Project: Develop an AI-Powered Solution for Mondelez

Objective:

- Work in pairs to develop a concept for an AI-powered solution that addresses a real-world business challenge within Mondelez.
- The project will require your knowledge of AI fundamentals, bias mitigation, data considerations, and project management principles.

Requirements:

1. **Define a Business Problem:**
    - Identify a specific and significant business challenge within the Mondelez food and beverage sector that can be addressed with AI.
    - Clearly articulate the problem statement and its impact on Mondelez's business.
2. **AI Solution Concept:**
    - Propose an AI-powered solution to address the identified business problem.
    - Clearly describe the core AI technology involved (e.g., machine learning, deep learning, NLP, computer vision, etc).
    - Explain how the AI solution will work and its expected benefits.
3. **Model Selection:**
    - Discuss the decision to use an "off-the-shelf" pre-trained model (e.g., from a cloud provider) versus developing a custom model from scratch.
    - Consider factors such as:
        - **Cost:** Development and maintenance costs of a custom model vs. licensing fees for pre-trained models.
        - **Data Requirements:** Data requirements for training a custom model vs. data requirements for fine-tuning a pre-trained model.
        - **Time to Market:** Speed of development and deployment for each approach.

        - **Performance:** Expected performance and accuracy of each approach.
        - **Data Security:** Risks associated with using external pre-trained models (e.g., data privacy, vendor lock-in).

4. **AI System Architecture:**
    - Briefly describe the high-level architecture of the proposed AI system.
    - Consider key components such as:
        - **Data Ingestion & Processing:** How will data be collected, cleaned, transformed, and prepared for the AI model?
        - **Model Deployment & Serving:** How will the AI model be deployed and made available for use (e.g., cloud-based services, on-premise servers)?
        - **Monitoring & Maintenance:** How will the performance of the AI system be monitored, and how will the model be updated and maintained over time?
5. **Data Considerations:**
    - Identify the types of data required to train and operate the AI solution.
    - Discuss potential data sources within Mondelez (e.g., sales data, customer data, social media data, production data).
    - Address potential data quality issues, biases, and privacy concerns.
    - Outline a plan for data collection, storage, and processing.
6. **Project Plan:**
    - Develop a simple project plan outlining key milestones, timelines, and resource allocation.
    - Conduct a basic risk assessment, identifying potential project risks and proposing mitigation strategies.
7. **Ethical Considerations:**
    - Discuss the ethical implications of developing and deploying this AI solution.
    - Consider potential societal impacts, consumer trust, and the responsible use of AI.

8. **Presentation:**
    - Prepare a concise presentation of 8 - 10 slides to present their project to the class.
    - The presentation should effectively communicate the business problem, the proposed AI solution, and the key considerations outlined above.

Suggested Topics (Or Develop Your Own!):

Focusing on Consumer Insights & Marketing:

- **Personalized Product Recommendations:** How can AI be used to recommend the right Mondelez products to the right consumers at the right time, increasing sales and customer loyalty? Consider online and offline channels.
- **Predictive Analytics for Marketing Campaigns:** How can AI predict the success of marketing campaigns *before* they are fully launched, allowing Mondelez to optimize spending and target specific demographics more effectively?
- **Social Media Sentiment Analysis:** How can AI analyze social media conversations to understand consumer sentiment towards Mondelez brands and products, identifying potential PR crises or product development opportunities early on?
- **Targeted Advertising:** How can AI be used to deliver highly targeted online advertising campaigns, maximizing ROI and minimizing wasted ad spend? Consider privacy implications.
- **Understanding Consumer Preferences:** How can AI analyze purchase data, online behavior, and social media interactions to identify emerging trends and predict future product preferences? This could inform new product development.

Focusing on Supply Chain & Operations:

- **Demand Forecasting:** How can AI improve the accuracy of demand forecasting for Mondelez products, reducing waste from overproduction and preventing stockouts? Consider seasonality and promotional activities.

- **Supply Chain Optimization:** How can AI optimize Mondelez's complex supply chain, reducing costs, improving delivery times, and mitigating risks from disruptions (e.g., natural disasters, geopolitical events)?
- **Predictive Maintenance:** How can AI be used to predict equipment failures in Mondelez's manufacturing facilities, allowing for proactive maintenance and minimizing downtime?
- **Quality Control:** How can AI be used to automate quality control processes in manufacturing, ensuring consistent product quality and reducing defects?
- **Inventory Management:** How can AI optimize inventory levels across the supply chain, balancing the need to meet demand with minimizing storage costs?

Focusing on Product Development & Innovation:

- **Flavor Profile Development:** How can AI be used to analyze consumer preferences and identify new and exciting flavor combinations for Mondelez products?
- **Recipe Optimization:** How can AI optimize existing recipes to improve taste, texture, or nutritional value while minimizing costs?
- **Packaging Design:** How can AI be used to analyze consumer feedback and design packaging that is more appealing, functional, and sustainable?

Focusing on Sales & Distribution:

- **Optimizing Distribution Routes:** How can AI be used to optimize delivery routes for Mondelez products, reducing transportation costs and improving delivery efficiency?
- **Sales Forecasting:** How can AI be used to forecast sales performance at the regional or store level, allowing for better resource allocation and inventory management?
- **Retail Execution:** How can AI be used to analyze in-store data (e.g., shelf placement, promotions) to improve product visibility and sales?