**Answers for Tutorial-5**

**Ans.1**

π\_emp\_id, first\_name, last\_name, salary, department\_id(σdepartment\_name='Engineering'(employees ⋈ departments))

**Ans.2**

Projection to display only the first names and salaries of all employees :

π\_first\_name, salary(employees)

**Ans.3**

Find employees who are managers:

π\_emp\_id, first\_name, last\_name, salary, department\_id(employees ⋈ σ\_manager\_id=emp\_id(departments))

**Ans.4**

Retrieve employees earning a salary greater than 60000:

σ\_salary > 60000(employees)

**Ans.5**

Join employees with their respective departments:

employees ⋈ departments

**Ans.6**

Cartesian product between employees and projects:

employees × projects

**Ans.7**

Find employees who are not managers:

π\_emp\_id, first\_name, last\_name, salary, department\_id(employees - (employees ⋈ σ\_manager\_id=emp\_id(departments)))

**Ans.8**

Natural join between departments and projects:

departments ⋈ projects

**Ans.9**

Project the department names and locations from departments table:

π\_department\_name, location(departments)

**Ans.10**

Retrieve projects with budgets greater than 100000:

σ\_budget > 100000(projects)

**Ans.11**

Find employees who are managers in the 'Sales' department:

π\_emp\_id, first\_name, last\_name, salary, department\_id(σ\_department\_name='Sales'(employees) ⋈ σ\_manager\_id=emp\_id(departments))

**Ans.12**

Union operation between two sets of employees from the 'Engineering' and 'Finance' departments: π\_emp\_id, first\_name, last\_name, salary, department\_id(σ\_department\_name='Engineering'(employees)) ∪ π\_emp\_id, first\_name, last\_name, salary, department\_id(σ\_department\_name='Finance'(employees))

**Ans.13**

Find employees who are not assigned to any projects:

π\_emp\_id, first\_name, last\_name, salary, department\_id(employees - (employees ⋈ projects))

**Ans.14**

Join operation to display employees along with their project assignments:

employees ⋈ projects

**Ans.15**

Find employees whose salaries are not within the range 50000 to 70000:

π\_emp\_id, first\_name, last\_name, salary, department\_id(σ\_salary < 50000 ∨ salary > 70000(employees))