

TASK 1: Create an E-R diagram

Exactly 5 entities

The five entities shown below in the diagram are Building, Employees, Movies, Customers and Tickets.

Exactly 4 relationships including:

- at least one 1-to-1 relationship

The “buying” relationship is the one to one relationship as seen on the diagram below.

- at least one 1-to-many relationship

The “hosting” relationship in the below diagram is the one to many relationship.

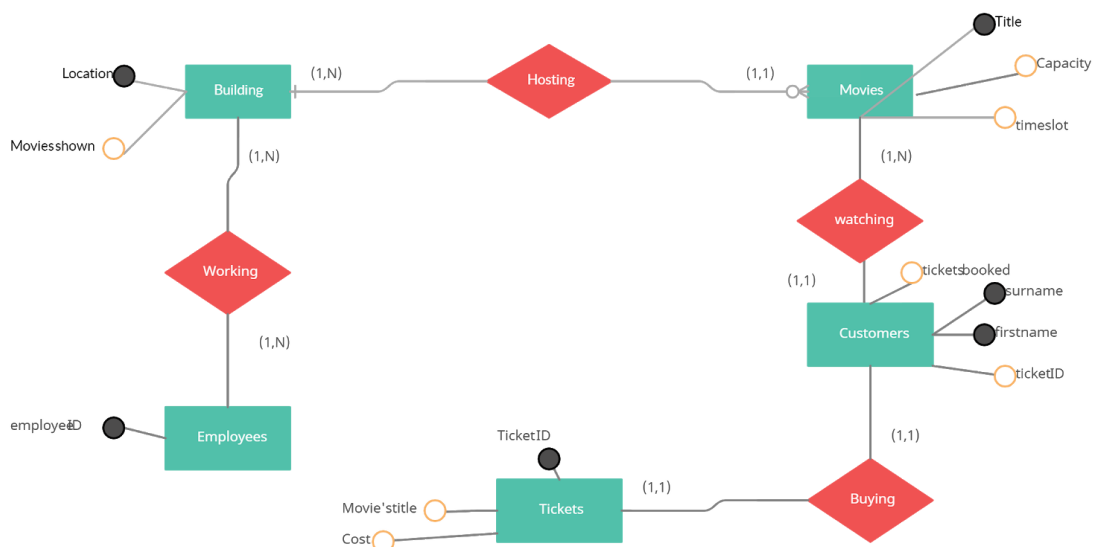
- at least one many-to-many relationship

“Working” is the many to many relationship in the below diagram.

- the fourth relationship can have any cardinality

“Watching” is the fourth relationship and this is a one to many relationship.

Title: Cinema Operations



Task 2:

Assumptions :

- This diagram represents the common activities in a chain of Cinemas on one particular date. This diagram shows that the cinemas can show a number of different movies, it has a number of different customers using its facility and a number of different employees who can be assigned to work in many of its different buildings.
- Tickets are sold for access into a movie, each customer needs to have one ticket to be admitted into the movie theatre.
- One building can show many movies as it has a number of different theatres and time slots for movies, but certain movies will only be shown in one building/location in the chain of cinemas.
- Movies are only hosted in one building, meaning cardinality is (1,1) on the side of the movies, while Multiple movies can be hosted in multiple buildings so cardinality is (1,N) on the side of the building. Which is a one to many relationship.
- One movie will have many customers watching it but one customer will just watch one movie. Which is a one to many relationship. This relationship is represented by a (1,N) on the movie side and (1,1) on the customer side.
- Each customer just has one ticket , and one ticket is just for one customer, this is a 1 to 1 relationship represented by (1,1) at the customer side and (1,1) at the ticket side of the ER diagram.
- Many employees can work in many different buildings, and many different building can have many different employees working in them. This is a many to many relationship represented by cardinality (1,N) on the employees side and (1,N) on the building's side of the diagram.

Task 3:

Translation into Relational Model:

BUILDING

(location, moviesshown, employeeID)

EMPLOYEES

(employeeID)

TICKETS

(ticketid, movie'stitle, cost)

MOVIES

(title, capacity, timeslot)

CUSTOMERS

(ticketsbooked, firstname, surname, ticketID, title)

Notes:

- “Working” is translated by adding employee ID attribute to table BUILDING . Employee ID is the foreign key of table BUILDING that references the key in table EMPLOYEES.
- “Watching” is translated by adding the attribute title to table CUSTOMERS, title is the foreign key of table CUSTOMERS and references the key in table MOVIES.
- “Buying” is translated by adding the attribute ticketID to the table CUSTOMERS, ticketID is the foreign key of table CUSTOMERS referencing key in table TICKETS.
- Primary keys are the above underlined attributes in each table.

Task 4:

- 1) How many tickets were sold for a particular movie.
- 2) Names of customers and the movies they watched.

Task 5:

- 1)

```
SELECT count(*)  
FROM tickets  
WHERE movie'stitle = mamamia
```
- 2)

```
SELECT customers.first name, customers.surname, movies.title  
FROM movies, customers  
WHERE customer.title = movies.title
```