EXP-04 DATE

# Scenario-Based Report Development Utilizing Diverse Prompting Techniques

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#### AIM:

To create a comprehensive report for the design of a specific application, such as AI-powered chatbot/solar panel system/automation in manufacturing, using diverse prompt patterns. This report will employ scenario-based prompting techniques to guide each stage of the design process, ensuring the solution meets the functional and user experience requirements for the chosen application.

#### **PROCEDURE:**

To create a scenario-based report for designing an AI-powered chatbot, a solar panel system, or an automation solution for manufacturing, a systematic approach using diverse prompting techniques is essential. This report leverages scenario-based prompting to guide each stage of the design process, ensuring the solution addresses functional and user experience needs comprehensively.

### 1. Introduction

- **Objective:** Outline the goal of designing an AI-driven solution (e.g., chatbot, solar panel system, or automation system) tailored to address specific user and operational requirements.
- Importance of Scenario-Based Prompting: Explain how using different prompting techniques can improve design precision, anticipate user needs, and address technical challenges.

# 2. Project Overview

- Use Case Selection: Define the chosen application scenario, providing context for the solution.
  - o For AI-powered Chatbot: Focus on customer service or technical support.
  - o For Solar Panel System: Emphasize residential or commercial energy management.
  - o For Automation in Manufacturing: Highlight process automation for efficiency and safety.
- **Scope:** Describe key features the solution should achieve, including data handling, real-time functionality, and user engagement.

# 3. Prompting Techniques for Each Stage of the Design Process

# Stage 1: Requirement Gathering and User Needs Assessment

• **User Scenario Prompting:** Create prompts that help simulate end-user interactions or needs.

- o **Prompt Example:** "Describe a day in the life of a customer interacting with an AI-powered chatbot to resolve an issue."
- o *Goal*: Identify core user pain points and essential functionalities (e.g., ease of communication, quick problem resolution).
- Functional Requirements Prompting: Use prompts to establish system requirements.
  - o **Prompt Example:** "List five must-have features for a solar panel monitoring app designed for residential users."
  - o *Goal*: Define required features (e.g., energy consumption tracking, real-time performance metrics) aligned with user needs.

## Stage 2: System Design and Architecture

- Technical Scenarios for Component Design: Develop prompts that target technical design choices.
  - o **Prompt Example:** "For a chatbot handling customer queries, suggest an ideal backend setup ensuring low latency and high availability."
  - o *Goal*: Determine architecture suited to the expected query volume and response time requirements.
- Interactivity and UX Prompting: Focus on user experience through prompts that envision typical interactions.
  - o **Prompt Example:** "Describe the experience of a user checking solar panel efficiency via a mobile app, focusing on ease of navigation."
  - o *Goal*: Inform design choices for an intuitive user interface.

# **Stage 3: Prototype Development**

- Scenario-Based Workflow Prompts: Create scenarios that guide specific workflow designs.
  - o **Prompt Example:** "A user wants to automate repetitive tasks on a manufacturing line. Outline the interface workflow for setting up and modifying automation routines."
  - o **Goal:** Develop a clear workflow that allows users to configure automation easily.
- **Simulated Interaction Prompts:** Use prompts to test user interactions in a controlled prototype setting.
  - o **Prompt Example:** "Simulate a conversation with a chatbot assisting a user in tracking an order. What should be the steps and response times at each stage?"

o **Goal:** Ensure the chatbot provides a responsive, helpful interaction flow that users find satisfying.

## **Stage 4: Testing and Iteration**

- Stress Testing and Edge Case Prompts: Generate prompts to simulate highdemand situations.
  - o **Prompt Example:** "What should be the system response if 100 users simultaneously access the solar monitoring app during a high energy consumption alert?"
  - o *Goal*: Confirm the system's resilience under high load, addressing any bottlenecks.
- User Feedback Prompting: Use prompts to gather feedback on prototype usability.
  - o **Prompt Example:** "If a user encounters a chatbot response error, what options should be available for corrective action?"
  - o *Goal*: Ensure smooth error handling and user satisfaction by anticipating response issues.

## Stage 5: Deployment and Continuous Improvement

- **Real-World Scenario Prompts:** Simulate prompts that reflect real-world operational scenarios post-deployment.
  - Prompt Example: "Describe a scenario where the solar panel system needs to update firmware remotely. What notification and user approval steps should be included?"
  - o *Goal*: Maintain system integrity and user control over updates.
- Adaptability and Scalability Prompting: Focus on the system's ability to scale and adapt to changing needs.
  - o **Prompt Example:** "As the chatbot user base grows, describe the scalability adjustments necessary to maintain response quality."
  - o **Goal:** Plan for future growth while maintaining high-quality user interactions.

# 4. Evaluation of Prompt Effectiveness in Design

- Accuracy and Specificity: Highlight how scenario-based prompts provided detailed insights into each stage, helping refine requirements and design.
- Adaptability to User Needs: Show how the prompts helped predict user behavior, enhancing solution relevance and usability.

• **Flexibility in Design Adjustments:** Describe how diverse prompting allowed for rapid iteration and real-time adjustments based on test feedback.

### 5. Conclusion and Recommendations

- **Summary**: Recap how scenario-based prompting techniques drove the design process to align with functional and experiential goals.
- **Best Practices for Prompting**: Suggest effective prompting methods (e.g., roleplay scenarios, edge-case simulations) for future AI-driven applications.
- **Future Prospects:** Mention potential improvements in prompting techniques, such as adaptive prompting models, to further enhance design precision.