## Assessment task

# Description:

1. Implement a C# Web API using .NET or .NET Core using the requirements listed below.
2. Showcase the following:
   1. Input validation
   2. Unit tests
   3. Integration tests
   4. Exception handling
   5. Dependency Injection
   6. Generics
   7. Async programming
3. Benefits (optional):
   1. Logging
   2. Caching
   3. Multi-threading
   4. Containerization
   5. Add Swagger/Postman support + prepared Postman collection
   6. Middleware and filter usage
   7. Extension methods

# Requirements:

Implement an API capable of generating and returning a subsequence from a sequence of Fibonacci numbers. The API should have a controller with an endpoint accepting the following parameters:

1. The index of the first number in Fibonacci sequence that starts subsequence.
2. The index of the last number in Fibonacci sequence that ends subsequence.
3. A flag that indicates whether the result can be returned from cache or not.
4. A request timeout in milliseconds. If generating the first number in subsequence takes longer than that time, the program should return an error. Otherwise as many numbers as were generated with extra information indicating the timeout occurred.

The return from the endpoint should be a JSON containing the subsequence from the sequence of Fibonacci numbers that is matching the input indexes.

The controller that accepts requests should use async pattern.

Please bear in mind, there could be many incoming requests, so try to avoid thread exhaustion.

There should be a cache for numbers, so that subsequent requests can rely on it in order to speed up the Fibonacci numbers generation.

Optional: the cache should have expiration time defined in configuration.