

# Software Engineering (ISW)

Evaluation Theory. Act 1

October 27<sup>th</sup> 2014

ETSInf-UPV

NAME:

Time: 2 hours

## **Questions** (3 points)

1. (1 point) What does it mean that a software development process is iterative, evolutive and interactive? Mention two software development processes that have these three features.

2. (1 point) What does “high quality software” mean?

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3. (1 point) Indicate whether the following sentences are true or false. Justify and discuss your answers in both cases (true or false answers).

a) The information modeled in a use cases diagram is equivalent to the information modeled in a class diagram but using a different notation and terminology.

b) All the actors that appear in a use cases diagram must appear in a class diagram, except the actor "System".

c) An "includes"/"uses" relationship between two use cases becomes an aggregation relationship between two classes in a class diagram

d) In a class diagram, an association class represents a sorting (order) criterion of the objects that participate in the relationship/association.

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**Problem 1.** (7 points) The production team of the TV series *Game of Thrones* needs an information system to manage the filming of the different chapters of a season.

A season has a number and a year of production. A season is a collection of 10 chapters. The production manager creates a new season by registering the 10 chapters with a default title. Later, during the filming process, the production manager may update the information associated to a chapter (chapter number, title, total duration and its sequences). Each time a sequence is filmed, the production manager adds it to the system as part of a chapter. For each sequence we want to know the characters that appear. A character may be added to the system by a scriptwriter at any time. Scriptwriters may also update the information about characters at any time. Each character is defined by a first name, age and the family he/she belongs to. A family is defined with a last name and an image that represents the family emblem. Families can be added at any time by scriptwriters but if a family does not exist when adding a character, the scriptwriter may add the family at this moment. A character is performed by an actor who has a name and an age. An actor only performs one character. Moreover, we want to know the salary earned by each actor on each season (the salary may be different for each season). The direction manager is in charge of adding new actors for each season, when an actor is added the direction manager may assign it to a season and assign a salary for the season. However, he may decide to assign the season and salary for an actor in any other moment. For those characters who are Kings the system has to record information about their reigns such as the date in which the reign started, the date in which the reign ended (in case it has already ended), the preceding King for the reign (if it is a new reign there may be no preceding King), the successor King (in case there is already a successor) and the territories that the King owned during the reign. A King may own different reigns during his life, e.g. he may be overthrown in a reign at a given time and have in the future another reign. A territory has a name, an extension (square kilometers) and a several adjacent/bordering territories. A territory might have no bordering territories (e.g. an island). If a King takes possession of a new territory during his reign we need to know the date of possession. Similarly, if a King loses a territory during a reign we also want to know the date of the loss. The management of all the information about Kings, reigns and territories is made by scriptwriters.

The system also has to record information about the characters that die in a given chapter and the concrete sequence in which the character dies. If the death is not accidental, i.e. if there is a killer, the system has to record the character who acted as a killer. The killer will always be another existing character. For each sequence we also need to record the name of the city in which it is filmed and the start and end filming dates. The possible deaths of characters and the possible killers (if they exist) are inserted by the scriptwriters when a sequence is inserted.

Based on the previous description:

- a) (3'5 points) Build a use cases model in UML 2.0 for the previous system.
- b) (3'5 points) Build a class diagram using UML 2.0 including class attributes and the names of the relationships (associations) that you detect.