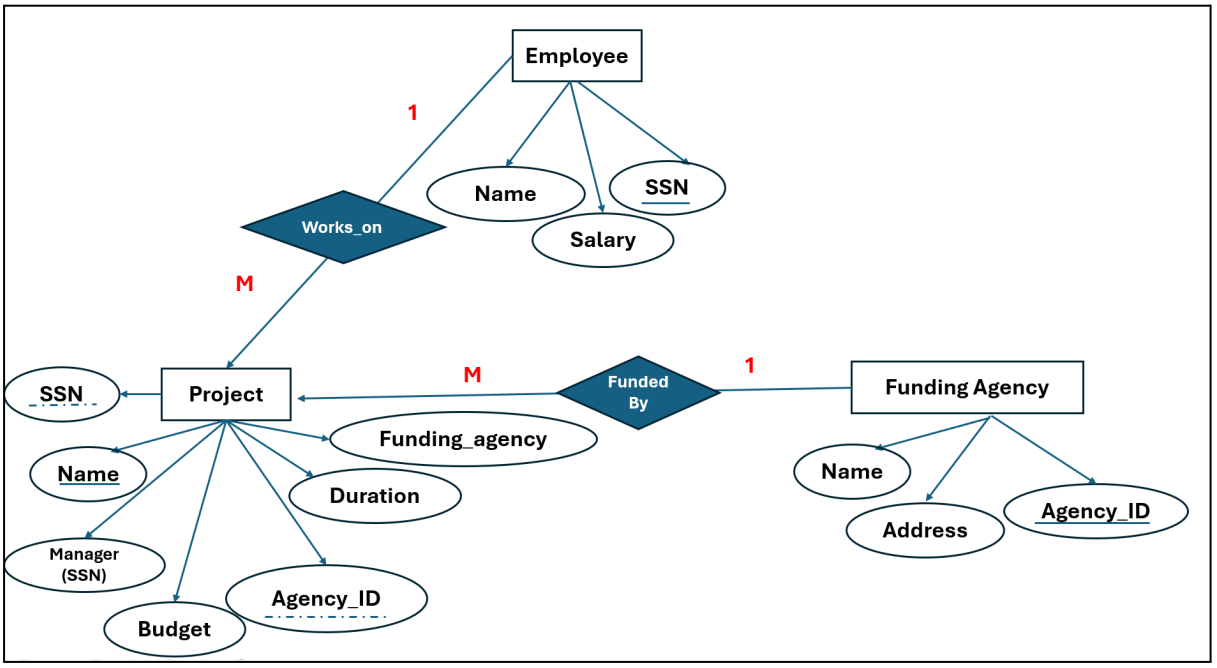
# Problem 1: Research Projects Database

Design an Entity-Relationship schema for a database of research projects. The database should contain the information about projects, which include their name, manager, budget, duration in years, and funding agency; employees, who have SSN, name, salary, and can work on multiple projects; and funding agencies, which have name and address. Each project is funded by a single agency. Project names are unique within an agency. An employee can be associated with several projects and managers are also employees. You can make any other additional assumptions that make sense in the real world.




### 1. Employee Table

```
CREATE TABLE Employee (
    SSN INT PRIMARY KEY,
    Emp_Name VARCHAR(50),
    Salary DECIMAL
);
```

### 2. FundingAgency Table

```
CREATE TABLE FundingAgency (
    Agency_ID INT PRIMARY KEY,
```

```
    Name VARCHAR(100),
    Address VARCHAR(255)
);
```

**3. Project Table**

```
CREATE TABLE Project (
    Project_ID INT PRIMARY KEY,
    Name VARCHAR(100),
    Duration INT,  -- Assuming duration in days/months
    Budget DECIMAL(12, 2),
    Agency_ID INT,
    FOREIGN KEY (Agency_ID) REFERENCES FundingAgency(Agency_ID),
);
```

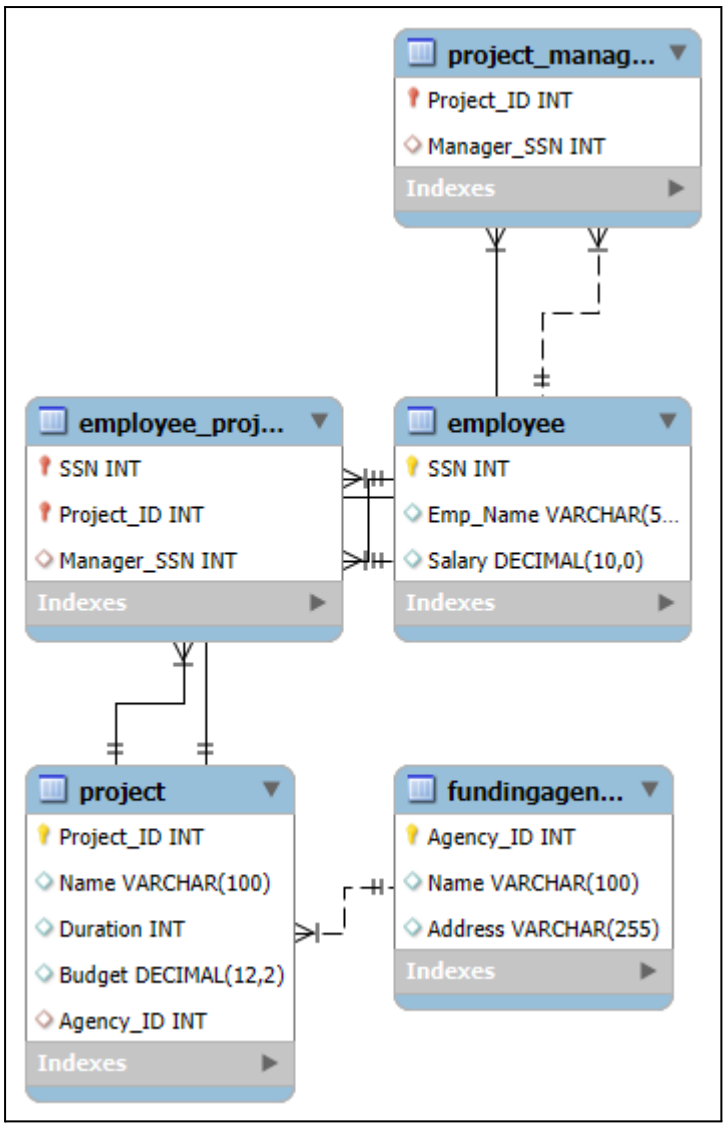
**4. Employee_Project Junction Table**

```
CREATE TABLE Employee_Project (
    SSN INT,
    Project_ID INT,
    Manager_SSN INT,
    PRIMARY KEY (SSN, Project_ID),
    FOREIGN KEY (SSN) REFERENCES Employee(SSN),
    FOREIGN KEY (Project_ID) REFERENCES Project(Project_ID),
    FOREIGN KEY (Manager_SSN) REFERENCES Employee(SSN)
);
```

**5. Project_Manager Table**

```
CREATE TABLE Project_Manager (
    Project_ID INT PRIMARY KEY,
    Manager_SSN INT,
    FOREIGN KEY (Project_ID) REFERENCES Project(Project_ID),
    FOREIGN KEY (Manager_SSN) REFERENCES Employee(SSN)
);
```

ER Diagram :


project_manag...
Project_ID INT
Manager_SSN INT
Indexes
employee_proj...
SSN INT
Project_ID INT
Manager_SSN INT
Indexes
employee
SSN INT
Emp_Name VARCHAR(5...
Salary DECIMAL(10,0)
Indexes
project
Project_ID INT
Name VARCHAR(100)
Duration INT
Budget DECIMAL(12,2)
Agency_ID INT
Indexes
fundingagen...
Agency_ID INT
Name VARCHAR(100)
Address VARCHAR(255)
Indexes