

E-R Diagram >> Practice 1 (Banking Enterprise)

- ▶ The bank is organized into **branches**. Each branch is located in a particular **city** and is identified by **a unique name**. The bank monitors the **assets** of each branch.
- ▶ Bank **employees** are identified by their **employee-id** values. The bank administration stores the **name** and **telephone number** of each employee, the names of the **employee's dependents**, and the **employee-id number** of the employee's manager. The bank also keeps track of the employee's **start date** and, thus, **length of employment**.
- ▶ Bank **customers** are identified by their **customer-id** values. The bank stores each **customer's name**, and the **street** and **city** where the customer lives. **Customers may have accounts and can take out loans**. A customer may be associated with a particular banker, who may act as a **loan officer** or **personal banker** for that customer.
- ▶ **Accounts** can be **held by more than one customer**, and a customer can have more than one account. Each account is assigned a **unique account number**. The bank maintains a record of each **account's balance**, and the most **recent date on which the account was accessed** by each customer holding the account.
- ▶ A **loan originates at a particular branch and can be held by one or more customers**. A loan is identified by **a unique loan number**. For each loan, the bank keeps track of the **loan amount** and the **loan payments**. Although a loan **payment number** does not uniquely identify a particular payment among those for all the bank's loans, a payment number does identify a particular payment for a specific loan. The **date** and **amount** are recorded for each payment.

Construct an E-R Diagram for the bank enterprise.

E-R Diagram >> Practice 2 (Company Database)

- ▶ The company is organized into **departments**. Each department has a **unique name**, a **unique number**, and a particular **employee who manages the department**. We keep track of the **start date** when that employee began managing the department. A department may have several **locations**.
- ▶ A **department controls a number of projects**, each of which has a **unique name**, a **unique number**, and a **single location**.
- ▶ We store each **employee's name**, **social security number**, **address**, **salary**, **gender**, and **birth date**. An employee is assigned to one department but may work on several **projects**, which are not necessarily controlled by the same department. We keep track of the **number of hours** per week that an employee works on each project. We also keep track of the direct supervisor of each employee.
- ▶ We want to keep track of the **dependents** of each employee for insurance purposes. We keep each dependent's **first name**, **gender**, **birth date**, and **relationship** to the employee.

Draw the E-R Diagram.

E-R Diagram >> Practice 3 (Online Book Store Database)

- ▶ Every **book** has a **title**, **isbn**, **year** and **price**. The store also keeps the author and publisher for any book.
- ▶ For **authors**, the database keeps the **name**, **address** and **the url** of their homepage.
- ▶ For **publishers**, the database keeps the **name**, **address**, **phone number** and **the url** of their website.
- ▶ The store has several **warehouses**, each of which has a **code**, **address** and **phone number**. The **warehouse stocks several books**. A **book may be stocked at multiple warehouses**. (In previous sentence, we are not referring to a particular copy of the book. Consider for example “the complete book” for our course. This book may be stocked at multiple warehouses.) The database records the **number of copies** of a book stocked at various warehouses.
- ▶ The bookstore keeps the **name**, **address**, **email-id**, and **phone number** of its **customers**.
- ▶ A **customer owns several shopping basket**. A shopping basket is identified by a **basketID** and **contains several books**. Some shopping baskets may contain more than one copy of same book. The database records the **number of copies** of each book in any shopping basket.

Design an ER diagram for such a bookstore.

E-R Diagram >> Practice 4 (Blog Management System)

Construct an ER diagram according to the details provided below:

- ▶ The blog management system maintains each blog writer's unique email, name, encoded password, gender, date of birth, join date, length of employment and address. The address field consists of three components: postal code, city and street name. Every blog writer is hired by only one blog writer as his employer. The visitors may follow more than one blog writer.
- ▶ Each of the blogs has blog id, details, date, time and category. One blog may fall under several categories. Here blog id cannot uniquely identify a specific blog but blog id together with blog writer email can uniquely identify a specific blog. A blog writer may publish several blogs.
- ▶ The visitors can see all the blogs published by writers. Each visitor can comment more than one time in each blog and the system maintains the date, time, content of that blog comment. Visitors can also hit reactions (like/dislike) in more than one blogs. The system maintains unique visitor email, visitor name and encrypted password for each visitor.

E-R Diagram >> Practice 5 (League of Villains)

Consider the following Scenario:

The League of Villains is getting more and more prominent. To reduce the dominance of the villains, hero society is thinking of positioning heroes in regions. However they first need to design a database with the following conditions:

- ▶ Heroes have a unique name, a power, strength level and a rank. Villains also have properties similar to heroes. Also, each villain may have a boss who is also a villain himself.
- ▶ A hero is responsible for a certain region. A region has latitude, longitude, and population. A region can be terrorized by multiple villains. However, one villain does not terrorize more than a region.
- ▶ Heroes and villains often fight. Hero society needs to keep track of the dates and results of these fights. A hero and a villain may fight multiple times.

Design an ERD for the scenario.

E-R Diagram >> Practice 6 (Course Mgmt. System)

Consider the following scenario for Course Management System:

- ▶ The university stores all the student information that includes a unique student id, name, date of birth, address. Address is stored in the following three sections: street name, postal code and city.
- ▶ Each course is identified by its unique course code, trimester, course name and course content. One course is conducted by several faculties and a student can choose several courses in a single trimester.
- ▶ The university identifies each faculty through their unique employee id. Each faculty also has a particular room no, name, contact no, email and join date. Each faculty is associated with anonymous reviews of students. Each review consists of a review id, review details and datetime. The review id can't identify a particular review among all the reviews but the review id for a specific faculty can identify a particular review. Each student is also assigned to a specific faculty for advising purpose.

Design an ER Diagram for the scenario that satisfies all the given requirements.

E-R Diagram >> Practice 7 (Job Portal System)

Consider the following scenario for a Job portal:

- ▶ The job portal manages each user's profile where each user is represented by his or her name, unique email, address, date of birth, educational qualifications, job position and job experience. Both recruiters and job seekers are user and one recruiter can recruit more than one job seeker.
- ▶ The recruiters can post job openings to the job portal. The job portal keeps track of each posts date, time, contents, no of viewers. The system also keeps track of which job seeker is interested in which job posts.
- ▶ Each of the offices is maintained by their unique office id, name, address and contact no. Every user belongs to some offices as a recruiter or, an employee or, a follower. Each person can provide his or her anonymous review of offices. Each of the review contains review id, date, time, review details. The review id cannot uniquely identify a particular review but a review id together with an office id can uniquely identify a particular review.

Design and ER Diagram for the scenario that satisfies all the given requirements.