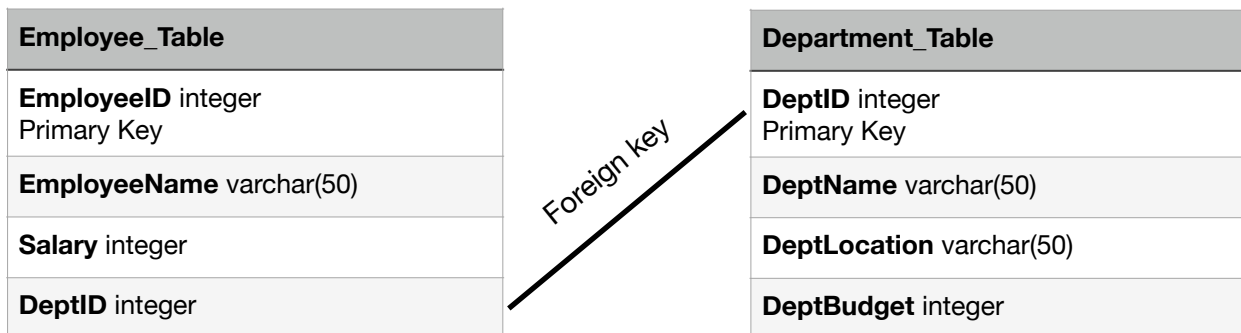# Database Normalisation

The database in question is poorly organised, with redundant data and inconsistent dependencies throughout. For example, if the budget is changed for the Sales department it would have to be updated three times in this table, likewise the budget for R&D would need to be updated four times. Moreover, it would not be possible to add a new department without first adding a new employee; a new entry cannot be added without an employeeID, as it is the primary key. Logically, department details should not depend upon employee details and vice versa.

For the database to be properly normalised there should be two tables; an employee table with columns for EmployeeID, EmployeeName, Salary and DeptID, and a department table with columns for DeptID, DeptName, DeptLocation, and DeptBudget, with the employee table referencing the department table on the on the deptID column through the use of a foreign key. An example of a normalised form of this table can be seen below.

Employee_Table
EmployeeID integer Primary Key
EmployeeName varchar(50)
Salary integer
DeptID integer

Foreign key

Department_Table
DeptID integer Primary Key
DeptName varchar(50)
DeptLocation varchar(50)
DeptBudget integer

FOREIGN KEY REFERENCES DepartmentTable(DeptID)

EmployeeID*	EmployeeName	Salary	DeptID
100	Sean	35,000	1
101	Mary	36,000	1
102	John	40,000	1
104	Albert	55,000	2
105	Conor	52,000	2
106	Maeve	50,000	2
107	Tom	50,000	2
108	Alice	44,500	3

DeptID*	DeptName	DeptLocation	DeptBudget
1	Sales	Dublin	750,000
2	R&D	Galway	1,500,000
3	HR	Limerick	250,000