



Programa Take-Home MLE Challenge



Welcome

Thank you for your interest in joining the Data & AI team at Programa! We're excited to see what you can build.

This take-home challenge is designed to give you an opportunity to demonstrate your technical skills in a realistic scenario that reflects the kind of problems we solve at Programa. There are no trick questions—we genuinely want to see how you approach problem-solving, structure your code, and handle real-world data challenges.



Timeline & Expectations

- **Duration:** 5 calendar days from when you receive this challenge
- **Estimated effort:** 8–12 hours (you don't need to spend all 5 days on this!)

Interior Schedule Extraction API



Objective

Interior designers often create Excel-based product schedules containing product names, materials, finishes, prices, dimensions—and sometimes images.

Your task is to **build a Python-based REST API** that accepts `.xlsx` file uploads and converts them into structured JSON format so that we can import the schedules into programa platform.

The screenshot shows a software application interface for managing product schedules. On the left, there's a sidebar with various project management and library links. The main content area is titled 'Seating 41' and lists several products with their details:

- KINESIS PERSONAL - VISI...**: Technogym, Sliver, 1700.0x0.0x2100.0, 450.0, 1 QTY, 2-4 wks LEAD TIME, Technogym Australia, Giulio Gasperini, Draft
- Couch for living room**: Lapis, Orange Bubble Couch, 0.0x0.0x760.0, 1000.0, 1 QTY, 6-8 wks LEAD TIME, Lapis, Marcello Valente, Quoting
- Armchair**: New Tendency, Throne Chair, 620x-750x470, Powder Coated, Aluminum, 1 QTY, 16-18 wks LEAD TIME, Supplier Click to add supplier, Internal Review
- Accent Chair - Op 1**: Frama, Triangolo Chair, 480x-680x400, As Shown, Steel, 3 QTY, 4-6 wks LEAD TIME, Frama, Lisette Birch, Hidden
- Accent Chair - Op 2**: Matter Made, Pudica, 365x-965x450, 3124 QTY, In Stock, Leibal, Birg Peters, Approved
- accent chair**: - (empty), - (empty), - (empty), 3.33 QTY, - (empty), Supplier Click to add supplier, Draft

A 'New' button is visible at the bottom right of the list.

The primary challenge lies in the **variability of schedule formats** from different designers—including inconsistent column names, merged cells, multiple sheets, and diverse layouts. The goal is to **accurately extract and standardize** product data to support seamless schedule imports into our platform.

🛠 Requirements

1. Build an API

- Use **FastAPI** or **Flask**
- Implement the endpoint:
 - **POST /parse**
 - Accepts an Excel **.xlsx** file upload (you will be provided with a sample of schedules)
 - Returns structured JSON in the format specified below
- Ensure the implementation is **modular, clean, and production-ready**

2. Extract Data

Expected fields to extract:

Field	Description	Type
doc_code	Drawing or reference code	string
product_name	Product display name	string
brand	Product brand	string
colour	Colour name	string
finish	Surface finish	string
material	Main material	string
width	Width in mm	integer
length	Length in mm	integer
height	Height in mm	integer
qty	Quantity	integer
rrp	Recommended retail price	decimal
feature_image	Image filename (optional)	string
product_description	Short description	string
product_details	Additional specifications	string

- Input data may span **multiple sheets**
- Expect **merged cells**, inconsistent headers, and missing values

Expected JSON Output Format

```
{
  "schedule_name": "Lighting Schedule",
  "products": [
    {
      "doc_code": "L1",
      "product_name": "Minimalist Pendant Light",
      "brand": "Lighting Co",
      "colour": "Black",
      "finish": "Brushed Brass",
      "material": "Metal",
      "width": 300,
      "height": 200,
      "length": 100,
      "qty": 2,
      "rrp": 150.00,
      "product_description": "A sleek, minimalist pendant light fixture made from brushed brass and black metal. It features a single circular shade and a simple, modern design.",
      "product_details": "The fixture is designed for a modern interior space. It has a weight of 2kg and a power rating of 10W. The shade is made from a high-quality acrylic material and is held in place by a black metal frame. The base is a simple, cylindrical brass plate. The fixture is suitable for hanging over a dining table or kitchen island. It is also available in a white finish upon request."
    }
  ]
}
```

```
"length": 300,  
"height": 600,  
"qty": 1,  
"rrp": 489,  
"feature_image": "blackpendantlight.jpg",  
"product_description": "A simple pendant light ideal for modern interiors.",  
"product_details": "Install at 2.4m height; supplied with dimmable bulb."  
}  
]  
}
```

Suggested Libraries

You may use any Python libraries you see fit. For Excel parsing, you might find libraries like [openpyxl](#) or [pandas](#) useful.

Bonus Points

These features are **not required**, but may earn you bonus credit:

- Extract embedded images or image URLs (if available)
- Handle merged cells gracefully
- Handle inconsistent headers and edge cases robustly
- Include a [Dockerfile](#) for containerization
- Include basic test cases
- Include a **system architecture diagram** (optional but encouraged) showing how you'd deploy this API in a production environment

Project Structure

- Place any sample [.xlsx](#) files under [/data](#)
- Keep code modular (e.g., [/app/parser.py](#), [/app/models.py](#))
- Include a [README.md](#) with:

- Setup instructions
 - Example request/response
 - Optional architecture diagram
-

Evaluation Criteria

- **Code quality:** Clean, modular, well-documented
 - **Robustness:** Handles diverse real-world input formats
 - **Accuracy:** JSON output structure and correctness
 - **API design:** RESTful and resilient
 - **Bonus:** Docker, tests, image support, architecture diagram
-

Submission

- Upload your solution to GitHub
 - Include a detailed system architecture diagram showing your proposed production deployment setup
 - Invite: `joshiain` , `foozieakbar` and `vinceliorg` as collaborators
 - Share the repository link with us via email
-

 **Note:** Image support is a nice-to-have, not a requirement. Focus on accuracy, robustness, and thoughtful code design. Good luck, and have fun!