

## Problem-Solving & Troubleshooting Summary

Throughout this assignment, I encountered several technical challenges across Dataverse, SSIS/KingswaySoft, Azure Functions, authentication, and even the initial Microsoft tenant setup.

My general approach was consistent: **analyse the error, validate assumptions, test alternative solutions, and confirm the fix through experimentation.**

Below is a concise summary of the key issues and how they were resolved.

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### 1. Dataverse Authentication & Permissions

**Problem:** Azure Function couldn't authenticate (401 / insufficient privileges).

**What I tried:** Verified connection string, checked Azure AD App Registration, recreated Application User, tested multiple roles, confirmed credentials via Postman.

**Solution:** The Function was running under the wrong identity. After resetting the Application User and assigning correct privileges, authentication succeeded.

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### 2. Incorrect Dataverse Schema

**Problem:** Null values and "Object reference not set" errors caused by mismatched logical names.

**Approach:** Logged entity attributes, compared logical vs. display names, inspected metadata.

**Solution:** Corrected logical names in code → fields started returning valid data.

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### 3. OptionSetValue Casting Error

**Problem:** Casting OptionSetValue to string caused exceptions.

**Solution:** Read the value as `option?.Value (int?)`, following Dataverse SDK conventions.

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### 4. Swagger Not Detecting Endpoints

**Problem:** Swagger UI loaded, but no endpoints appeared.

**Solution:** Registered OpenAPI services in the isolated worker pipeline → Swagger successfully detected all Azure Functions.

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### 5. Unit Testing Restrictions

**Problem:** ServiceClient is sealed and not mockable.

**Solution:** Implemented FakeOrganizationService and FakeDataverseService to simulate CRM operations → enabled full unit test coverage.

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### 6. Integration Test Connection Error

**Problem:** Tests could not reach the local Azure Function ("target machine actively refused connection").

**Solution:** Ensured the Function host was running before starting integration tests.

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### 7. SSIS / KingswaySoft Challenges

- Missing tables → resolved by selecting the correct Dataverse environment

- Missing fields → resolved by “Publish All” in Dataverse
  - Alternate Key not detected → appeared after status became “Active”
  - GUID mapping error → removed incorrect mapping and used Alternate Key
  - Merge Join failures → fixed by sorting both data sources on the same column
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## 8. Azure Functions Runtime Issues

**Problem:** .NET 6 Azure Function template is deprecated.

**Solution:** Created a new .NET 8 isolated worker project (required by Dataverse SDK).

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## 9. Incorrect Connection String Structure

**Problem:** “Authority cannot be empty” and anonymous authentication errors.

**Solution:** Added

Authority=https://login.microsoftonline.com/{tenantId}

and moved Dataverse configuration into its own dedicated section → authentication worked.

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## 10. Microsoft Tenant Creation Blockers

I attempted multiple Microsoft tenant and Dynamics trial setups across different accounts, regions, devices, and VPN configurations.

Due to regional licensing restrictions and Microsoft’s automated security controls, all US-based trial flows failed.

The process proceeded successfully only after accessing an EU-region environment.

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## Overall Outcome

I resolved every technical issue within my control by:

- analysing logs and metadata,
- validating assumptions,
- testing multiple approaches,
- consulting documentation,
- and confirming solutions through unit and integration tests.