**A)Exercise 1:**

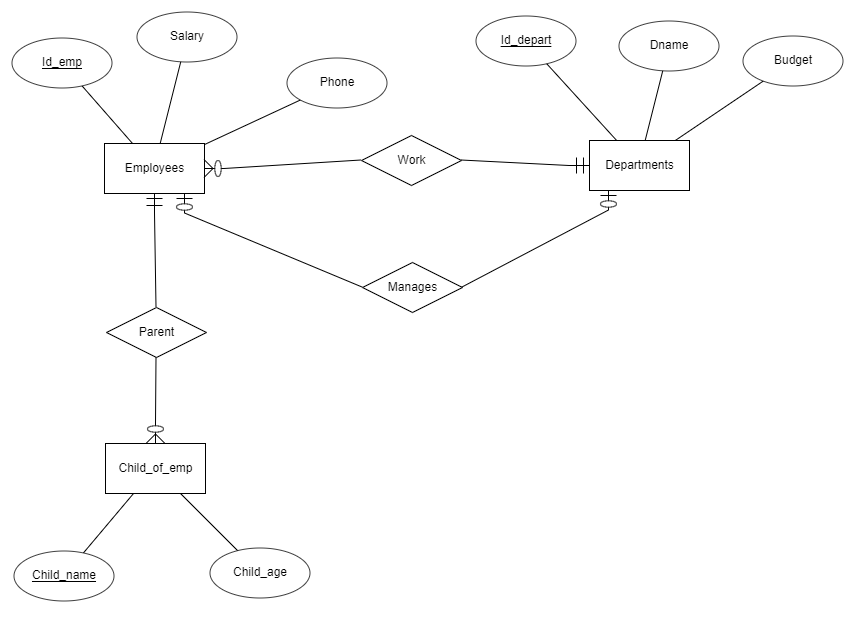
**Problem Description**:

* A **company database** needs to store information about **employees** (identified by ssn, with salary and phone as attributes), **departments** (identified by dno, with dname and budget as attributes), and **children of employees** (with name and age as attributes).
* Employees work in departments; each department is managed by an employee; a child must be identified uniquely by name when the parent (who is an employee; assume that only one parent works for the company) is known. We are not interested in information about a child once the parent leaves the company.

**Questions to answer**:

1. Draw an ER diagram that captures this information.
2. Convert from ER diagram to relational schema.

A1.



A2.

**Employees**

|  |  |  |  |
| --- | --- | --- | --- |
| Id\_emp | Salary | Phone | Id\_depart |

**Manages\_depart**

|  |  |
| --- | --- |
| Id\_depart | Id\_emp |

**Departments**

|  |  |  |
| --- | --- | --- |
| Id\_depart | Dname | Budget |

**Child\_of\_emp**

|  |  |  |
| --- | --- | --- |
| Child\_name | Child\_age | Id\_emp |

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**B) Exercise2:**

**Problem Description**:

Consider the following relations for a database that keeps track of student enrollment in courses and the books adopted for each course (Primary Key is mark post-fix with #):

STUDENT (SSN#, Name, Major, Bdate)

COURSE (Course#, Cname, Dept)

ENROLL (SSN#, Course#, Quarter, Grade)

BOOK\_ADOPTION (Course#, Quarter, Book\_ISBN#)

BOOK (Book\_ISBN#, Book\_Title, Publisher, Author)

**Questions to answer**:

Draw a relational schema diagram specifying the foreign keys for this schema.

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**STUDENT**

|  |  |  |  |
| --- | --- | --- | --- |
| SSN | Name | Major | Bdate |

**COURSE**

|  |  |  |
| --- | --- | --- |
| Course | Cname | Dept |

**ENROLL**

|  |  |  |  |
| --- | --- | --- | --- |
| SSN | Course | Quarter | Grade |

**BOOK\_ADOPTION**

|  |  |  |
| --- | --- | --- |
| Course | Quarter | Book\_ISBN |

**BOOK**

|  |  |  |  |
| --- | --- | --- | --- |
| Book\_ISBN | Book\_Title | Publisher | Author |