



## Mercor Mini-Interview Task: Airtable Multi-Table Form + JSON Automation

**Goal:** Design an Airtable-based data model and automation system that

1. Collects contractor-application data through a structured, multi-table form flow
2. Local Python script that compresses the collected data into a single JSON object for storage and routing
3. Local Python script that decompresses the JSON back into the original, normalized tables when edits are needed
4. Auto-shortlists promising candidates based on defined, multi-factor rules
5. Uses an LLM endpoint to evaluate, enrich, and sanity-check each application

### 1. Airtable Schema Setup

Create a base with **three linked tables** plus two helper tables:

Table	Key Fields	Notes
<b>Applicants</b> (parent)	Applicant ID (primary), Compressed JSON, Shortlist Status, LLM Summary, LLM Score, LLM Follow-Ups	Stores one row per applicant and holds the compressed JSON + LLM outputs
<b>Personal Details</b>	Full Name, Email, Location, LinkedIn, (linked to Applicant ID)	One-to-one with the parent
<b>Work Experience</b>	Company, Title, Start, End, Technologies, (linked to Applicant ID)	One-to-many
<b>Salary Preferences</b>	Preferred Rate, Minimum Rate, Currency, Availability (hrs/wk), (linked to Applicant ID)	One-to-one
<b>Shortlisted Leads</b>	Applicant (link to Applicants), Compressed JSON, Score Reason, Created At	Auto-populated when rules are met

All child tables are linked back to **Applicants** by Applicant ID.

## 2. User Input Flow

Airtable's native forms can't write to multiple tables simultaneously, so simulate the flow with **three forms** (one per child table) that each pre-fill or ask for the **Applicant ID**. Require applicants to submit all three forms.

*Steps 3-4 can be done in a local Python file outside of Airtable. When you run the scripts you can just reflect the updates in Airtable using the API.*

## 3. JSON Compression Automation

1. **Action:** Write a Python local script that gathers data from the three linked tables, builds a single JSON object, and writes it to **Compressed JSON**.

```
JSON
{
  "personal": { "name": "Jane Doe", "location": "NYC" },
  "experience": [
    { "company": "Google", "title": "SWE" },
    { "company": "Meta", "title": "Engineer" }
  ],
  "salary": { "rate": 100, "currency": "USD", "availability": 25
}
}
```

## 4. JSON Decompression Automation

Write a separate Python local script that can:

1. Read **Compressed JSON**.
2. Upsert child-table records so they exactly reflect the JSON state.
3. Update look-ups/links as needed.

## 5. Lead Shortlist Automation

After compression, evaluate rules:

Criterion	Rule
Experience	≥ 4 years total <b>OR</b> worked at a Tier-1 company (Google, Meta, OpenAI, etc.)
Compensation	<b>Preferred Rate</b> ≤ \$100 USD/hour <b>AND</b> <b>Availability</b> ≥ 20 hrs/week
Location	In <b>US</b> , <b>Canada</b> , <b>UK</b> , <b>Germany</b> , or <b>India</b>

If all criteria are met, create a **Shortlisted Leads** record and copy **Compressed JSON**.  
Populate **Score** **Reason** with a human-readable explanation.

## 6. LLM Evaluation & Enrichment

### 6.1 Purpose

Exercise a modern LLM (e.g., OpenAI, Anthropic, Gemini) to automate qualitative review and sanity checks.

### 6.2 Technical Requirements

Aspect	Requirement
Trigger	After <b>Compressed JSON</b> is written <b>OR</b> updated
Auth	Read API key from an Airtable <b>Secret</b> or env variable (do <b>not</b> hard-code)
Prompt	Feed the full JSON and ask the LLM to: • Summarize the applicant in ≤ 75 words • Assign a quality score from 1-10 • Flag any missing / contradictory fields • Suggest up to three follow-up questions
Outputs	Write to <b>LLM Summary</b> , <b>LLM Score</b> , <b>LLM Follow-Ups</b> fields on <b>Applicants</b>
Validation	If the API call fails, log the error and retry up to 3× with exponential backoff
Budget Guardrails	Cap tokens per call and skip repeat calls unless input JSON has changed

### 6.3 Sample Prompt (pseudo-code)

None

You are a recruiting analyst. Given this JSON applicant profile, do four things:

1. Provide a concise 75-word summary.
2. Rate overall candidate quality from 1-10 (higher is better).
3. List any data gaps or inconsistencies you notice.
4. Suggest up to three follow-up questions to clarify gaps.

Return exactly:

Summary: <text>

Score: <integer>

Issues: <comma-separated list or 'None'>

Follow-Ups: <bullet list>

## 6.4 Expected Results

Field	Example Value
LLM Summary	<i>"Full-stack SWE with 5 yrs experience at Google and Meta..."</i>
LLM Score	8
LLM Follow-Ups	• "Can you confirm availability after next month?"• "Have you led any production ML launches?"

## Deliverables

1. **Airtable base** (share link) with all tables, automations, and scripts.
2. **Documentation** (Markdown or Google Doc) explaining:
  - Setup steps and field definitions
  - How each automation works, including script snippets
  - How the LLM integration is configured and secured
  - How to extend or customize the shortlist criteria

**No emojis** should appear in any field names, table names, or documentation.