Task 5:

Write ~150 words on:

How you would break down a complex topic like “Gradient Descent” for beginners.

To break down a complex topic like **Gradient Descent** for beginners, I’d start with an analogy. Imagine you're blindfolded, trying to reach the lowest point in a valley by feeling the slope beneath your feet. Each step you take downhill is like adjusting your position based on how steep the slope is — this is essentially what gradient descent does. I'd explain that it's an **optimization algorithm** used to minimize errors in models, particularly in machine learning. Then, I'd introduce the idea of a "cost function" (MAE, MSE) as a measure of how wrong the model is, and how gradient descent helps reduce that cost by updating model parameters step-by-step. I’d use visuals to show how it converges to a minimum and explain terms like “learning rate” as the size of each step. By combining **real-world metaphors, visuals, and simple math**, I’d make the topic approachable and intuitive.

Task 6:

**Objective:**

We want to see how comfortable you are with the rapidly evolving AI landscape, especially tools powered by LLMs like ChatGPT or Claude.

**Option A: Prompt Engineering** Use **ChatGPT or any LLM** to assist with one of your earlier tasks (e.g., EDA, SQL query building, Excel formula generation).

1. Share the **exact prompt(s)** you used.
2. Copy the **response** from the AI.

*I used chatgpt for this task.*

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| --- |
| *Me Confused person with solid fill: how to create a trend chart showing the monthly revenue trend* |
| Chatgpt🧠: Creating a **trend chart for monthly revenue** is pretty straightforward, and you can do it using tools like Excel, Google Sheets, Python (e.g., with matplotlib or seaborn), or a dashboard tool like Power BI or Tableau.  Here’s a quick guide for a few different methods: **Using Excel or Google Sheets**  1. **Prepare Your Data**  | **Month** | **Revenue ($)** | | --- | --- | | Jan 2024 | 10,000 | | Feb 2024 | 12,500 | | Mar 2024 | 11,000 | | ... | ... |  1. **Insert Line Chart**    * Highlight your data.    * Go to **Insert > Chart**.    * Choose **Line chart** or **Scatter chart with lines** for a clear trend visualization. 2. **Customize**    * Add chart title, axis labels.    * Format the line (color, width, markers, etc.).  🐍 **Using Python (with matplotlib)** python  CopyEdit  import matplotlib.pyplot as plt  # Example data  months = ["Jan", "Feb", "Mar", "Apr", "May"]  revenue = [10000, 12500, 11000, 14000, 13500]  plt.figure(figsize=(10, 5))  plt.plot(months, revenue, marker='o', linestyle='-', color='teal')  plt.title('Monthly Revenue Trend')  plt.xlabel('Month')  plt.ylabel('Revenue ($)')  plt.grid(True)  plt.tight\_layout()  plt.show() 📊 **Using Power BI / Tableau**  1. Import your data (Excel, CSV, or database). 2. Use a **line chart** or **area chart**. 3. Drag Month to the X-axis and Revenue to the Y-axis. 4. Format the visualization with labels, tooltips, colors, etc.   Want help generating a chart with your specific data? Just drop your data here or tell me the format you’re using (Excel, CSV, code, etc.), and I’ll guide you step-by-step or even build it for you. |
| *Me* Confused person with solid fill *: in excel with a pivot table to show total sales by country and month* |
| Chatgpt🧠: Perfect! Here's how you can create a **trend chart in Excel** using a **Pivot Table and Pivot Chart** to show **total sales by country and month**: ✅ **Step-by-Step Guide**1. ****Prepare Your Data**** Make sure your data is structured like this:   | **Date** | **Country** | **Sales** | | --- | --- | --- | | 2024-01-05 | USA | 1000 | | 2024-01-07 | Canada | 1500 | | 2024-02-10 | USA | 1200 | | ... | ... | ... |  2. ****Insert Pivot Table****  1. Select your data. 2. Go to **Insert > PivotTable**. 3. Choose to place it in a **New Worksheet** or existing one.  3. ****Build the Pivot Table****  * **Rows**: Drag **Date** to Rows.   + Right-click a date in the Pivot Table → Click **Group** → Select **Months** (and optionally **Years**). * **Columns**: Drag **Country** to Columns. * **Values**: Drag **Sales** to Values (ensure it's set to **Sum**).   Now your pivot should show **total sales per country per month**. 4. ****Insert Pivot Chart****  1. Click anywhere inside the Pivot Table. 2. Go to **PivotTable Analyze > PivotChart**. 3. Choose a **Line Chart** or **Stacked Column Chart** (Line is better for trends). 4. Customize it:    * Add a **Chart Title**, axis labels.    * Use the **Design** tab to format colors or layout.  📝 Optional Tips  * **Filter**: Add a Country filter if you want to focus on one. * **Slicer**: Use Insert > Slicer for interactive filters (e.g., filter by year or country). * **Refresh**: If your data changes, right-click the Pivot Table > **Refresh**.   Want me to generate a sample Excel template for this? I can give you a downloadable version too. |

1. Reflect briefly (3–4 lines):  
     
   * What did the AI do well?

AI did summarize all the approaches that were available in the context of visualizing the data. And it has explicitly gave the steps in detail when the problem was drilled down when asked about the pivot table. Maybe if we did provide additional information on our task status and the goal it would precisely give all the data we need.

* + What did you have to modify or improve?

The question was to show the sales trend by month, however it thought it should extract the information from the pivot table that was already build and gave steps according to that. But in my case I had the month as columns and country as rows for more readability. Apparently a new pivot table was built to implement the concept it provided, for making my dashboard more appealing.