XML project：
collaborative real estate platform

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Team Contribution and Task Distribution

Student	Tasks
Zakirov	XML Schema Design, XML Data Entry, JSON Conversion
Diarra	XSLT Stylesheets for Scenarios JSON Output Report
WANG	XSLT Stylesheets for Scenarios JSON Output Report

All students collaborated in review and testing.

Working Environment and Tools

- **Text Editors**: VS Code, Notepad++

- **Version Control**: GitHub –
  https://github.com/fractalical/collaborative-real-estate-platform

- **Testing Tools**: xsltfiddle.net, Python (lxml)

- **Operating System**: Windows 10 / Ubuntu

- **File sharing**: GitHub

Modeling Principles and Design Choices

We designed the platform around key real estate entities and users, including:

- Property, User, Agency, ServiceProvider, Booking, Transaction
- Each entity includes a unique ID, and is linked via references (UserID, PropertyID, etc.)

Advantages:

- Scalable and modular XML schema

- Easy to validate with XSD
- Efficient access and transformation using XPath/XSLT

Disadvantages:

- Cross-entity lookups require extra keys (in XSLT)
- Verbose structure for smaller use-cases

Modeling Challenge & Solution

Problem: Connecting Booking records to both User and Property details.

Solution: We used XSLT <xsl:key> + key() to look up referenced data from User ID and Property ID inside templates. This made the calendar-style output in Scenario 6 efficient and elegant.

Implemented Scenarios

Scenario 1: Agent Dashboard

XSL Displays agent profiles, active listings, and key metrics.

Agent Profile

JohnSmith

ID: AGT001
Email: john.smith@luxuryregroup.com
Phone: 305-555-0124

Specializations
- Luxury Properties
- Waterfront Homes

Licenses

Real Estate Broker
License #: FL123456
Expires: 2024-12-31

Active Listings	Total Value	Avg. Price
1	$2,500,000	$2,500,000

Active Listings

AVAILABLE

Luxury Waterfront Villa

Stunning 4-bedroom villa with panoramic ocean views

Price: $2,500,000
Type: Villa
Location: Miami Beach, Florida

Listed: 2024-01-15

Scenario 2: Property Listings

Displays property details, pricing, and features.

Available Properties

Luxury Waterfront Villa

AVAILABLE

Stunning 4-bedroom villa with panoramic ocean views

Location

123 Oceanview Drive
Miami Beach, Florida, 33139

Property Details
- Type: Villa
- Bedrooms: 4
- Bathrooms: 3.5
- Total Area: 450.5 sq ft

$2,500,000

Features

• Swimming Pool • Ocean View • Smart Home System

Scenario 3: Property Analytics

Includes metrics like total properties, average price, and property type distribution.

Property Analytics Report

Total Properties	Average Price
2	$1,251,750
Available Properties	**Average Area**
2	285 sq ft

Property Type Distribution

Villa	Apartment
1	1

Price Range Analysis

Price Range: $3,500 - $2,500,000

Scenario 4: Transaction Summary

Includes transaction details, financials, involved parties, and timeline events.

Transaction Summary Report

Transaction #TR001

IN_PROGRESS

Type: PURCHASE

Property Information

Luxury Waterfront Villa
123 Oceanview Drive
Miami Beach, Florida33139

Financial Details

Price: $550,000
Payment Method: MORTGAGE

Financing Information

Lender: First National Bank
Loan Amount: $440,000
Interest Rate: 6.5%
Term: 360 months

Fees
- **Inspection:** $450 - Standard home inspection
- **Appraisal:** $400 - Residential appraisal fee

Documents
- **Residential Purchase Agreement** (Purchase Agreement)
  Status: SIGNED
  Uploaded: 2024-03-18T14:30:00
  Signed by: USER001,USER002

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Scenario 5: Service Provider Directory

Lists providers with contact information, services offered, and ratings.
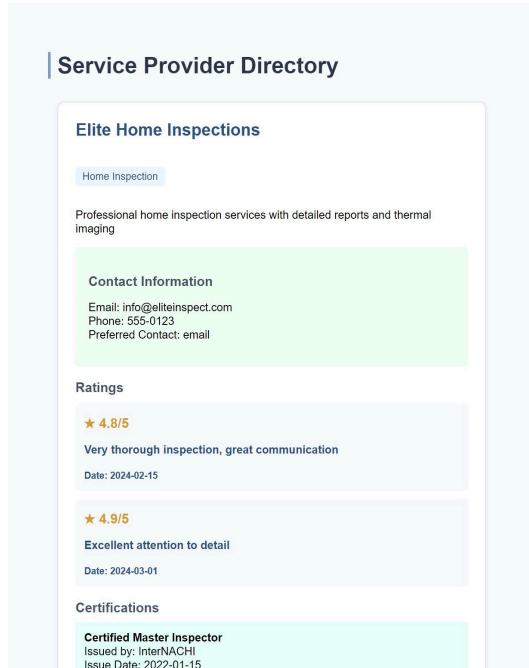
Scenario 6 (XML→Simplified XML)

Purpose: Export Booking records to a calendar-style format for integration.

Output: <Calendar> with <Event> nodes showing property address, date, and visitor name.

Scenario 7 (XML→JSON-like)

Purpose: Export service provider data for front-end or API use.

Output: JSON-style string with name, type, and rating.

Assistant Used: ChatGPT

Prompts used:

- "Create a template schema for real estate listings"

- "Create a mock database using the schema for real estate listings"

- "Generate an XSLT to convert XML to JSON"

- "Explain how to apply XSL to XML using Python"

Output Received:

- Base templates for XML Schema and XSLT

- Filled database in XML format ready to use with XSLT

- Code snippets for Python/XSLT integration

Adjustments made:

- Fixed namespace issues

- Rewrote parts for compatibility with lxml

- Optimized XSLT for performance and readability

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