

CORRECTION of The EXAM – Software engineering

Exercise 01 (3pts)

What are the three essential types of software tests?

ما هي الأنواع الثلاثة الأساسية لاختبارات البرمجيات؟

Exercise 02 (12pts)

System Description:

Secondary education in Algeria lasts three years, detailed as follows:

- The study takes place in 3 levels: 1st year, 2nd year and the 3rd year (BAC).
- In each level, there are several specialities (the common trunks are also considered specialities).
- For each speciality, there are several modules to study.
- The same module can be studied in several specialities as it can be taught by several teachers.
- Each speciality module has an hourly volume and a coefficient.
- In each speciality, there can be one or more classes, and the number of students in each class is known.
- Each teacher is responsible for a single module if his hourly volume is greater than or equal to 21 hours. Otherwise, a second module will be assigned to him.
- After his registration in the 1st year, a student moves from one level to the advanced level when he passes his exam (Annual Average > 10.00). Otherwise, he is authorized to repeat the year twice during his study at high school. If the number of repetitions is greater than 2, he is dismissed.

يمتد التعليم الثانوي في الجزائر لثلاث سنوات ، مفصلة كالتالي:

- تتم الدراسة في 3 مستويات: 1 ثانوي ، 2 ثانوي و 3 ثانوي.
- في كل مستوى ، هناك عدة تخصصات (جذوع مشتركة تعتبر أيضا من التخصصات).
- لكل تخصص ، هناك عدة مواد تدرس.
- يمكن دراسة نفس المادة في عدة تخصصات حيث يمكن تدريسها من قبل العديد من الساتذة.
- لكل مادة حجمها الساعي و معاملها.
- في كل تخصص يمكن أن يكون هناك قسم أو عدة أقسام، وعدد الطلاب في كل قسم معروف.
- كل أستاذ مسؤول عن تدريس مادة واحدة إذا كان حجمه بالساعة أكبر من أو يساوي 21 ساعة. خلاف ذلك ، تسند له مادة ثانية.
- بعد تسجيله في السنة الأولى ، ينتقل الطالب من مستوى إلى المستوى الأعلى عندما يجتاز امتحانه (المعدل السنوي ≥ 10.00). خلاف ذلك ، يسمح للطالب بإعادة السنة مرتين خلال دراسته في المدرسة الثانوية. إذا كان عدد التكرارات أكبر من 2 ، يتم فصله.

1. Design the **UML class diagram** describing the organization of Algerian high schools.
2. Design the **UML state machine diagram** describing the behavioural of a **student** at high school.

Exercise 03 (5pts)

Say whether the following statements are **TRUE** or **FALSE** regarding the Agile method.

قل ما إذا كانت العبارات التالية صحيحة أو خاطئة ، فيما يتعلق بطريقة Agile

- a. In the Agile method, changing requests from customers are encouraged and efficiently incorporated.
- b. Each Agile project includes a customer representative on the team. At the end of each iteration, he reviews the progress made and re-evaluates the requirements.
- c. In the Agile method, the development team size should be small (between 3 and 5 people) to enhance face-to-face communication.
- d. Long-term plans are encouraged in the Agile method.
- e. The Agile method supports working with documentation.
- f. The central principle of the Agile model is the delivery of an increment to the customer after each Time-box.
- g. An agile process focuses more on documentation rather than code development.
- h. The Agile method is suitable for big and medium projects.
- i. The Agile model adopts Iterative development. Each incremental part is developed over an iteration.
- j. Agile model is the combination of iterative and incremental process models.

Exercise 01:

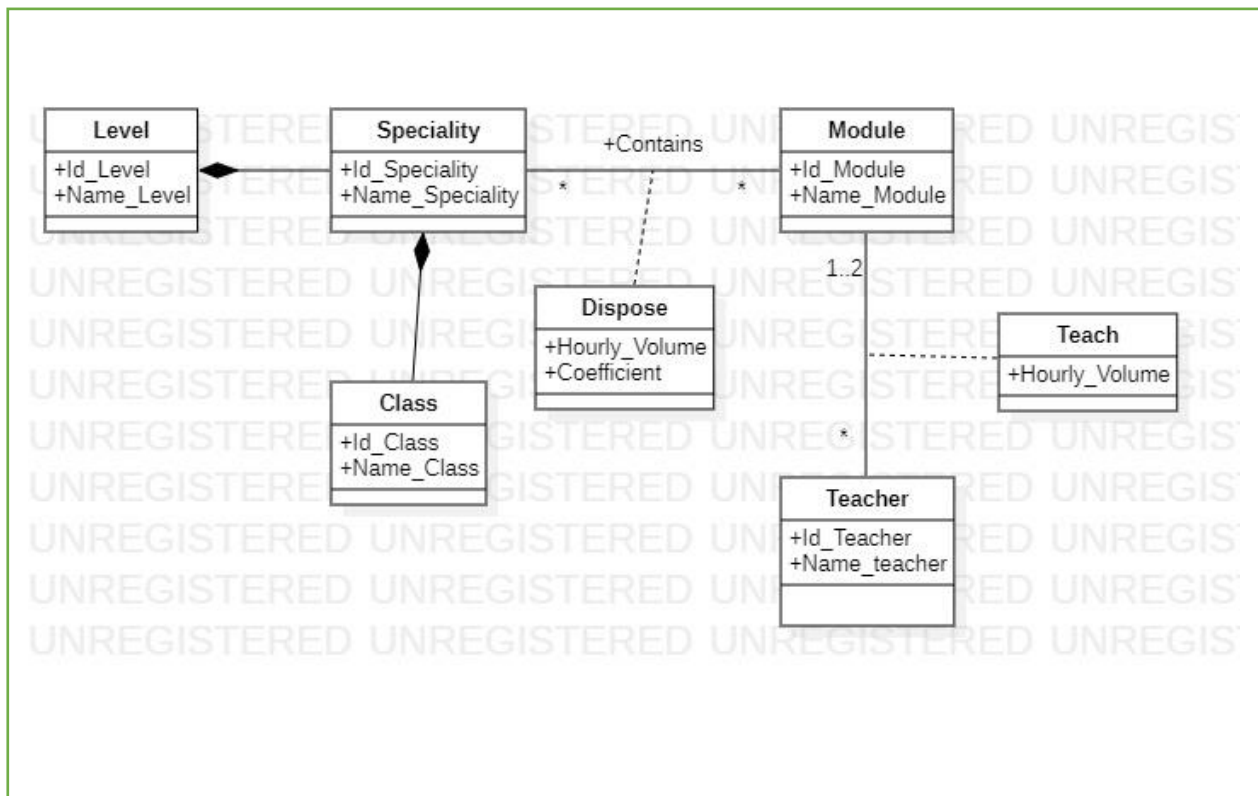
The three types of tests are:

- Unit testing.
- Integration Testing.
- Validation testing.

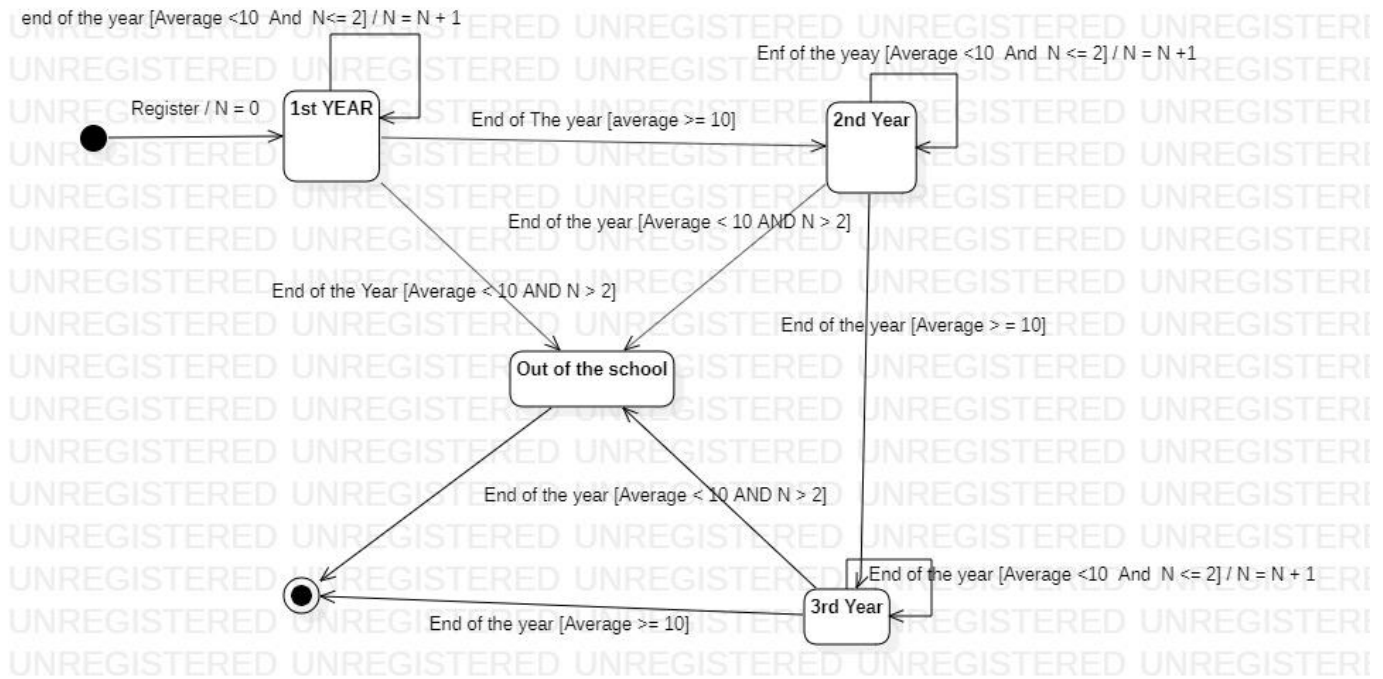
Exo 02:

CORRIGE :

The class diagram of the model:



The state Chart Diagram:



Exercise 03 (5pts)

Say whether the following statements are **TRUE** or **FALSE** regarding the Agile method.

قل ما إذا كانت العبارات التالية صحيحة أو خاطئة ، فيما يتعلق بطريقة Agile

- In the Agile method, changing requests from customers are encouraged and efficiently incorporated. **TRUE**
- Each Agile project includes a customer representative on the team. At the end of each iteration, he reviews the progress made and re-evaluates the requirements. **TRUE**
- In the Agile method, the development team size should be small (between 3 and 5 people) to enhance face-to-face communication. **TRUE**
- Long-term plans are encouraged in the Agile method. **FALSE**
- The Agile method supports working with documentation. **FALSE**
- The central principle of the Agile model is the delivery of an increment to the customer after each Time-box. **TRUE**
- An agile process focuses more on documentation rather than code development. **FALSE**
- The Agile method is suitable for big and medium projects. **TRUE**
- The Agile model adopts Iterative development. Each incremental part is developed over an iteration. **TRUE**
- Agile model is the combination of iterative and incremental process models. **TRUE**