

### 1. Organic Skincare Products

- A Product must include at least three Ingredients.
- An Ingredient may be used in many Products.
- An Ingredient is sourced from exactly one Supplier.
- A Supplier may provide many Ingredients.
- A Supplier must hold exactly one Certification (e.g., USDA, ECOCERT).
- A Certification may be held by many Suppliers.
- A Batch belongs to exactly one Product.
- A Product may be produced in many Batches.
- Constraint: All Ingredients in a Product must come from different Suppliers.

### 2. Renewable Energy Solutions

- A Project must involve at least two Engineers.
- An Engineer may work on many Projects.
- Each Engineer must hold at least one Certification (e.g., Solar PV Design).
- A Project is managed by exactly one Client.
- A Client may commission many Projects.
- A Project must use equipment from Suppliers with a carbon score  $\geq 80$ .
- A Supplier may provide equipment for many Projects.
- Constraint: No two Projects for the same Client can overlap geographically.

### 3. Virtual Reality Gaming Studios

- A Game must be tested on at least three Platforms (e.g., Oculus).
- A Platform may host many Games.
- A Game must have exactly one Lead Developer.
- A Developer may work on up to three Games at a time.
- A Playtester under 18 requires parental consent for every Testing Session.
- A Testing Session may involve many Playtesters.
- Constraint: Lead Developers cannot work on concurrent Games

### 4. Specialty Coffee Roasters

- A Roast Profile must combine beans from exactly two Regions.
- A Region may be part of many Roast Profiles.
- A Subscription must include three Shipments per month.
- A Shipment may belong to many Subscriptions.
- A Bean from a conflict zone requires a Fair Trade Audit.
- A Fair Trade Audit may apply to many Beans.
- Constraint: Each Shipment must contain a unique Roast Profile.

### 5. Cybersecurity Consulting Services

- An Audit must involve two Consultants (one Penetration Testing, one GDPR).
- A Consultant may participate in many Audits.

- A Client classified as "high-risk" must undergo Audits quarterly.
- A Client may request many Audits.
- An Audit Report older than 6 months cannot reference outdated standards.
- Constraint: Audit teams must include consultants with distinct certifications.

## **6. Luxury Travel Concierge**

- An Itinerary must include at least two Exclusive Vendors (e.g., private yacht charters).
- An Exclusive Vendor may serve many Itineraries.
- A Client with dietary restrictions must use Chefs pre-vetted for allergens.
- A Chef may cater to many Clients.
- A Payment is split into a 50% deposit and 50% post-trip balance.
- Constraint: Deposits become non-refundable after flight bookings.

## **7. AI-Powered Marketing Tools**

- A Campaign must use three Datasets from different industries.
- A Dataset may be used in many Campaigns.
- An A/B Test can only run if the Campaign has  $\geq 1,000$  impressions in 7 days.
- A User with an "Enterprise" tier may override AI recommendations.
- Constraint: Overriding AI voids performance guarantees.

## **8. Sustainable Fashion Brand**

- A Garment must include two Sustainable Materials (e.g., organic cotton).
- A Material may be used in many Garments.
- A Supplier providing  $>10$  Products/year must pass an annual Ethical Audit.
- A Pop-Up Store in the same city must be spaced  $\geq 3$  months apart.
- Constraint: Ethical Audits are mandatory for high-volume Suppliers.

## **9. Biotech Research & Development**

- A Project must involve two Labs (one academic, one commercial).
- A Lab may participate in many Projects.
- A Clinical Trial can only reference patents granted in the past 5 years.
- A Researcher working on gene-editing cannot work on antibiotic studies.
- Constraint: Labs must be of distinct types (academic/commercial).

## **10. Pet Wellness Subscription Boxes**

- A Box must include products from three Categories (e.g., food, toys).
- A Category may appear in many Boxes.
- A Brand must have  $\geq 5$  veterinarian-certified Products to be included.
- A Subscription renews automatically unless canceled 7 days pre-shipment.
- Constraint: Products in a Box must come from distinct Brands.