

# Participation 10.2

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## Employee

```
Employee(Ssn:char(11), Bdate:date, Fname:vchar(20), MInit:char(1), Lname:vchar(20),  
sex:vchar(6), Address:vchar(100), salary:integer, primary key(Ssn))
```

```
Supervision(supervisorSsn:char(11), employeeSsn:char(11), primary key(supervisorSsn,employeeSsn),  
foreign key(employeeSsn) references Employee)
```

```
Dependent(Ssn:char(11), Name:vchar(50), Sex:vchar(6), BirthDate:date,  
Relationship:vchar(20), primary key(Ssn, Name), foreign key(Ssn) references Employee)
```

We then combine `Employee` and `Supervision` because of the one to many relationship

```
EmployeeWithSupervision(Ssn:char(11), SupervisorSsn:char(11), Bdate:date, Fname:vchar(20),  
MInit:char(1), Lname:vchar(20), sex:vchar(6), Address:vchar(100), salary:integer, primary  
key(Ssn), foreign key(Ssn) references employee)
```

We will then combine `Dependent` to `Employee` because of the one to many relationship

```
EmployeeWithDependent(Ssn:char(11), DependentName:vchar(50), Bdate:date, Fname:vchar(20),  
MInit:char(1), Lname:vchar(20), sex:vchar(6), Address:vchar(100), salary:integer,  
DependentSex:vchar(6), DependentBirthDate:date, DependentRelationship:vchar(20), primary  
key(Ssn, DependentName))
```

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## Department

```
Department(Name:varchar(50), Number:integer, Locations:varchar(50), primary key(Name,Number))
```

```
Controls(ProjName:varchar(50), ProjNumber:integer, DeptName:varchar(50), DeptNumber:integer,  
primary key(ProjName, DeptName, ProjNumber, DeptNumber) foreign key(ProjName, ProjNumber)  
references Project)
```

We will then combine `Department` and `Controls` because of the one to many relationship.

```
DepartmentControl(ProjName:varchar(50), ProjNumber:integer, DeptName:varchar(50),  
DeptNumber:integer, Locations:varchar(50), primary key(ProjName, ProjNumber, DeptName,  
DeptNumber), foreign key(ProjName, ProjNumber) references Project)
```

## Next, we look at the relations `Manages` and `Works_For`

`Manages` :

We will combine the relation `Manages` with entity `Department` due to the total participation on the one-to-one.

```
DepartmentManages(DeptName:varchar(50), DeptNumber:integer, Ssn:char(11), StartDate:date, primary  
key(DeptName, DeptNumber), foreign key(Ssn) references Employee)
```

`Works_For` :

```
Works_For(DeptName:varchar(50), DeptNumber:integer, Ssn:char(11), primary  
key(DeptName, DeptNumber), foreign key(Ssn) reference Employee)
```

We will combine the relation `Works_For` with entity `Department` due to the total participation on the one-to-many.

```
DepartmentEmployee(Name:varchar(50), Number:integer, Locations:varchar(50), Ssn:char(11), primary  
key(Name, Number, Ssn), foreign key(Ssn) references Employee)
```

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Thus the Relational Model using the merge rule is simplified to the below:

```
Project(Name:varchar(20), Number:integer, Location:varchar(50), primary key(Name, Number))
```

```
SupervisorToEmployee(SupervisorSsn:char(11), EmployeeSsn:char(11), Bdate:date, Fname:varchar(20),  
MInit:char(1), Lname:varchar(20), sex:varchar(6), Address:varchar(100), salary:integer, primary  
key(SupervisorSsn), foreign key(EmployeeSsn) references employee)
```

```
EmployeeWithDependent(Ssn:char(11), DependentName:varchar(50), Bdate:date, Fname:varchar(20),  
MInit:char(1), Lname:varchar(20), sex:varchar(6), Address:varchar(100), salary:integer,  
DependentSex:varchar(6), DependentBirthDate:date, DependentRelationship:varchar(20), primary  
key(Ssn, DependentName))
```

```
DepartmentProjectControl(ProjName:varchar(50), ProjNumber:integer, DeptName:varchar(50),  
DeptNumber:integer, Locations:varchar(50), primary key(ProjName, ProjNumber, DeptName,  
DeptNumber), foreign key(ProjName, ProjNumber) references Project)
```

```
DepartmentManages(DeptName:varchar(50), DeptNumber:integer, Ssn:char(11), StartDate:date, primary  
key(DeptName, DeptNumber), foreign key(Ssn) references Employee)
```

```
DepartmentEmployee(Name:varchar(50), Number:integer, Locations:varchar(50), Ssn:char(11), primary  
key(Name, Number, Ssn), foreign key(Ssn) references Employee)
```

```
Works_On(Ssn:char(11), Name:varchar(20), Hours:float, primary key(Ssn), foreign key(Name)  
references Project)
```