CSU22BC1 Systems Analysis and Design 2019-20: **Assignment 3**

- *This assignment is mandatory. Failure to submit will mean automatic failure of the module.*
- ***This is an individual project**. Plagiarism, even if accidental, will not be tolerated and will result to a reduced grade or a no grade and possible disciplinary proceedings.*

Project Outline

You are a software project manager who previous worked on the requirements analysis for a clinical trial support system (as per CA1). The Irish Health Service Executive (HSE) was impressed by your work in that analysis and has taken on board several suggested changes in implementing its new electronic patient health record (EPHR) system and a new drug and effect catalogue (DEC) system. However, a virus outbreak has made the gathering of information about the occurrence of specific effects in patients and their relationship to specific drugs a priority.

You are asked to plan a software development project for a new **clinical research support (CRS) system** with the following requirements:

1. The CRS system will integrate with an electronic patient health record (EPHR) system which has recently been made available by the HSE for all doctors.
2. The EPHR system allows doctors to record each consultation with a patient, including medical effects observed and drugs prescribed. The EPHR system uses the current list of drug descriptions and effect types from the DEC system.
3. The CRS system is used by scientists who set up lists of virus-related effects and drugs they want to track, taken from the sets available from the DEC system. Everyday at 23.59 the CRS system requests a bulk download from the EPHR of the last 14 days of medical health record items for any patient who has registered an effect or is being treated with a drug on the scientists virus-related list in use that day. The bulk download is in the form of two comma separated value file with the following column headings
    - Drug file:
        - Patient ID: unique ID for patient
        - Medical practitioner ID: unique ID for medical practitioner recording record
        - Record time: date-time code for when this drug prescription was recorded in the EPHR system
        - Prescribed drug ID: unique drug type ID from DEC system
        - Prescribed dose: code from set defined for this drug in the DEC system
        - Course started: date code for when course of drug was started
        - Course ended: date code for when the course of drug was ended if known
    - Effect file:
        - Patient ID: unique ID for patient
        - Medical practitioner ID: unique ID for medical practitioner recording record
        - Record time: date-time code for when this effect observation was recorded in the EPHR system
        - Effect ID: unique effect type ID from DEC system

    - Severity: code from set defined for this effect in the DEC system
    - First observed: Date Code when effect was first noticed by the patient
4. Structure the CRS system architecture to include the following subsystems:
    - Authentication subsystem: to ensure that only authorised scientists can log in and use the CRS system.
    - Drug and effect selector subsystem: Fetches drug and effect list from DEC system and allows Scientist to select drug and effect types of interest for that day's download from the EPRH system.
    - Medical health item record retrieval and integration subsystem
    - Data analysis subsystem via which scientists can run statistical analyses of the data and display results.

All students must attempt the following [percentage of marks as indicated] and submit as a single pdf document via the CA3 entry on Blackboad by 23.59 11th May 2020:

1. Define a schema of relational database tables for the data that you think must be held by the CRS system, in the third normal form. [10%]
2. Define a UML activity diagram for the daily processing of incoming drug file to ensure no coding errors and to remove duplicates with previously recorded entries that use data form this file. [10%]
3. Define the software development methodology you wish to use (e.g. waterfall, prototyping, spiral, RUP, agile), justifying your choice in the context of the requirements set out above. [10%]
4. Create a work breakdown consisting of: [30%]
    a. Tasks to be conducted in developing, testing and deployment of the CRS systems, its subsystems and external interfaces.
    b. Team make up and type of team member required for each task. Select team member types from: project manager, analyst, designer, software developer, tester or other more specialised types as required.
    c. The outputs of those tasks.
    d. The dependencies between tasks.
5. Consistent with your chosen methodology and task breakdown, create an initial project plan consisting of: [30%]
    a. A description of phases of the project, including what they aim to achieve.
    b. A list of milestone descriptions and due dates: points in the project plan
    c. Gantt Chart with a weekly resolution, showing the sequencing and active period for each tasks, the milestones they aim to achieve and dependencies so that critical paths can be identified.
6. Qualitative cost benefit analysis to inform the feasibility of successfully delivering the CRS system into service using your plan, addressing economic, technical, operational and political issues that you think may be encountered. [10%]