ID	*name*	*salary*
10101	Srinivasan	65000
12121	Wu	90000
15151	Mozart	40000
22222	Einstein	95000
32343	El Said	60000
33456	Gold	87000
45565	Katz	75000
58583	Califieri	62000
76543	Singh	80000
76766	Crick	72000
83821	Brandt	92000
98345	Kim	80000

Figure 2.11 Result of $\Pi_{ID,\ name,\ salary}(instructor)$.

The basic version of the project operator $\Pi_L(E)$ allows only attribute names to be present in the list L. A generalized version of the operator allows expressions involving attributes to appear in the list L. For example, we could use:

$$\Pi_{ID,name,salary/12}(instructor)$$

to get the monthly salary of each instructor.

2.6.3 Composition of Relational Operations

The fact that the result of a relational operation is itself a relation is important. Consider the more complicated query "Find the names of all instructors in the Physics department." We write:

$$\Pi_{name}\ (\sigma_{dept\_name = \text{"Physics"}}\ (instructor))$$

Notice that, instead of giving the name of a relation as the argument of the projection operation, we give an expression that evaluates to a relation.

In general, since the result of a relational-algebra operation is of the same type (relation) as its inputs, relational-algebra operations can be composed together into a **relational-algebra expression**. Composing relational-algebra operations into relational-algebra expressions is just like composing arithmetic operations (such as $+$, $-$, $*$, and $\div$) into arithmetic expressions.

2.6.4 The Cartesian-Product Operation

The **Cartesian-product** operation, denoted by a cross ($\times$), allows us to combine information from any two relations. We write the Cartesian product of relations r_1 and r_2 as $r_1 \times r_2$.