

Develop a simple note taking system and a web API front end.

Users will work with notes.

Notes may or may not belong to a project.

Notes will have zero or more attributes.

This project does not deal with the administration of the users, projects, or attributes.

Use a simple authentication model (login and password) with no real authorization model sitting on top of it.

You should not use any ORM packages (e.g. Entity Framework) as we would like to see the code to make the SQL connection and queries.

Users have the following properties:

- UserId
- Username (must be unique)
- Password
- Creation timestamp
- Last login timestamp

Notes have the following properties:

- NoteId
- Creation timestamp
- Note text
- Project
- Attribute[]

Projects have the following properties:

- ProjectId
- Name (must be unique)

Attributes have the following properties:

- AttributeId
- Name (must be unique)

The API will have the following methods:

- Login(username, password) - returns a token
- Logout(token)
- NewNote(NoteId, NoteText, Project, Attribute[])
- UpdateNote(token, NoteId, NoteText)
- DeleteNote(token, NoteId)
- GetNotes(token, ProjectId, AttributeId[]) – Specifying a project will return notes for that project only. Not specifying a project will return notes for all projects. Specifying attributeIds will return only notes that have those attributes. Not specifying attributeIds will return all notes regardless of attributes.
- GetProjectNoteCounts(token) – Returns a count of notes for each project, and a count of notes not belonging to any project.
- GetAttributeNoteCounts(token) – Returns a count of notes for each attribute, and a count of notes without attributes.

Project requirements:

- Should be written in C#, because that's what we're developing in. If there's a legit reason to do it in something else, that would be acceptable.

- Database back end must be a relational database. NoSQL databases not allowed. MS SQL is preferred, but others would be allowed.