Coding Task

1. It's built using; MS SQL Server, ASP .NET Restful API Controller, Swagger, XUnit, Unit Test (arrange, act, assert), Angular
2. Database file is located in: \database\db.bak
    a. please restore it using MS SQL Server Express 2012 (or later)
3. Some approaches used here:
    a. TDD (Test Driven Development): on Infrastructure (such as mockup data), and API (test real API in some environment)
    b. DDD: https://docs.microsoft.com/en-us/dotnet/architecture/microservices/microservice-ddd-cqrs-patterns/ddd-oriented-microservice
    c. SOLID principles; dependency injection using Autofac, Unity
4. Technical inclusions:
    a. A simple page of CRUD (Create, Refresh, Update, Delete) with no pagination.
    b. A listing page with pagination functions, can list down all cars with certain page size and page index.
    c. Single Page Application. Using bootstrap and Angular
    d. 2 Restful API, but choose 1 to invoke (.Net Core or .Net Framework)
    e. Testing projects: integration testing (invoke API or connect database)
5. Steps to deploy in local PC:
    a. Prepare a folder for the solution project, ex: C:\projects\angulardotnetpoc
    b. Deploy Restful API
        i. Open SLN file (with Visual Studio 2019); main .net core.sln
        ii. Restore all nuget package
        iii. Build all solutions
        iv. Please adjust these files on DotNetCoreApi.csproj; appsettings.json
        v. Publish API of DotNetCoreApi.csproj using default publish.pubxml
            1. The target folder: /bin/publish
            2. Please change the target publish folder if required
        vi. Create website in IIS, which folder is /bin/publish (the one specified above)
        vii. For testing purpose, please bind it to http://localhost:5000 (this is written in angular file)
        viii. On the API Tester csproj. Ex: XUnitApiTester.csproj
            1. Please adjust: appsettings.json (ex: this is to simulate API testing in Staging or DEV)
            2. In this example, http://localhost:5000 represents DEV
    c. Testing Projects
        i. Unit Testing Sample (.Net Framework)
            1. Open this SLN: main .net fx
            2. See InfrastructureTester.csproj, ApiTester.csproj
            3. For unit testing (testing logic purpose): just consume mockup class instead of real database connection
            4. For integration testing: we can connect database (see InfrastructureTester.csproj), or invoke API directly (see ApiTester.csproj)
        ii. XUnit Testing (.Net Core)
            1. Using XUnit, FluentAssertions
            2. Open this SLN: main .net fx.sln
            3. Find this CSPROJ: XUnitApiTester.csproj
            4. See theory, fact, inlinedata. We can put some permutations within 1 method
            5. For integration testing, in this case we invoke API by using HttpClient (instead of database connection).
    d. Deploy UI (Angular)
        i. Install node.js, as it's angular requirements, download from https://nodejs.org/en/download/

ii. Install node.js based on your OS, in my case, I use Windows Installer (.msi) 64bit
iii. Make sure node js and NPM is installed, open command prompt
    1. Run: node –v
    2. Afterwards you will see the node js version. Ex: v14.15.5
    3. Run: npm –version
    4. Afterwards you will see npm version. Ex: 6.14.11
iv. Prepare a folder for angular website. Ex: c:/websites
v. Install angular in that folder
    1. Run in command prompt: cd "c:/websites"
    2. Then run: npm install -g @angular/cli
    3. Make sure angular is installed, run: ng –version
    4. You'll see Angular version, ex: Angular CLI: 13.0.4
    5. Create angular website
        a. Run this in the same folder: ng new main-ui
        b. Then answer No
        c. Then choose CSS
        d. Wait until finish
        e. Change directory to the newly created folder. Ex: cd "main-ui"
        f. Install jquery, run:
            i. npm install jquery –save
            ii. npm install @types/jquery --save
        g. Copy the front end source codes to this folder. Ex: from C:/projects/angulardotnetpoc/src/front-end to c:/websites/main-ui
        h. Then run the angular, either prod or dev mode. Run in command prompt:
            i. cd "c:/websites/main-ui"
            ii. ng serve