

✓ Artificial Intelligence Chatbot – Project Report

Project Details

Project Title: Artificial Intelligence Chatbot

Internship Program: Code Alpha

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College: SR University

Objective

To design and develop a simple AI chatbot using Java that can:

- Simulate interactive communication with users.
- Respond to frequently asked questions using NLP-based keyword matching.
- Provide immediate, rule-based answers based on predefined logic.

Technologies Used

- Java Programming Language
- Natural Language Processing (via keyword matching)
- Rule-Based Logic
- HashMap for storing chatbot responses
- Scanner (optional, for user input)
- Console-based CLI (Command Line Interface)

Features Implemented

- Keyword-based NLP logic for understanding input.
- Rule-based responses for known question patterns.
- Instant response without requiring runtime input.
- Interactive version using Scanner for manual testing.
- Simple, readable output format suitable for terminal or online compilers.

Sample Output

AI Chatbot: Hello! You can ask one question below:

You: What is AI

AI Chatbot: AI stands for Artificial Intelligence, simulating human intelligence in machines.

Conclusion

This project demonstrates how Java can be used to build a simple AI-powered chatbot using natural language processing techniques. It uses rule-based logic to simulate intelligent conversation and helps in understanding basic AI/NLP concepts in real-world applications. The chatbot can be expanded to support more questions or integrated with GUI/web interfaces for further development.

Full Java Source Code

```
import java.util.HashMap;
import java.util.Map;

public class Main {

    public static void main(String[] args) {

        Map<String, String> knowledgeBase = new HashMap<>();
        knowledgeBase.put("hello", "Hello! How can I assist you today?");
        knowledgeBase.put("hi", "Hi there! What can I do for you?");
        knowledgeBase.put("your name", "I am Code Alpha AI Chatbot.");
        knowledgeBase.put("how are you", "I'm functioning perfectly, thank you!");
        knowledgeBase.put("help", "You can ask me questions like 'What is AI?', 'Who created you?', etc.");
        knowledgeBase.put("bye", "Goodbye! Have a great day.");
        knowledgeBase.put("what is ai", "AI stands for Artificial Intelligence, simulating human intelligence in machines.");
        knowledgeBase.put("what is nlp", "NLP stands for Natural Language Processing — it helps machines understand human language.");
        knowledgeBase.put("who created you", "I was developed as part of the Code Alpha Internship project.");

        String message = "What is AI";
        String response = "Sorry, I didn't understand that. Please try again or type 'help' for suggestions.";
        String lowerMessage = message.toLowerCase();

        for (String keyword : knowledgeBase.keySet()) {
            if (lowerMessage.contains(keyword)) {
                response = knowledgeBase.get(keyword);
                break;
            }
        }

        System.out.println("AI Chatbot: Hello! You can ask one question below:");
        System.out.println("You: " + message);
        System.out.println("AI Chatbot: " + response);
    }
}
```