Homework

Task 1. Analyze framework loading

1. Create plain new Console application (e.g. **`dotnet new console`**)
2. Publish framework dependent version of it (using your IDE or by **`dotnet publish`**)
3. Use Process Monitor to see what I/O operations are made when published app is executed
    - probably it will be **`\bin\Release\net6.0\publish\HelloWorld.exe`**
4. Publish self-contained version of it
5. Again, use Process Monitor to confirm an app does NOT use anything beside local runtime
    - probably it will be **`\bin\Release\net6.0\win-x64\publish\HelloWorld.exe`**

Task 2. Play with the Fibonacci

1. Open in sharplab.io and input F# code calculating *Fibonacci sequence* **n**-th element:

```
namespace Fibonacci.FSharp

module Math =
  let Fib n =
      let rec FibAcc a b n =
          match n with
          | 0 -> a
          | n -> FibAcc b (a+b) (n-1)
      FibAcc 0 1 n
```

   See how it is compiled to IL. Does it use **`tail.`** call or not? Try to understand the generated code. See how it looks under C#. In the end, see the JIT result.

2. Write C# version of the same code.

   - experiment with making **`FibAcc`** a local function or static local function. What is being generated?
   - experiment with using pattern matching (C# **`switch`** expression) versus plain, old **`if`**. What is being generated?

3. (hardcore🔥) Try to write in sharplab.io the CIL version of it, using the **`tail.`** opcode.