Assignment: Domain-Specific Prompt Engineering

Objective:

The objective of this assignment is to explore domain-specific prompt engineering for various industries such as healthcare, finance, education, marketing, and more. Students will learn how to adapt prompts to generate accurate, ethical, and useful content in specific fields. The assignment will also cover ethical considerations, biases in prompt design, and the legal and societal implications of AI-generated content.

Scenario:

You are tasked with creating prompts tailored to different industries to generate content relevant to real-world applications. Your goal is to develop domain-specific prompts that address industry-specific challenges while considering the ethical, legal, and societal aspects of generative AI. You will also explore how AI can solve problems in various sectors such as healthcare, education, business, and entertainment.

Requirements:

1. **Adapting Prompts for Healthcare:**

   o **Scenario**: A medical research firm needs a tool to summarize the key points of clinical research papers for doctors who have limited time.

   o **Task**: Design a prompt that will generate a concise, easy-to-understand summary of a complex medical research paper.

      ▪ **Example Prompt**: "Summarize the following medical research paper about diabetes treatment in plain language for a general practitioner. Focus on the treatment methods, outcomes, and key findings."

   o Provide the generated output and a brief explanation (100-150 words) on how you adapted the prompt for the healthcare domain, including any challenges related to clarity, accuracy, and medical terminology.

2. **Adapting Prompts for Finance:**

   o **Scenario**: A financial consulting firm requires a tool to generate risk assessments and financial summaries based on market trends and stock data.

   o **Task**: Design a prompt that generates a financial analysis report for a given stock, taking into account recent market trends and financial indicators.

- **Example Prompt**: "Generate a detailed financial analysis for Tesla Inc., including an assessment of its current market position, recent stock trends, risk factors, and investment recommendations based on current data."

o Provide the generated output and a 100-150 word explanation on how you adjusted the prompt to be relevant to the finance domain, considering the financial terminology and context.

3. **Adapting Prompts for Education:**

   o **Scenario**: An online education platform wants to generate personalized learning materials for students based on their progress in a course.

   o **Task**: Design a prompt to generate personalized content that helps a student struggling with a specific concept in a math course (e.g., solving quadratic equations).

   - **Example Prompt**: "Create a step-by-step guide to solving quadratic equations, including explanations for common mistakes and tips for improving understanding. Make the content suitable for a high school student who is struggling with the concept."

   o Provide the generated output and a 100-150 word explanation on how you crafted the prompt to meet the specific needs of the education domain.

4. **Adapting Prompts for Marketing:**

   o **Scenario**: A digital marketing team needs help generating content for a social media campaign promoting a new eco-friendly product.

   o **Task**: Create a prompt that will generate an engaging and persuasive product description for a social media post, emphasizing its eco-friendly features.

   - **Example Prompt**: "Write a persuasive and engaging social media post promoting a new eco-friendly water bottle made from recycled materials. Focus on its sustainability, design, and benefits for both the user and the environment."

   o Provide the generated output and a 100-150 word explanation on how you adapted the prompt to fit the marketing domain, considering tone, language, and target audience.

5. **Ethical Considerations and Biases in Generative Prompt Design:**

- **Scenario**: You are designing a prompt for an AI tool used by a news organization to generate articles on political topics. There are concerns about the potential for bias or misinformation in the generated content.

- **Task**: Craft a prompt that can be used to generate balanced and unbiased news articles on a political topic, ensuring neutrality and factual accuracy.

  - **Example Prompt**: "Write a neutral, fact-based article about the recent political debate on healthcare reform. Include perspectives from both sides of the argument, with a focus on evidence-based claims and objective reporting."

- Provide the generated output and a 100-150 word analysis on how you ensured the prompt minimizes biases and ethical concerns, particularly in a sensitive political context.

6. **Group Project: Design Prompts for a Specific Industry Application:**

   - **Scenario**: As part of a group, you are assigned to design a set of prompts for an AI-powered customer service chatbot for a retail company.

   - **Task**: Work with your group to design a set of prompts that can handle common customer service inquiries, such as order status, product returns, and delivery issues.

     - Example Prompts:

       - "Generate a response to a customer who wants to know the status of their order."

       - "Generate a response to a customer requesting a refund for a defective product."

       - "Generate a response to a customer inquiring about delivery times for an out-of-stock item."

   - In your group, collaborate on the following deliverables:

     - Create a comprehensive set of customer service prompts.

     - Provide explanations on how you designed each prompt to ensure helpful, friendly, and professional responses.

     - Consider how AI responses could be customized for different retail contexts and customer needs.

Deliverables:

- **Individual Submission**: A report or document that includes:
  - Domain-specific prompts for healthcare, finance, education, and marketing, with generated outputs and brief explanations.
  - Ethical considerations and how you minimized biases in the design of political or sensitive prompts.
  - A reflection on how AI-generated content can impact various industries, including potential challenges and opportunities.
- **Group Project**: A set of customer service prompts for a retail company, along with explanations for how they were designed to handle common inquiries in a professional and effective manner.