

Example of a relational database

Assume that we wish to maintain a database that contains the flight information of an airline during one particular year. This database maintains information about flights, pilots, and assignments of pilots to flights. Each flight has a unique flight number, a departure city, a destination city, a departure time, and an arrival time. Each pilot has a unique company ID, a name, and an experience level. Pilots are assigned to fly certain flights on particular days of the year.

1. *Using this description of the database, identify the data objects and a relationship that need to be maintained in the database.*

Data objects: flights and pilots

Relationship: assigned-to, i.e, pilots are assigned to flights.

2. *For each data object specify its relevant attributes and identify its primary key.*

Flight: flight number, departure city, destination city, departure time, and arrival time. The primary key is the flight number attribute.

Pilot: company ID, name, and experience level. The primary key is the company ID attribute.

3. *For the relationship, determine its attribute(s) and identify its foreign keys.*

Assigned-to: flight number, company ID, and date. The key is of Assigned-to is (flight number, company ID)

Assigned-to as two foreign keys. The Assigned-to.(flight number) attribute is a foreign key referencing the Flight.(flight number) key attribute. And, the Assigned-to.(company ID) attribute is a foreign key referencing the Pilot.(company ID) key attribute.

4. Use relational tables to represent the data objects and relationships with their attributes and constraints.

Flight

<u>flight number</u>	dept. city	dest. city	dept. time	arrival time
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Pilot

<u>company ID</u>	name	experience level
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Assigned-to

<u><u>company ID</u></u>	<u><u>flight number</u></u>	date
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Primary keys are underlined ones. Foreign keys are underlined twice.

The foreign key company ID in the Assigned-to table references the primary key company id in the Pilot table.

The foreign key flight number in the Assigned-to table references the primary key flight number in the Flight table.