Software Engineering: Laboratory

Continuous Assessment Laboratory 1

Dental Clinic

Our company has signed a contract to develop the management software for a network of dental clinics in several EU cities. Its characteristics are as follows:

The network will consist of five clinics with the same distribution of spaces: three rooms equipped with the most modern dental equipment, an X-ray room for dental X-rays and a reception room for customers. Although each clinic includes a waiting area and toilets, these rooms are not included in the requested design.

Each of the rooms will have a computer connected to a local server in the reception area via its own LAN. The computers will allow consultation of the patient records stored on the local server, which in turn will be connected to the central network server located in the clinic in Alcalá de Henares via a VPN, using the TCP/IP protocol.

The staff in each clinic consists of dentists, assistants and receptionists, and each group interacts with the system in different ways. A dentist can create, modify, and delete a given patient's history, as well as generate a quote for the treatment to be performed. If the patient accepts the quotation, the treatment is started and subsequently paid for.

The assistant can create and modify a given history but cannot delete it or generate a quote. Finally, the receptionist can make appointments, modify the history, print the invoice for a treatment and collect the invoice. A fundamental requirement of the system is the validation of each user, allowing or denying access to the described operations depending on the group to which he/she belongs.

The history will consist of the following sections: history number, patient's name and surname, patient's ID number, postal address, and list of treatments. Each treatment will include the following, start date of the treatment, date of the intervention, description of the intervention, dental pieces operated on, medication prescribed to the patient, amount of the treatment and status of the treatment (paid, pending). Logically, all personal data recorded or stored in the application will follow the guidelines of the EU General Data Protection Regulation (GDPR), which governs how personal data of individuals in the EU may be processed and transferred.

Finally, the management software will be designed in Java respecting the separation of the business model from the user interface (MVC pattern), showing the logo of the

network of clinics on all its screens as a watermark. As there are branches in multiples countries, their possible peculiarities must be considered, for example different taxes and communication with tax authorities, languages, etc.

Submission

Upload onto Blackboard a pdf report of the software requirements specification (SRS) based on the above requirements.

You should consider:

- Consider a standard template for the software requirements specification (SRS) based on the IEEE 830 based on the above requirements (you will need to add further details such as non-functional requirements, etc)
- Draw a use case diagram showing the actors and use cases (UCs)
- Develop some UC scenarios (at least as many as members in the group).
    - Consider writing at least two use cases scenario, write a step-by-step use case description, including preconditions, postconditions, alternative courses, etc.
- Draw a sequence diagram for your specified UCs.
- Draw a high-class diagram. The class diagram should represent all of the classes, their attributes and operations, relationships between the classes, multiplicity specifications, and other model elements that you find appropriate.
- Other diagrams that could help with better specifying the requirements.

Marking Criteria

Clarity and conciseness in the written requirements as well as the logical flow from requirements to the Use Case diagram provided (including the textual description in a template) and sequence diagram(s) and use of the IEEE830 standard with all relevant headings, appendix, etc.