

SPRINT 3 – DEVELOPER JOURNAL

Research the terms and concepts listed below.

- API
- API Endpoints
- API Request/Response
- C# Interface
- CRUD
- Dependency Injection
- Document Database
- Entity Framework
- HTML Methods - HEAD, GET, POST, PUT, and DELETE Requests
- Json
- Object-Relational Mapping
- Repository Pattern
- Request Query String Parameters
- REST API
- SQL Database

NOTE: You do not need to submit definitions, but you should know what they are and may be asked to describe them in the questions below.

Answer the following questions in your own words:

1. Describe the differences between a relational database and a document database. Indicate where and why one or the other is used.
 - a Relational Databases are defined by a schema with tables, etc. and a document database doesn't use a schema with tables, but rather stores documents that just contain data like a JSON document.
2. Describe the purpose of an Object-Relational Mapping tool and how it works.
 - a It's a programming technique that maps application domain model objects to the relational database tables. This means ORM is a "shortcut" for getting the SQL database to a more "programmer-friendly" form for creating applications. It makes it easier for programmers to use.
3. Describe the frameworks and database servers that will work with Entity Framework.
 - a Entity framework is a widely used database. It is what lets you easily perform CRUD operations (create, read, update, and delete).
4. Describe the Repository Pattern, how it works, and its advantages.
 - a This pattern keeps the data layer separate from the rest of your application. The repositories are classes that encapsulate the logic you need to access data sources.
 - b It makes it easier to test the logic for your application. It helps prevent a lot of common mistakes like DRY (don't repeat yourself) and it aids in CRUD operations as well. It also allows for reusable code and provides code maintainability by providing more simplistic code.
 - c The repository pattern works as a layer between where the domain doesn't have to depend on the data access layer. Instead, it will use the repository to handle the ORM making it easier to have more "freedom" when working with your dependencies (database)
5. Explain APIs in general, how they work and their advantages.
 - a An API or application programming interface is a way to use your application or service to talk with other applications or services without knowing how they are implemented. It saves you time in developing applications. It is like SDK (software development kit) not in their

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implementation, but that they both allow you to implement certain things into your application quicker and easier. You don't have to write or copy and paste lines and lines of code, etc., you can simply implement them into your application with ease and save time and money for a client.

- b The advantages of APIs are increased productivity by reusing code, meaning you don't have to start from scratch as a developer. It aids in automation meaning machines handle more of the workload rather than manually by a developer. It also makes it easier to provide support for unforeseen future uses.
- 6. Describe the use of the following HTML Methods - HEAD, GET, POST, PUT, and DELETE.
 - a HEAD: used to ask only for information about a document, not for the document itself.
 - b GET: slower than HEAD. It transfers a much smaller amount of data than HEAD. This information tells you if a document has changed since it was last accessed, used by those that utilize caching.
 - i It gets a resource from the server that you are requesting by adding a query string at the end of a URL to send data to the server.
 - c POST: This sends data to the server for more processing. When you submit the form with the POST method, it will add the user input data to the body of the request you send to the server.
 - d PUT: this method updates or replaces existing data on the server. This is different from POST as POST can create new data on the server, but it won't modify any existing data like PUT can do.
- 7. Explain the main disadvantage of a request query string parameter.
 - a The attributes and values are visible to the end user, so it makes the URL susceptible to attackers. (Can more easily access things such as passwords, etc.)
- 8. Explain dependency injection and why it is used in object-oriented programming.
 - a Dependency is another object that your class needs to function. So if you have a model class the gets data from a database object. Therefore, your model class has a dependency of that database. The injection portion means that the dependency is pushed into the class (model) from the outside. From there you use the dependency as a constructor parameter. Dependency injection decouples your classes construction from the construction of its dependencies. This allows you to use the dependencies where you need to. The service locator acts as a container for dependencies, so when you need a dependency, the container can check as see if that dependency already exists. If it's there it will use if and if not, it will create one and then return it back to be used.
 - b It is used in OOP because it allows for dependencies such as database information to be more easily utilized as the resource it is. The dependency injection give the road map for locating these dependencies needed for an application.
- 9. Share observations you made this sprint about yourself as a developer or your team.
 - a Observations I made this sprint is that I need to speak up when I have an idea or concern. I have a habit sometimes of letting my imposter syndrome talk me out of making suggestions in fear of being wrong. However, even if I am wrong, we learn the most from our own mistakes. The team had a situation where I originally created the application using .net 5.0 instead of 6.0. This in addition to some other "adjustments" made by Shane created a rat's nest when it came to pushing to our GitHub repository. The silver lining was I got to test my skills again and I redid the entire application in .net 6.0 and I decided to go ahead and spend more time on our landing page, which I was super happy with when I was finished. It also allowed me to utilize some of my design skills that I haven't been able to use since fall of last year, so I was happy about that. I do

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really enjoy do enjoy the design aspect of web development; however I do love backend coding.
So I am becoming more solidified in my desire to get into the gaming industry after graduation.