Name _____

**PART 2 (50 marks)**

A. **Create a UML class diagram for system described below.**
Please include appropriate classes, their attributes (including types), and associations (with directions, multiplicities, compositions, and role names). No need to describe the operations or visibility (-, +, #) of attributes/roles.

**Marks will be given for effort, even if you don't have a perfect solution. However, marks will be lost for the common types of mistakes. Please do not include operations.**

**Problem description:** a **Soccer League Management System**

You must model the domain of a **soccer league management system** where we want to represent at least the following concepts:

1. There are many types of people involved: players, coaches, and referees.
2. Players and coaches belong to only one team.
3. Each team in the league has at least 18 players (including two goalkeepers), and 1 to 3 coaches.
4. Each game between two teams is refereed by 3 referees.
5. All people have a name, a date of birth, a city of origin, and a unique identifier. Players also have a jersey number.
6. A season includes 24 games per team. The dates and locations of each game are determined in advance.
7. As we would like to calculate some statistics during the season (including the ranking!), we must be able to determine for each game: the final score, who scored the goals, and which goalkeepers have been scored goals.
8. Players can also get, during a game, yellow and red cards. After a red card or two yellow cards in a game, a player must skip the next game.
9. Assumption: players and coaches will not change during the season. During a game however, the players on the field (including goalkeepers) can obviously change!

Name _____

**UML Class diagram for the Soccer League Management System**

(Answer here)

Visibility information (+, -, …) is not necessary in such model (my tool adds them by default, but ignore them). Note that it is necessary to have classes for goals and cards. An enumeration can be used for the card color (just like another one could have been used for the position of a player). No absolute need to have a class Goalkeeper or two sub-classes RedCard and YellowCard for the class Card; this can be handled differently. Some potential attributes such as game final scores, ranks, etc. are not necessary as they can be derived from other information in this model.