Project requirements

Work description:

Create a **new** application based on your previous projects.
We want a program that does 0 to 3 filters and 0 to 3 edge detections (symmetrical).
The code must have the maximum possible code coverage.

Features expected:
- Load an image from the disk
- Perform 0 to 3 filters and 0 to 3 edge detections
- Save the modified image into a file

Mandatory structure of the code (At least one of each)
- Use interfaces to load and save files
  (should be able to implement save to file system or to database but only the implementation for the file system is required)
- Use interfaces to separate the code from the presentation layer
- The following elements **must** be seen in the code
  - Exceptions
  - Methods that return void
  - Methods that return classes

Mandatory elements in the unit tests (At least one of each):

- Use Nsubstitute to test the code and substitute interfaces
- Use Nsubstitute to test exceptions
- Use Nsubstitute to test void methods
- Use Nsubstitute to test methods that return classes
- Cover 100% of the business layer code
- Short unit tests doing one thing at a time with explicit names

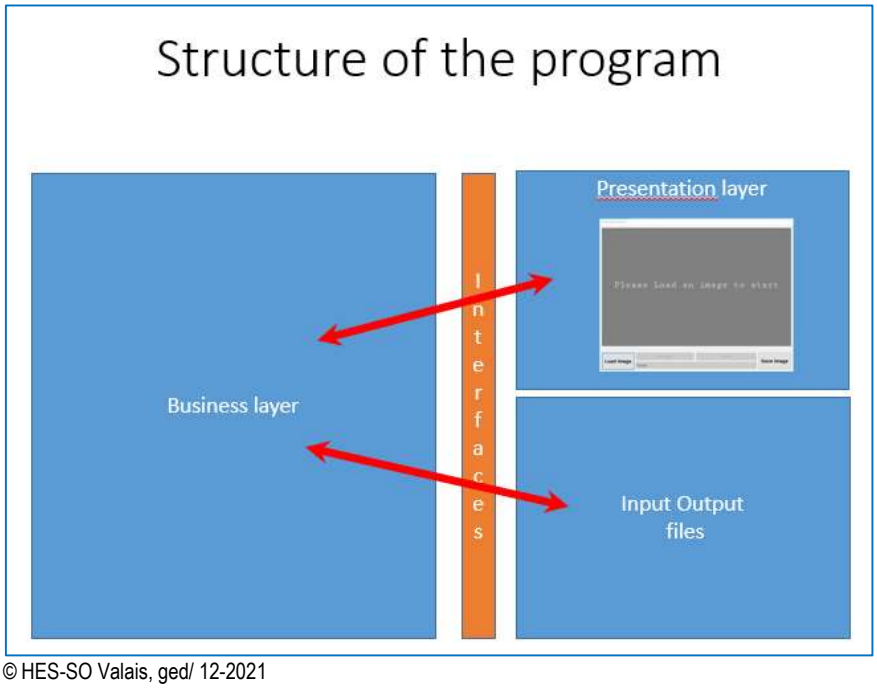

Figure 1: structure of the application

Work to do:

Developer A:

- Create an input/output file manipulation layer using interfaces
- Create the unit tests that goes with it (mandatory)
- Review the code of the developer B, correct and add necessary unit tests
- **It is mandatory to use Nsubstitute calls for the unit tests, all the calls to the I/O should be covered**

Developer B:

- Create a very simple GUI that follows the specifications
- Create the presentation layer based on interfaces
- Create the necessary unit tests
- Review the code of the developer A, correct and add necessary unit tests.
- **It is mandatory to use Nsubstitute calls for the unit tests, all the calls to file system should be covered**

Both developers together:

- Create the sketch of your application
- Define the required common classes and interfaces
- Create the Business layer and the unit tests that goes with it
- Prepare the necessary interfaces and prototypes
- Prepare the presentation

Deliverables:

- **1 running application** i
  - In production state.
  - Commented code
  - The application must behave properly without bugs
  - The code coverage should be 100% for the business layer.
  - The unit tests should include the necessary **test doubles (use Nsubstitute)** to test the file access and the presentation layer
  - ***No useless code or libraries should remain***

- **Project presentation**
  - **The 2 developers should present their project**
  - ***Demo of the application first***
  - Presentation of all the unit tests mandatory
  - During this presentation the professor should be able to clearly determine the contribution of each student.
  - A short user guide for your application

Organization:

Implementation / Development: Programming language: C# on Visual Studio 2019, use of Nsubstitute, give back a full solution.

As feed back of your work we would like a zip file containing:

- **The complete source code**
- **The presentation**
- **A short user guide for your application**