

## Hands-on Activity 9.1: Connectivities and Cardinalities

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**Section:** CPE 21 S3  
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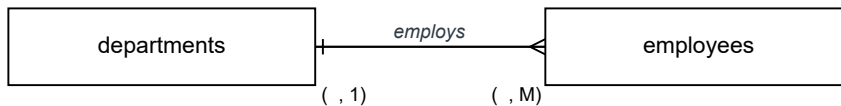
Database Management System

### Objectives:

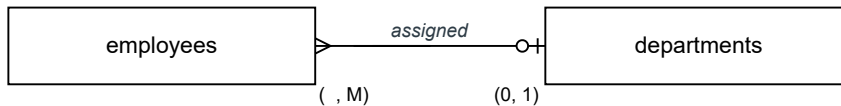
- Follow the Business Rules described by the instructions
- Perform the proper entity relationship connectives discussed on previous discussions.

**Instructions:** Use the following business rules to create a Crow's Foot ERD. Write all appropriate connectivities and cardinalities in the ERD. (35 points)

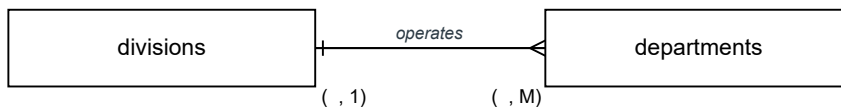
1. A department employs many employees, but each employee is employed by only one department.



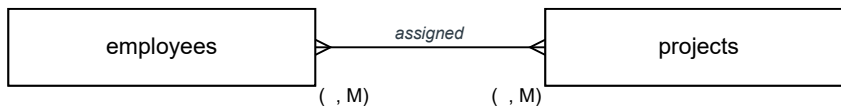
2. Some employees, known as "rovers," are not assigned to any department.



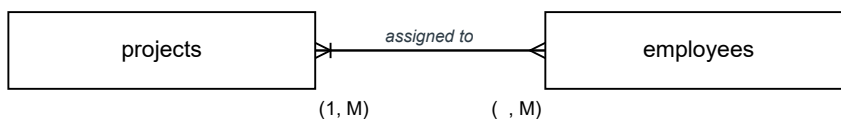
3. A division operates many departments, but each department is operated by only one division.



4. An employee may be assigned many projects, and a project may have many employees assigned to it.



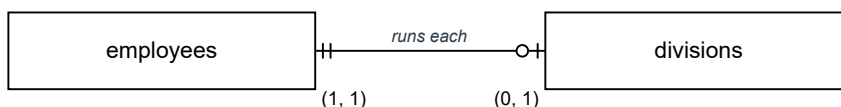
5. A project must have at least one employee assigned to it.



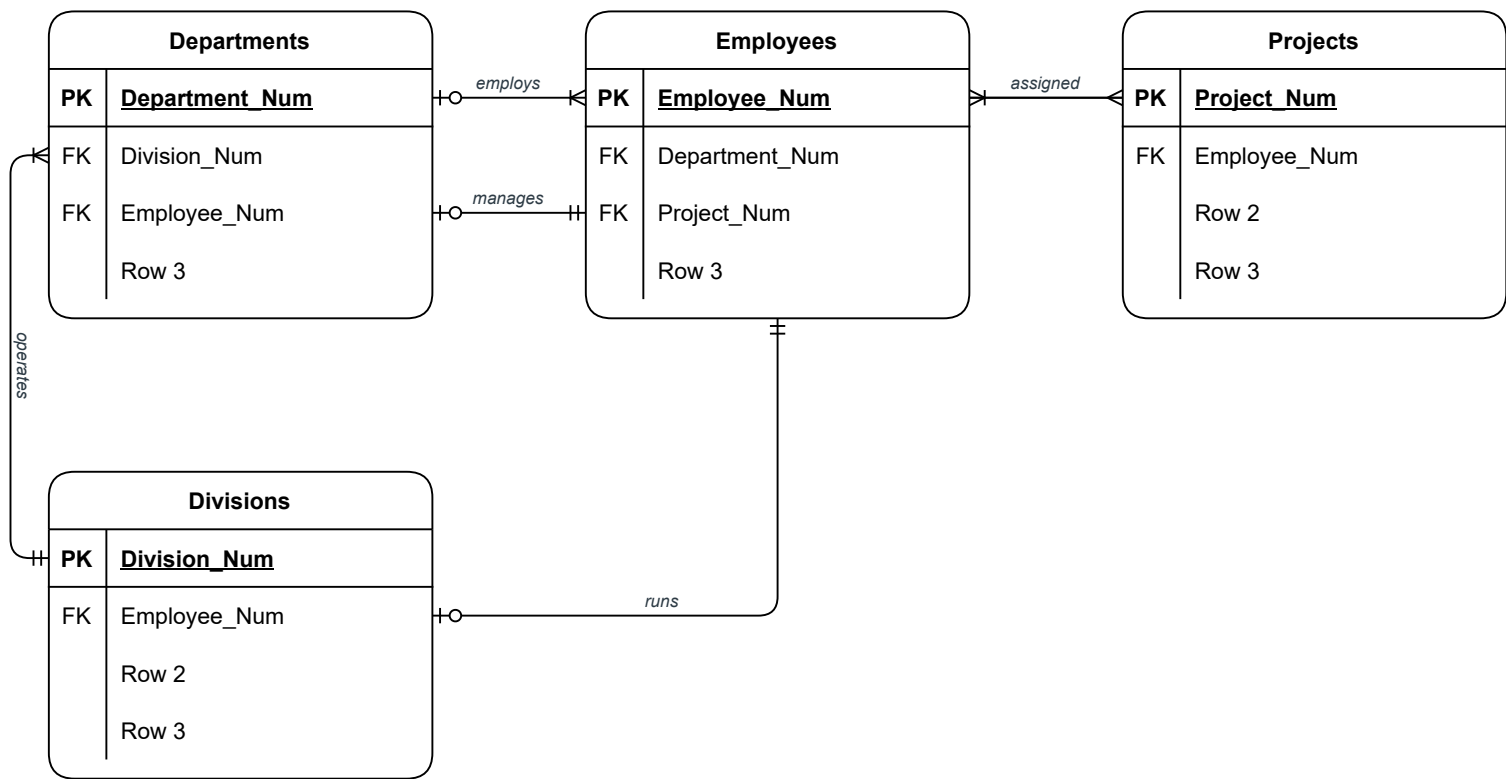
6. One of the employees manages each department, and each department is managed by only one employee.



7. One of the employees runs each division, and each division is run by only one employee.



ENTITY RELATIONSHIP DIAGRAM



**Observation:** Entity Relationship Diagram that combines the relationships that must be present based from the 7 given business rules. The departments employs one to many employees. The department is operated by one and only one division. An employee can have no department considering the presence of "rovers", or have one department in which they are employed or managing it. An employee may have many projects while a project must have one to many employees assigned to it. One of the employees may or may not run a division since the division requires only one employee in order for it to run. A division can manage one or more departments.