Tutorial 2 (Week 4): Conceptual modelling with the entity-relationship model and diagrams.

The Varsity International Network of Oenology (VINO) wishes to computerize the management of the information about its members as well as to record the information they gather about various wines. The organization is big enough so that there are several members with the same name. A card with a unique number is issued to identify each drinker. The contact address of each member is also recorded for the mailing of announcements and calls for meetings.

At most once a week, VINO organizes a tasting session. At each session, the attending members taste several bottles. Each member records for each bottle his or her evaluation of the quality (very good, good, average, mediocre, bad, very bad) of each wine that she or he tastes. The evaluation may differ for the same wine from one drinker to another. Actual quality and therefore evaluation also varies from one to another bottle of a given wine. Every bottle that is opened during the tasting session is finished during that session.

Each wine is identified by its name ("Parade D'Amour"), appellation ("Bordeaux") and vintage (1990). Other information of interest about the wine is the degree of alcohol (11.5), where and by whom it has been bottled ("Mis en Bouteille par Amblard-Larolphie Negociant-Eleveur a Saint Andrede Cubzac (Gironde) - France"), the certification of its appellation if available ("Appellation Bordeaux Controlee"), and the country it comes from (Produce of “France”).

Generally, there are or have been several bottles of the same wine in the cellar. For each wine, the bottles in the wine cellar of VINO are numbered. For instance the cellar has 20 bottles numbered 1 to 20 of a Semillon from 1996 named Rumbalara. For documentation purposes VINO may also want to record wines for which it does not own bottles.

The bottles are either available in the cellar, or they have been tasted (and drunk...).

1. Design an entity-relationship schema that most correctly and most completely captures the constraints expressed in the above description of the VINO application. Draw the corresponding entity-relationship diagram. Do not omit to declare the necessary integrity constraints. Indicate in English the constraints that cannot be captured, if any.
   Follow the following steps. At each step, justify your choice by quoting the sentences in the text that support it.
   a. Identify entity sets.
   b. Identify relationship sets and link them to the entity sets they relate.
   c. Indicate attributes of entity and relationship sets.
   d. Indicate the combination of attributes that form keys.
   e. Indicate the participation constraints.
2. Translate your entity-relationship diagram into a relational schema. Give the SQL DDL statements to create this schema. Do not omit to declare the necessary integrity constraints. Indicate in English the constraints that cannot be captured, if any.