I Hope you're having a productive week! As we move into Week 3, we're shifting gears to more advanced, hands-on applications of data analysis and an exciting introduction to AI. This week is packed with practical tasks, a team presentation, and collaborative planning.

Here’s a breakdown of what to expect:

🎯 **Week 3 Goal:**
This week, you'll dive deeper into practical data analysis using Python with Excel, explore foundational AI/ML/DL concepts, and apply these by using AI models for data analysis and building a simple chatbot. We'll also kick off some collaborative planning.

📝 **Your Key Activities for Week 3:**

1. **Excel & Python Data Proficiency:**
    a. **Excel Power-Up:** Refresh your skills in advanced Excel features like **PivotTables, VLOOKUP/XLOOKUP, and Conditional Formatting**. You'll be using a sample Excel dataset (which I'll share soon).
    b. **Python Meets Excel:** Use the **Pandas** library in Python to read, clean, and analyze data directly from that Excel file. Think about tasks like finding top sales figures or breaking down data by category.
2. **Exploring AI Concepts & Your First Presentation:**

AI/ML/DL Model Ideas (Don't feel limited to these!):

a. **AI Model Research:** Dive into the world of AI, Machine Learning (ML), and Deep Learning (DL) models. We've provided a list below to get you started, but feel free to explore other fascinating AI applications! For your chosen models, understand their purpose and discover a few real-world examples of how they're used.
b. **Team Collaboration:** By **Wednesday**, as a team, you need to select the specific AI/ML/DL topics you'll present on.
c. **Presentation Day!** You'll prepare and deliver a team presentation summarizing your research.

   d. **Artificial Intelligence (AI):** Natural Language Processing (NLP), Computer Vision, Speech Recognition, Chatbots, Anomaly Detection, Predictive Analytics, Recommendation Systems.
   e. **Machine Learning (ML)::** Supervised Learning, Unsupervised Learning, Reinforcement Learning, Transfer Learning, Ensemble Learning.
   f. **Deep Learning (DL):** Convolutional Neural Networks (CNNs), Recurrent Neural Networks (RNNs), Transformers, Generative Adversarial Networks (GANs), Diffusion Models.

3. **Practical AI: Hugging Face & Your First Chatbot:**
   a. **AI for Data Analysis:** Learn how to use pre-trained AI models from **Hugging Face Transformers**. You'll apply a sentiment analysis model to text data (like customer feedback or product descriptions) from your Excel file. (If your Excel file doesn't have enough columns, just create a column with using feature engineering).
   b. **Build a Simple Chatbot:** Create a basic chatbot using a Local Language Model (LLM). This chatbot should be able to answer simple questions related to the data you've analyzed from your Excel file.
4. **Collaborative Planning with Microsoft Planner:**
   a. **Set Up Your Planner:** Create a new plan in **Microsoft Planner** to help you organize collaborative tasks. Add some initial tasks, assign them, and set due dates as a practice run.
   b. **Invite Osamah: Crucially, please invite me to your Planner board.** This lets me see your progress and provide feedback.

💡 **Optional Self-Study (If you have extra time and want to explore further):**

- **Python Data Visualization:** Dive into **Seaborn** or **Plotly Express** for advanced and interactive data visualizations.
- **AI Ethics:** Learn about real-world examples of AI bias and what developers are doing to make AI fairer and more responsible.

🌟 **Optional Extra Challenge (For those who want to push boundaries!):**

- **Intelligent Data Chatbot:** Can you build a Python application where you can upload any Excel file? Your app should automatically (with minimal steps) convert this Excel data into a **SQLite database**. Then, enhance your chatbot to connect to this new database to intelligently answer questions about the *uploaded* data!

🗓️ **Key Deadlines & Deliverables:**

- **Wednesday:** As a team, finalize your AI/ML/DL presentation subjects. Only one from each team should submit this while including the team in the email and CC them.
- **Sunday (10 AM):**
  - **Team Presentation:** Deliver your presentation on AI/ML/DL topics.
  - **Presentation File:** Attach your PowerPoint file to the meeting invitation and also send a copy to my email. Only one from each team should submit this while including the team in the email and CC them.
  - **Microsoft Planner Link:** Provide the URL to your Microsoft Planner board, confirming I've been invited.
- **Monday (10 AM):**
  - **GitHub Repository Submission:** Push all your code and files for Week 3 to a dedicated GitHub repository. This should include at least:
    - Your modified Excel file (once provided)
    - excel_analysis.ipynb (your Jupyter Notebook with Pandas & Hugging Face analysis)
    - chatbot.py (your Python chatbot script)

I'm excited to see your progress and learn from your presentations. Please don't hesitate to reach out if you have any questions or need assistance.