✅ Task 12: KMeans – Customer Segmentation

Dataset:
- Primary: Mall Customer Segmentation (Kaggle)
- Alternative: Wholesale Customers Dataset

Tools:
- Python
- Scikit-learn
- Matplotlib / Seaborn
- Alternatives: Power BI clustering, Orange

Hints / Mini Guide:

1. Load mall dataset and inspect income and spending score columns.
2. Drop CustomerID column since it does not help clustering.
3. Apply StandardScaler to features for balanced distance calculation.
4. Run KMeans for multiple values of K and store inertia values.
5. Plot elbow curve to decide optimal number of clusters.
6. Train KMeans with selected K value.
7. Add cluster labels back into dataset.
8. Visualize clusters using scatter plot.
9. Interpret each cluster and label them as customer types.

Deliverables:

- Elbow plot
- Cluster visualization
- Segmented dataset CSV

Final Outcome:
Intern can perform unsupervised segmentation for business use.

Interview Questions Related To Above Task:

- What is clustering?
- Why scaling matters in KMeans?
- What is inertia?
- What is Elbow method?
- What are limitations of KMeans?

📌 **Task Submission Guidelines**

- ⏰ **Time Window:**

Youcan complete the task anytime between 10:00 AM to 10:00 PM on the given day. Submission link closes at 10:00 PM

- 🔍 **Self-Research Allowed:**

Youare free to explore, Google, or refer to tutorials to understand concepts and complete the task effectively.

- 🛠️ **Debug Yourself:**

Tryto resolve all errors by yourself. This helps you learn problem-solving and ensures you don't face the same issues in future tasks.

- 💸 **No Paid Tools:**

Ifthe task involves any paid software/tools, do not purchase anything. Just learn the process or find free alternatives.

- 📁 **GitHub Submission:**

Create a new GitHub repository for each task.
Add everything you used for the task — code, datasets, screenshots (if any), and a short README.md explaining what you did.

📤 **Submit Here:**

After completing the task, paste your GitHub repo link and submit it using the link below:

- 👉 [Submission Link]