Prototype Assignment Document

### NLP Chatbot Development using Dialogflow

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Prototype Phase Assignment

# Objective:

The Prototype Phase assignment is a critical step towards the successful development of a functional software application. This assignment will help you assess your ability to understand project requirements and implement core functionalities before the final project submission.

This assignment also includes the design and development of a **chatbot** using Google **Dialogflow** to assess both technical and non-technical knowledge of a chosen case study. You will not only implement key functionalities but also present your progress to peers to demonstrate your understanding and receive constructive feedback.

# **Functionalities to be Implemented:**

## Authentication and Authorization:

Implement user registration and authentication for all users specified in the Use Case diagram. Develop a customer dashboard with role-based access, ensuring that each user's permissions align with their role.

## Profile Management:

Create a user profile management system. Develop a customer dashboard with role-based access, ensuring that each user's permissions align with their role.

## Project Template:

Develop a project template using PHP or a suitable interface design tool

## Important Implementation Considerations:

## Database Schema:

Provide a detailed description of the designed database schema. Include explanations for table relationships and key constraints for prototype viva presentation.

## Intent and Entity Design

Use Specific Intents: clear implementation of Group user queries into clear and concise intents. Avoid having too many overlapping intents.

# ****Assessment Criteria****

|  |
| --- |
| Functional implementation |
| Usability & Interface Design |
| Database Schema & Integration |
| Chatbot Development (Google Dialogflow) |

# ****Submission Guidelines****

### ****Submission via LMS****

* Submit the assignment through the official Learning Management System (LMS).
* Accepted formats: (.docx, .pdf, .pptx.) .zip

### ****Submission via GitHub****

* Create a private GitHub repository titled Prototype-Assignment-[YourFullName\_ID].
* Suggested repository structure:

/Prototype-Assignment

|-- /docs # Documentation files

|-- /src # Source code for the chatbot and application

|-- /schema # Database schema files

|-- README.md # Summary of the project, setup instructions, and reflection

|-- presentation.pptx # Presentation slides for peer review

* Include the following in the README:
  + **Project Overview**
  + **Setup Instructions**
  + **Chatbot Dialogflow Integration Details**
  + **Reflection and Learning**
  + **Future Work**
* Submit the **repository link** through LMS or via email.
* Grant repository access to the supervisor.

<<Simple Document>>>

Consider a document for your guidance consider case study of a **restaurant**

## 1. Purpose & Scope

**Purpose** This document outlines the functional overview and interaction process of the Chabot integrated into the restaurant's website and mobile application. The Chabot is designed to enhance customer service by efficiently managing common inquiries and providing seamless support to users.

**Scope**

* **Inquiries Covered:**
  + **General Greeting:** Welcome users and introduce the Chabot’s capabilities.
  + **Order Status:** Provide real-time updates on order status and estimated delivery or pickup times.
  + **Product-Related FAQs:** Answer frequently asked questions about the menu, ingredients, dietary options, and pricing.
  + **Support Ticket Creation:** Facilitate the creation of a support ticket for complex inquiries that require human assistance.
  + **Conversation Closure:** Properly conclude the interaction, ensuring the user feels assisted and informed.
* **Channels:**
  + **Web Chat Interface:** Accessible via the restaurant's official website for desktop and mobile browsers.
  + **Mobile App Chat:** Integrated within the restaurant's mobile application to provide consistent support on the go.
* **Audience:**
  + **Internal Product Team:** Developers, designers, and product managers responsible for Chabot design, development, and maintenance.
  + **Stakeholders:** Business leaders, customer service managers, and marketing teams involved in the deployment and strategic alignment of the chatbot.

## 2. Dialog Flow Steps

Below is a step-by-step flow chart explanation. Each step lists User Possible Inputs, Chatbot Response, and the Logic or Condition that triggers the transition.

### 3.1 Greeting & Onboarding

| Step | User Possible Inputs | Chatbot Response | Logic/Condition |
| --- | --- | --- | --- |
| 1 | - “Hello” - “Hi” - “Hey” - No input at all (silent user) | Chatbot: “Hello! Welcome to [Company Name]. How can I assist you today?” | If user greeting detected, respond with a welcome message. If no input after a few seconds, prompt: “Hi there! Can I help you with something?” |

Purpose: Establish friendly introduction, set the conversational tone, and prompt user for their request.

### 3.2 Main Menu / Intent Identification

| Step | User Possible Inputs | Chatbot Response | Logic/Condition |
| --- | --- | --- | --- |
| 2 | - “I want to check my order status.”  - “Where is my order?”  - “My order is delayed.”  - “Order status?” | Chatbot: “Sure! Let me check your order status. Could you please provide your Order ID or email address associated with the order?” | If user mentions checking an order, route to Check Order Status flow. |
| 2 | - “I have a question about a product.”  - “Is product X in stock?”  - “How much is product Y?” | Chatbot: “I can help you with product inquiries. Which product would you like to know more about?” | If user mentions “product,” “stock,” or “price,” route to Product Information flow. |
| 2 | - “My device is not working.”  - “I need help with my account.”  - “I have a technical issue.” | Chatbot: “I’m sorry to hear that. Can you describe the issue? I can help troubleshoot or create a support ticket for you.” | If user mentions “technical,” “trouble,” or “support,” route to Technical Support flow. |
| 2 | - “Bye” - “Thanks, that’s all.” - “Goodbye.” | Chatbot: “Thank you for chatting with us. Have a great day!” | If user signals an end to the conversation, route to Closing Conversation. |

Purpose: Identify the user’s intent from their initial request.

Note: This step often involves Natural Language Understanding (NLU) to categorize user queries.

### 3.3 Check Order Status

1. Bot Asks for Order Details

Bot: “Sure! Can you please provide your Order ID or the email used to place the order?”

1. User Provides Order Details

User: “My Order ID is 123456.”

Bot: “One moment, I’m looking that up.”

1. Bot Fetches Order Status

Bot (after system lookup): “Your order is currently on its way and is expected to arrive by [date]. Would you like anything else?”

1. Confirmation & Next Step

Possible user responses:

“No, that’s it.” → Move to Closing Conversation.

“Yes, I have another question.” → Return to Main Menu or handle new request.

### 3.4 Product Information

1. Bot Requests Product Details

Bot: “Which product would you like to know more about?”

1. User Specifies Product

User: “I want to know if the [Product Name] is in stock.”

1. Bot Fetches Product Data

Bot: “The [Product Name] is currently available/in stock. It costs [Price]. Would you like to add it to your cart?”

Or if out of stock: “Currently, the [Product Name] is out of stock. Would you like me to notify you when it’s back?”

1. Confirmation & Next Step

Possible user responses:

* + - “Yes, add to my cart.” → Bot: “Great! It’s in your cart. Anything else you need?” → Return to Main Menu or end conversation.
    - “No, just checking.” → Bot: “Understood. Anything else I can help you with?” → Return to Main Menu.

### 3.5 Technical Support

1. Bot Gathers Issue Details

Bot: “Could you please describe the issue you’re facing?”

1. User Describes Issue

User: “My device won’t turn on.”

1. Bot Troubleshoots or Escalates

Bot: “I’m sorry to hear that. Let’s try some basic troubleshooting steps. Have you tried resetting the device by holding the power button for 10 seconds?”

1. User Response

If resolved: “Thanks, it works now!” → Bot: “Glad to hear! Anything else I can help with?” → Return to Main Menu or end conversation.

If not resolved: “Still not working.” → Bot: “I’ll create a support ticket for further assistance. Can you confirm your email address and preferred contact method?”

1. Bot Confirms Ticket Creation

Bot: “Your ticket has been created. Our support team will reach out within 24 hours. Is there anything else you need?” → Return to Main Menu or end conversation.

### 3.6 Closing Conversation

| Step | User Possible Inputs | Chatbot Response | Logic/Condition |
| --- | --- | --- | --- |
| 1 | - “Bye.” - “No, thank you.” - “That’s all.” | Chatbot: “Thank you for chatting with us today! Have a great day!” | If user explicitly says goodbye or indicates no further questions, end conversation gracefully. |

Purpose: Provide a friendly closing message, possibly with a follow-up survey or instructions.

## 4. Error Handling & Fallbacks

1. No Intent Recognized

Bot: “I’m sorry, I didn’t quite understand. Could you please rephrase your question?”

Logic: Triggered when the NLU fails to map user input to a known intent.

1. Multiple Intents Detected

Bot: “I see you’re asking about multiple things (e.g., ‘order status’ and ‘product availability’). Which one would you like to start with?”

Logic: Triggered when the NLU detects more than one top intent.

1. Invalid Input

Bot: “Sorry, that doesn’t seem to be a valid order number. Could you check and try again?”

Logic: Occurs when user provides input not matching the expected data format (e.g., “abcdef” instead of a numeric Order ID).