## **AI/ML - Coding Interview Questions**

### **Solve the problems within 24 hours. If you feel there are some things missing in the problem statement, you are free to assume. Make sure to note down your assumptions. Save your response in a GitHub Repo and share the link.**

## **Problem 1:**

Analyze the cryptocurrency.csv file and extract meaningful insights.

**Requirements:**

* Clean the data
* Find the top 10 cryptocurrencies by market cap
* Calculate which coins have the highest 7-day growth
* Find which coins have the highest trading volume relative to their market cap
* Identify the most volatile coins (based on 24h and 7d changes)
* Create 2-3 visualizations:
  + Bar chart of top 10 by market cap
  + Scatter plot of market cap vs price
  + Any other chart that shows an interesting insight
* Based on your analysis, suggest 5 cryptocurrencies that might be good investments
* Explain your reasoning in 2-3 sentences for each pick
* Consider factors like: growth trend, volatility, market cap, volume

**Follow-up Questions:**

* What patterns did you notice in the data?
* Which metrics did you prioritize and why?
* What additional data would help make better predictions?
* How would you automate this analysis to run daily?

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## **Problem 2:**

Build a simple ML model to predict if a cryptocurrency price will go up or down.

**Requirements:**

* Create features from the available data:
  + Use chg\_24h and chg\_7d as features
  + Calculate volume-to-market-cap ratio
  + Create a binary target: 1 if price is expected to go up, 0 if down
  + (You can use chg\_24h > 0 as a simple target for training)
* Split data into train and test sets
* Train a simple classification model:
* Evaluate using:
  + Accuracy
  + Precision and Recall
  + Confusion matrix
* Use your model to predict which cryptocurrencies will increase in price
* Output the top 10 coins most likely to go up with confidence scores
* Explain which features were most important

**Follow-up Questions:**

* Why did you choose the model you chose?
* What is the accuracy percentage?
* What would you do to improve the model?
* How would you deploy this model?
* How do you handle multiple prediction requests at once?

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## **Problem 3: (If time permits)**

Create an agentic system that sends alerts when cryptocurrencies show interesting price movements.

**Requirements:**

**Core Functionality:**

* Read cryptocurrency data from a CSV or receive it via a simple API endpoint
* Implement rules to detect:
  + **Big Movers:** Price change > 10% in 24h
  + **Momentum:** Positive change for both 24h AND 7d
  + **Volume Spike:** Volume > 2x the average for similar coins
* When a rule triggers, send an alert to a webhook

**Alert Format:**

* ****{
* "timestamp": "2025-10-08T12:43:56Z",
* "symbol": "leo",
* "name": "LEO Token",
* "alert\_type": "BIG\_MOVER",
* "current\_price": 9.67,
* "change\_24h": 12.5,
* "message": "LEO Token increased 12.5% in 24 hours"
* }

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