⬚ Task: "Build & Judge a Mini AI"

Part 1 — Chronology of AI

- Write **one real-world example** for each stage:

    - Machine Learning → Content recommendation
    - Deep Learning → Autonomous Vehicles
    - Computer Vision → Facial Recognition
    - NLP → Sentiment Analysis
    - LLMs → Microsoft Copilot

Part 2 — Deep Learning Architectures

- Match the model to the use case:

    1. **RNN**
    2. **LSTM**
    3. **CNN**
    4. **Transformer**

  Use cases:

    - Image recognition 3. CNN
    - Text translation (old Google Translate) 4. Transformer
    - Predicting the next word in ChatGPT 2. LSTM
    - Early speech-to-text systems 1. RNN

Part 3 — Frameworks

- Choose one framework (PyTorch / TensorFlow / Keras).
- In **one sentence**, explain why you would use it if you were a student making a cat-vs-dog classifier. **As a student I would choose Keras, because of its beginner friendly interface & high level API**

Part 4 — Evaluation Metrics

- Imagine you built a spam filter. Answer:

    - **Precision:** If it marks 10 emails as spam and 7 are truly spam → what's Precision? **0.7 or 70%**
    - **Recall:** If there were 12 spam emails in total, how many did it catch? (use same example) **7/12 = 0.58**
    - **F1 Score:** Use the formula and calculate (round to 2 decimals). **0.64**
    - **MSE/MAE:** Predict your friend's age (actual = 15, prediction = 18). Which metric punishes the error more? **MAE = 3, MSE = 9. Mean Squared Error (MSE) punishes the error more.**
    - **BLEU/ROUGE:** AI translated "The cat sat on the mat" as "Cat is on the mat." Which metric (BLEU/ROUGE) do you think would give a high score? **ROUGE will give a higher score.**

Part 5 — Responsible AI & Explainability

- You built an AI that predicts loan approvals.
- A customer asks, "Why was my loan rejected?"

- Write **one simple way** to explain the decision fairly (e.g., "Your income was too low compared to the loan size").

Ans - Your loan application was denied because your financial profile is not according to our criteria for approval. Specifically, your current income is not high enough to comfortably manage the monthly payments for the loan amount you requested. This is a standard measure to ensure that borrowers can responsibly repay their loans without delays. We want to avoid putting you in a difficult situation, and this decision is based on a responsible assessment of your financial stability.