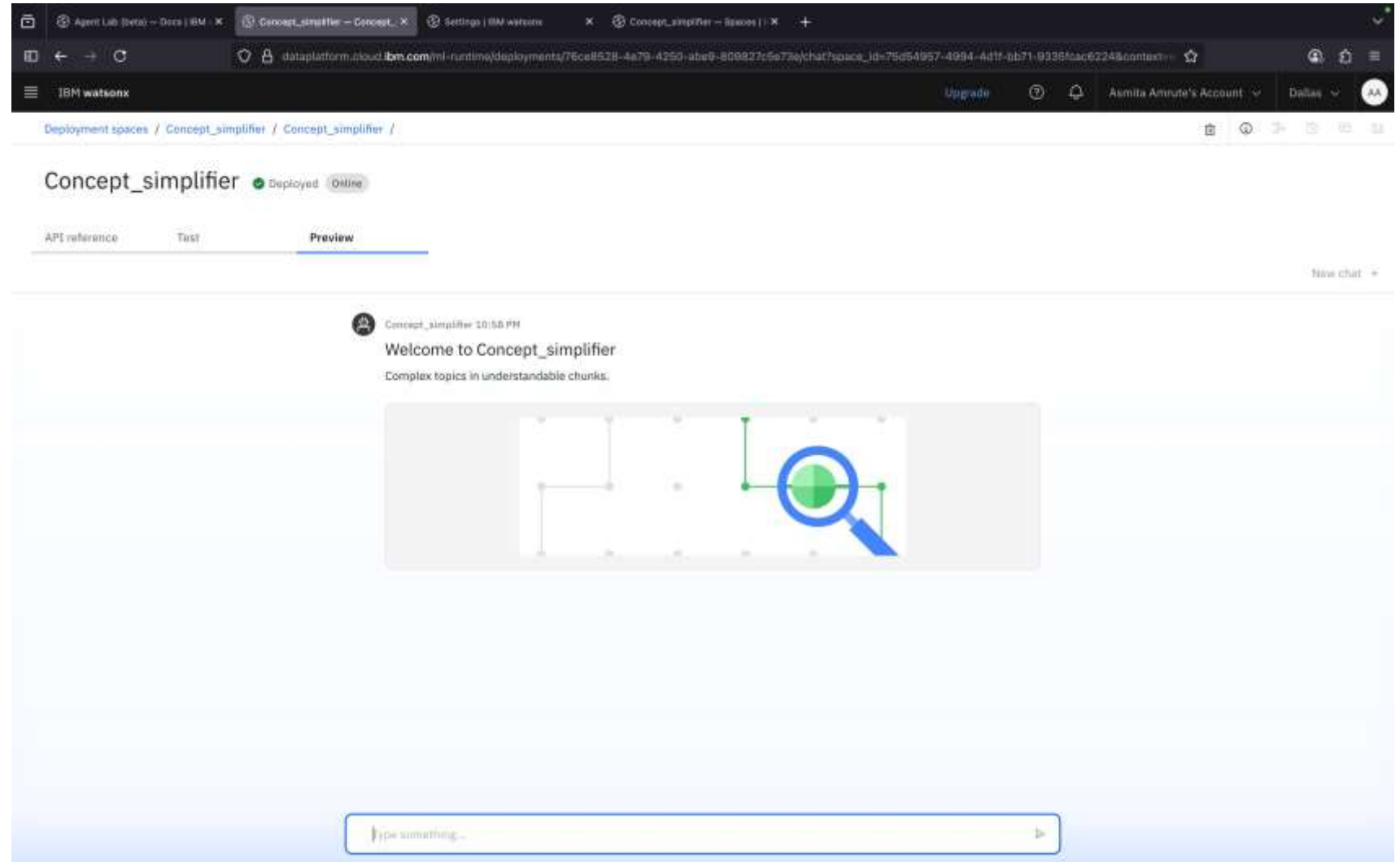


Type something...



RESULTS

Deployed AI Agent:



CONCLUSION

- **Personalizes Learning:** Instantly adapts complex academic texts into Beginner, Intermediate, or Expert explanations, allowing students to learn at their own pace and comprehension level.
- **Makes Concepts Intuitive:** Automatically generates simple analogies and defines technical jargon on demand, breaking down the biggest barriers to understanding difficult subjects.
- **Empowers Educators & Students:** Provides a scalable tool that acts as a 24/7 personal tutor for students while enabling educators to easily create differentiated learning materials for a diverse classroom.

FUTURE SCOPE

- Automated Curriculum Assistance
- Multilingual Support
- LMS Integration (Moodle, Canvas, etc.)
- Automated Diagram & Visualization
- Adaptive Learning Paths
- Voice-Enabled Learning

IBM CERTIFICATIONS



IBM **SkillsBuild**

Completion Certificate



This certificate is presented to

Asmita Amrute

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

GITHUB LINK:

[Click here for the GitHub repository](#)

OR Go to:

https://github.com/Asmita1426/Concept_simplifier



THANK YOU