

## Film Showings

The Cinema Guild Theatre Group wants the following collection of 21 data items to be implemented in a database to manage its member theatres in several towns. Provide the 3NF LDM that satisfies these requirements.

Your answer must be the minimum required for a valid logical model solution. No extraneous entities or relationships. Do not add *\*any\** data items to the 21 items shown. You must label with a name each entity and each relationship (between entities). Check carefully that you have satisfied all constraints A through K.

Actor	Movie_Name	Student_Price
Address_of_Theatre	Movie_Rating	Theatre_Name
Adult_Count	Movie_Review	Theatre_Phone_Number
Adult_Price	Number_of_Screens	Time_of_Showing
Child_Count	Screen_Number	Town
Child_Price	Senior_Count	
Date	Senior_Price	
Director	Student_Count	

The following describe key business rules, definitions, requirements and relationships between data items:

A: Theatres can show a "double bill" (2 films for 1 admission price) or a "triple bill" (3 films) or a "festival" (a larger number of films for one price).

B: The film distributor requires each theatre to report the count of each type of ticket sold by showing. A showing is one start of a movie on a particular day at a specific time. Movies shown together (double bill, etc.) have one start time.

C: A given movie may be showing at more than one theatre at the same time.

D: The movie review is a short paragraph quoted from a national magazine. The movie's rating is also based on non-local information.

E: The database needs to track all principal actors in a movie, e.g. co-stars Bette Middler and Carrie Fisher.

F: Theatres sometimes run film festivals, where they show several films starring the same actor. (Don't handle the festival separately, just be sure that your design for individual movies handles it.)

G: Theatres have four classes of admission with separate prices: adults, students, children, and senior citizens.

H: All prices are determined by the time of day and the day of the week (i.e. the date). Therefore, weekend and holiday prices can be different than weekday prices. Prices can be different in each theatres showing the same film at the same time.

I: A theatre is in only one town, but a town can have more than one theatre.

J: Most of the theatres in the theatre group have become multi-screen centers, as specified by the "Number of Screens" data item for each theatre. For each showing, the screen number must be recorded to identify the actual room in which the screening will occur. Date and time alone do not uniquely identify a showing.

K: Assume that a movie has only one director, but that director film festivals can be held (e.g. showing five Alfred Hitchcock or Woody Allen movies).