DuploCloud Take Home Assignment

Azure-based Weather forecast RESTful API

Git Repo: https://github.com/vinantigit/weatherForecast

Tech Stack:

- .NET Core (.NET 8) Web API
- Entity Framework Core with Azure Cosmos DB
- Integration with Open-Meteo API
- Swagger for API documentation
- xUnit for test coverage

Divided Assignment into 3 stages:

Stage 1: Basic Working API

- Integrate Open-Meteo API
- Use memory storage
- Add endPoint to achieve listed features

Stage 2: Persistence and structured DB access

- SQLite DB Storage
- Entity Framework
- Validations, Exception handling, Logging

Stage 3: Cloud base access

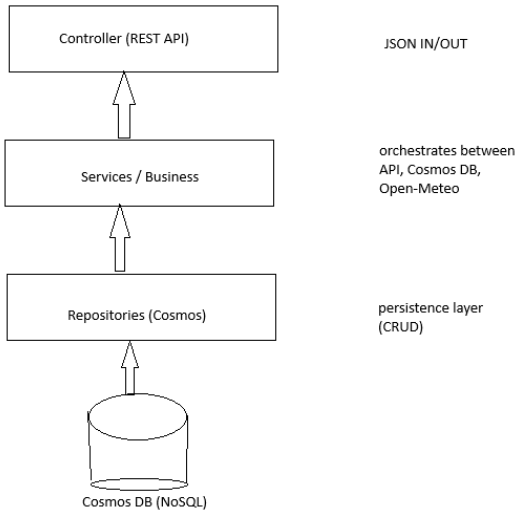
- Add API Authentication
- Migrate from SQLite to Azure CosmosDB
- Deploy API to Azure cloud
- Catching
- Azure Monitors

Features:

1. **Add** new coordinate pair (latitude/longitude) → fetch & persist forecast
2. **Get** current forecast for a coordinate
3. **Delete** a stored coordinate

4. **List** all stored coordinates
5. **Refresh** and return the latest forecast for a selected coordinate

Architecture (Layered):



Detailed Architecture (Draft later)

Endpoints:

Method	**Route**	**Description**
POST	/api/coordinates	Add lat/lon, fetch & store forecast
GET	/api/forecast?latitude=<latitude>&longitude=<longitude>	Get forecast for coordinates
DELETE	/api/coordinates/{id}	Delete coordinate from DB
GET	/api/coordinates	List stored coordinates

PUT	/api/forecast/refresh/{id}	Refresh forecast for saved coordinate