Assignment Description

Task 1

A regional government in northern Sweden has started an emergency central due to the long distance to the regional hospital.

At the emergency central, physicians and nurses work. Each of physicians and nurses have name, mobile number, national ID Number, and employee number. When a patient arrive, the patient need to be registered by the nurse. The registration should document the following: name and national ID Number of the patient, registration date, results of a first emergency assessment done by the nurse, and room number where the patient needs to wait for investigation. During the investigation carried out by the physician, the nurse needs to document the following: preliminary diagnose, actions planned to be carried out, and which physician and/or nurse are assigned to carry out the planned actions. Finally, after the actions have been carried out (if any), the physician needs to meet the patient in a sum-up meeting. During the meeting, the following need to be documented: the physician's overall health assessment of the patient, the results of each actions that have been carried out (if any), eventual medicine(s) prescribed and eventual referral(s) written. For each of the medicines prescribed, the name and product number of the medicine need to be documented as well as patient and prescribing physician. For each of the referrals, the name and address of the health care unit to receive the referral needs to be documented, the date for the writing the referral as well as a short description of the health issues identified, and, of course, the patient to be referred and physician writing the referral(s).

Your task: Describe the concepts by creating a conceptual model using UML class diagram, including classes, attributes, associations and multiplicity.

Task 2

For each class you modelled in Task 2, define the term/concept using an intensional definition - and for each definition use the genus-differentia method. For example, if you have a class named Nurse, then define the term/concept Nurse, and use an intension definition using the genus-differentia method. Your definitions should be aligned with your conceptual model.

Task 3

An assess-plan-do-process has been introduced at the emergency central and should be carried out as follows:

When a patient arrives at the emergency central, a nurse makes an emergency assessment, then registers the patient, and finally gives the patient a room. After that, the physician and a nurse meet the patient in the room. The physician makes an investigation of the patient and then plan which actions should be carried out, and, for each action, decides who, the nurse or the physician, should carry the planned action. In parallel, the nurse documents the planned actions and, for each action, documents who should carry out the action. After that, the physician or nurse carries out the actions she/he needs to carry out. The physician and the nurse can carry out the action in any order, depending on who is free to do the action. It is not necessary that the physician and/or the nurse carry out any action. When all the actions have been carried out (if any), the physician meets the patient in a so called sum-up meeting, which includes the following actions: 1) the physician informs the patient of his/her overall assessment of the health of the patient; 2) if some actions have been carried out, the physician informs the patient about the results of these actions; 2) if the patient needs some medicine(s), the medicine(s) shall be prescribed; 3) if the patient needs to be investigated by an expert(s), referral(s) to the expert(s) shall be written and sent to the experts' health care unit(s). These four actions can be carried out in any order. Action 1) should always be carried out but actions 2), 3) and 4) should not always be carried out (for example, the patient may not need medicine and/or may not need expert investigations, or no actions may have been carried out).

Your task: Describe the assess-plan-do-process using UML activity diagram, from the emergency central's perspective. Use swim lanes for the two roles: physician and nurse. You do not need to have a swim lane for the patient.

Task 4 (Max 3 points)

The emergency central is planning to develop an IT system supporting the assess-plan-do-process.

Two of the requirements/use case are:

"Register patient". In this requirement/use case, the nurse needs to register the patient in the IT system when the patient is arriving at the emergency central, including name, national ID Number, registration number, result of emergency assessment, and room number.

"Document result of actions carried out". In this requirement/use case the physician needs to document the result of the actions carried out (this is done during the sum-up meeting). In order to document the result of actions, the physician needs to first find the patient and the planned actions in the system, in order to connect the result to the patient and the planned actions.

Your task is to:

i) Create a *use case diagram* with the two use cases "Register patient" and "Document result of actions carried out", plus three (3) more use cases identified by you by reading the text for tasks 1 and 2. (Note that use case is an interaction between a user and an IT system).

ii) Make *use case descriptions* for the two use cases "Register patient" and "Document result of actions carried out", see the description of the two use cases above. You do NOT need to do descriptions for the other three (3) use cases.