

Test and Quality, Course 2020-2021

First Software project

The first half of the practical part of the course will focus on developing a small software project from scratch, using the various test techniques explained in the first half of the course. Two people per group (maximum). The project will be developed in three practical sessions (that is, approximately one and a half months).

The first software project to be developed (which will be delivered before the fourth practical session, the week of November 16th, 2020) can be chosen from the following list:

MasterMind, Battleship (Sea Battle), Animal-Vegetable-Mineral, Minesweeper, Candy Crush, Chess, Otello, Tetris, Go, Solitaire, etc.

If you decide to define the software project yourself, the project must be a medium-complex project that requires at least 15 to 20 hours of work, similar to the work in the suggested list. Software projects of some subject in which projects has been predefined by the professor (and therefore many students are developing the same software) will not be accepted. That is, it must be an **original** project of yours. You can develop a game whose interface can be either graphical or console type. In either case, you must use the **Model-View-Controller(MVC)** architecture to develop code. This allows you to develop testable code without other parts, that is, you must be able to develop the part of the Model under the TDD paradigm (and its associated test code) without having to implement the Vista part. This means that the practice test code must be centered on the Model and Controller parts. There will be a test on the graphic part in the second practice.

Students who choose to define their own projects need to email a written definition (about a piece of paper) to your practice teacher (one for each group of exercises). You should indicate the purpose of the software, the function of the software, the language you will use, etc. And send the email before the first practice.

Sessions

The first, second and third sessions will be tutoring sessions where teachers will monitor the work done autonomously. No evaluation will be conducted in these sessions. Attendance is NOT mandatory but an attendance check will be performed.

Delivery

The project delivery deadline is **Monday, November 16th, 2020 at 11:55 p.m.** In the fourth practice session there will be an individual evaluation of the practice delivered on the day indicated.

In this first project, a github-style version server will have to be used where the student will show the different versions of the test code and the code developed as TDD is applied. For

each method, one version of the test code must be shown as many times as necessary, followed by another version of the code developed from that test code. For each method it is mandatory to make a minimum of two versions (except for very simple methods such as getters and setters) of both the test code and the code developed in order to evaluate how the TDD has been performed.

The github repository where you will have your project must be a public repository. You must invite to this repository the teachers Keyao Li (github user @ kaia-li) Juan Manuel Vicente (user @juanmav) and Xavier Otazu (@xavierotazuGDS).

Both the developed code and the test code should be documented with explanatory comments. These comments should indicate, for example in a test code, which test case is being checked, whether an equivalent partition value is being tested, or a boundary / boundary case, whether a white box test is being performed, etc. Similarly, developed code should also be self-explanatory.

A report must be submitted explaining each and every type of test performed. A template for preparing this report can be found in the Moodle classrooms of the Virtual Campus.

Each student (individually) will fill in and deliver a grade proposal sheet (a template will be published in the Moodle classrooms) where it will indicate which topics he has worked on in practice and which maximum grade he chooses.

Those who are in the **English practice group** and want to opt for the NAngles note (see next section), **MUST** submit **ALL** materials (code, report, etc.) in **ENGLISH** in full.

Evaluation

The evaluation criteria will be published in the usual way (virtual campus Moodle classroom).

During the individual evaluation of practices (fourth session) will evaluate some of the subjects that the student has marked in his sheet of proposal of note (the professor will decide freely which subjects evaluate and will not necessarily be all the marked by the student). The format of the individual assessment is free, ie the teacher will be able to decide if it is a small case study and / or an oral exam. The individual delivery note for the software project is

$$N_{Lab}(i) = N_{Entrega}(i) * N_{FactorEx} * N_{Test2} * N_{ModelVistaControlador} + N_{Angles},$$

where $N_{Entrega}(i)$ is the mark of the telematic delivery (project in the github server) considering only the subjects of the project in which the student has worked (indicated in his sheet of self-evaluation) and $N_{FactorEx}$ is the note of the individual evaluation (between 0 and 1). $N_{ModelVistaControlador}$ will have a value of 1 or 0 in case this architecture has been applied or not, respectively.

The software project must be functional, that is, it must be able to run smoothly and it must have the functionalities correctly implemented. Please note, as explained on the day of the course presentation, that this software will be tested by other classmates during the second part of the course, and that the results of this second test will influence the grade for this first installment. Therefore, if the code delivered in this first project cannot be tested, the grade for this first delivery will be penalized. Remember that the fact that the testing done in the second half of the course will discover new errors in the software of this first delivery will not be penalized, but it will be penalized the fact that testing cannot be done properly (e.g. .mock objects within the developed code, menus or options that do not work, functionalities not yet implemented, etc.). The correction criteria on this delivery due to the testing done in the second half of the course will be published in the Virtual Campus. The grade obtained in the first delivery will be multiplied after the second delivery by an NTest2 factor that will never be less than 0.75.

For the English value, if you have not done the practice in the English group, the value is 0; if you have done the practice in the English group, the value is 0.5 (as mentioned in Delivery section, **ALL** materials **MUST** be submitted in **English**).