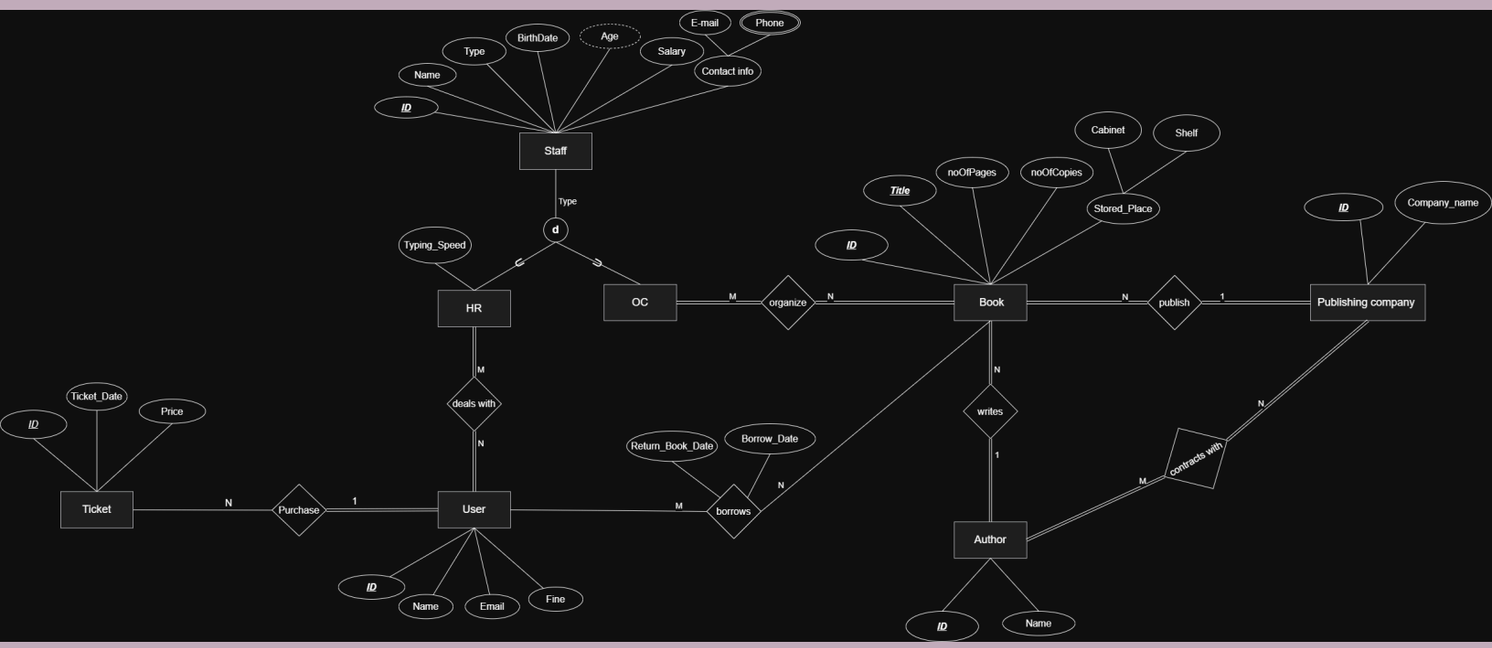
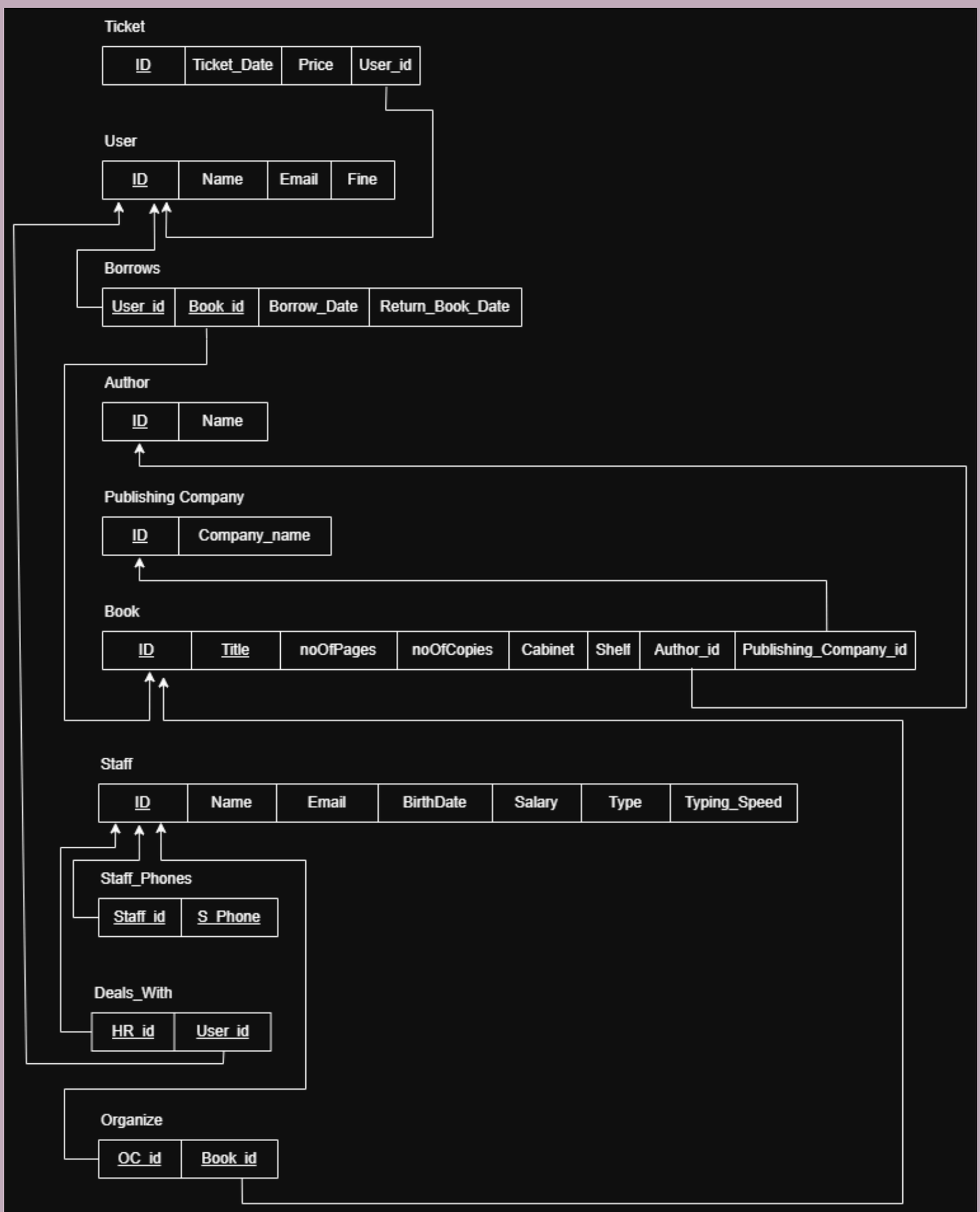
ERD


E-mail
Phone
Type
BirthDate
Age
Salary
Name
Contact info
ID
Staff
Type
d
Typing_Speed
HR
OC
M
organize
N
Book
Cabinet
Shelf
noOfPages
noOfCopies
Title
Stored_Place
ID
N
publish
1
ID
Company_name
Publishing company
M
deals with
N
N
writes
1
N
contracts with
M
Ticket_Date
ID
Price
Ticket
N
Purchase
1
User
Return_Book_Date
Borrow_Date
M
borrows
N
Author
ID
Name
Email
Fine
ID
Name

SCHEMA


Ticket
ID
Ticket_Date
Price
User_id
User
ID
Name
Email
Fine
Borrows
User_id
Book_id
Borrow_Date
Return_Book_Date
Author
ID
Name
Publishing Company
ID
Company_name
Book
ID
Title
noOfPages
noOfCopies
Cabinet
Shelf
Author_id
Publishing_Company_id
Staff
ID
Name
Email
BirthDate
Salary
Type
Typing_Speed
Staff_Phones
Staff_id
S_Phone
Deals_With
HR_id
User_id
Organize
OC_id
Book_id

ASSUMPTIONS

Staff / HR / OC

1. Every **Staff** member has an ID, Name, Type, BirthDate, Salary, Contact info (email, phone), and Age.
2. Age is a **derived attribute** derived from BirthDate.
3. Staff is specialized into two subtypes:
   - **HR (Human Resources)** — has additional attribute Typing_Speed.
   - **OC (Organizing Committee)** — no extra attributes
4. The specialization between Staff and (HR, OC) is **disjoint (d)** — a staff member can only be **either HR or OC**, not both.
5. **HR staff** must **deal with** one or more **Users.**
6. **OC staff** must organize one or more **Books**.

Book

1. Each **Book** has ID, Title, noOfPages, noOfCopies, and a Stored_Place (Cabinet, Shelf).
2. A book must be **organized** by one or more **OC** members.
3. A book must be **written** by exactly one **Author**.
4. Each book must be **published** by exactly **one publishing company**.
5. A book may be **borrowed** by one or many **Users** — includes attributes Borrow_Date and Return_Book_Date.

Publishing Company

1. A **Publishing company** has an ID and Company_name.
2. A publishing company must **contract** with one or more **authors**.
3. A publishing company must **publish** one or more **books**.

Author

1. An **Author** has an ID and Name.
2. An author must **write** one or more **books**.
3. An author must **contract with** one or more **publishing companies**.

User

1. A **User** has an ID, Name, Email, and may have a Fine.
2. A user may **borrow** one or many **Books** — includes attributes Borrow_Date and Return_Book_Date.
3. A user must **purchase** at least one **Ticket.**

Ticket

1. Each **Ticket** has an ID, Ticket_Date, and Price.
2. Each ticket belongs to exactly **one user**.