Homework 4: Conceptual and logical design of a data base

You are required to create a database for the management of a company of multiplex cinemas.

- The company manages several cinemas, each of which is Identified by means of a unique incremental code. For every cinema are known the name, the city where it is located and a list of times of opening on any day of the week. Consider that for each cinema are possible multiple times opening on the same day (e.g., Monday from 10 am at 3 pm and 5 pm to 10 pm or Tuesday from 10 am to 1 pm and from 4pm to 9 pm)
- Each cinema has some rooms, identified by a number unique for each cinema where the room is located. Each room is also characterized from the name, its capacity (expressed as num I was of seating) and the availability of facilities for people with disabilities (as a Boolean value). The movies screened at the different cinemas are identified by a unique code and are characterized by the title, the genre (it can be more than one), the year of release and the duration in minutes.
- Employees of the company are characterized by SSN, name, surname, date of employment. Employees work in rotation at the different cinemas. You want to store in the database the list of cinemas where each employee worked and for what time interval (expressed as start date and end date). Consider that the same employee may have worked in only one cinema in each time frame. Also consider that the same employee may have worked for multiple periods of time at the same cinema. At each cinema, employees can work at the ticket office or as screening staff. For ticket office staff, the list of languages spoken must be stored.
- Each room hosts screenings of different movies, for which the designated screening staff is known. The screening of a movie can take place in the same room at different times (start date and time), and in different rooms, even at the same time. For each projection, the database must record the list of customers who attend the projection. Each customer is identified by the unique code of the ticket purchased and characterized by his name, the seat inside the room and the ticket agent who sold the ticket.

1. Describe with an E-R diagram the conceptual scheme of a database for such an application.
2. Build a normalized relational logical scheme for the same database.
3. Define the referential integrity constraints for 3 relationships chosen from those defined in the conceptual scheme.