Northeastern University

CS 5200 Homework 2

Conceptual design using UML notation

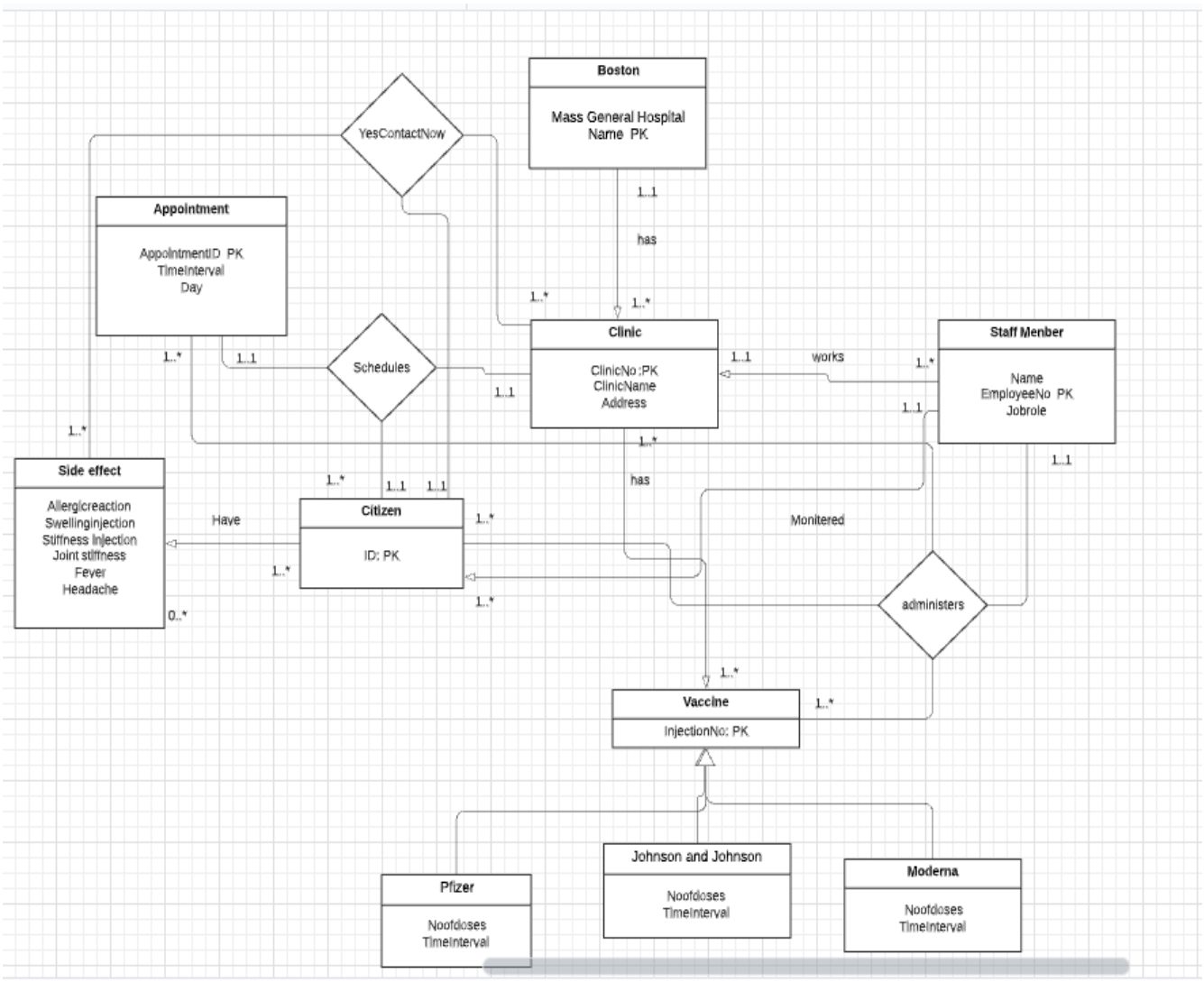
This assignment gives you an opportunity to create a complex conceptual design from a textual description. For each of the schemas below:

1. Create an entity relationship diagram for the conceptual design using UML notation. The diagram can be created by hand or via some modeling tool.
2. Create a data dictionary for the entities, relationships, and attributes. Make your best guess for representing the attributes.

Schema 1 COVID-19 clinic: (50)

Mass General Hospital runs a collection of COVID-19 clinics throughout the city of Boston. A clinic has many staff members who work at it. A staff member has a name, an employee number, (empNo) which is unique for the employee, a job role, as well as a description of the job role. A staff member may only work at one clinic. Each clinic has a unique clinic number (clinicNo) , clinic name, and an address. The clinic has a stock of vaccines that are available for injection. Currently there are three vaccine types approved in the US, the Pfizer, the Johnson and Johnson and the Moderna vaccine type. For each vaccine type the clinic must track the number of doses required for full immunization and the time interval (number of recommended days) between the doses.

When a citizen is required to receive a COVID-19 vaccine, he/she contacts a clinic to schedule an appointment. The appointments are an hour in length and can be scheduled from 8AM-8PM on Monday through Friday for a specific day of the year. Each appointment has a unique appointmentId. At the appointment, a citizen is administered the vaccine and is then monitored for a ½ hour by a staff member for side effects. The side effects are: allergic reaction, swelling at the point of injection, stiffness at the point of injection, joint stiffness, fever and headache. After the monitoring stage, the patient is then required to monitor him/herself and to contact the clinic if he/she experiences any side effects. The patient is also required to contact the clinic for any further inoculations needed for the vaccine type that has been administered.



Schema 2: Wildlife populations. (50)

Your goal is to create a database containing wildlife species populations for specific regions in the world. A region will lie in one country only. A country may be situated on 1 to many continents. For each continent you track its name, for each country you also track its name and a region will have a name. Surveys are conducted on the various animal species found in the regions across the world. These surveys count the number of animals for each species found in that region. This will provide a general sense of the distribution of the animals in this region. Each tracked species has a scientific name, a common name as well as a unique speciesId. You will survey regions of the world and determine the species found in that region. To monitor the individual animals within each animal species, you will tag specific animals with the help of sensors. Tagging an individual animal involves attaching a sensor tag to the ear of the animal. Each sensor tag has a unique TagId. For each tagged animal you track the sex, and approximate age of the animal. A region

also has a climate associated with it. For each type of climate you track, the climateId, climateType and a description of the climate.