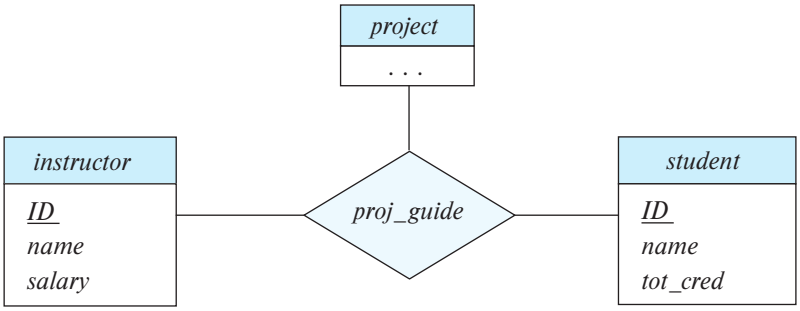

Figure 6.6 E-R diagram with a ternary relationship *proj_guide*.

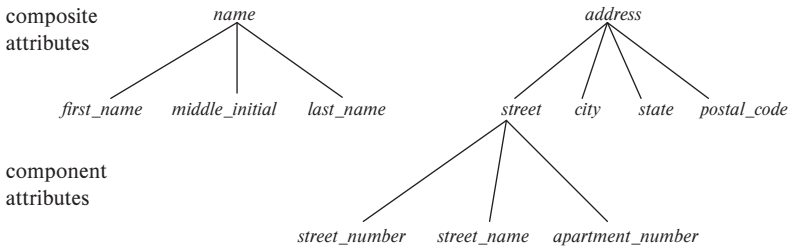

Figure 6.7 Composite attributes instructor *name* and *address*.

An attribute, as used in the E-R model, can be characterized by the following attribute types.

- **Simple** and **composite** attributes. In our examples thus far, the attributes have been **simple**; that is, they have not been divided into subparts. **Composite** attributes, on the other hand, can be divided into subparts (i.e., other attributes). For example, an attribute *name* could be structured as a composite attribute consisting of *first_name*, *middle_initial*, and *last_name*. Using composite attributes in a design schema is a good choice if a user will wish to refer to an entire attribute on some occasions, and to only a component of the attribute on other occasions. Suppose we were to add an address to the *student* entity-set. The address can be defined as the composite attribute *address* with the attributes *street*, *city*, *state*, and *postal_code*.[1] Composite attributes help us to group together related attributes, making the modeling cleaner.

  Note also that a composite attribute may appear as a hierarchy. In the composite attribute *address*, its component attribute *street* can be further divided into *street_number*, *street_name*, and *apartment_number*. Figure 6.7 depicts these examples of composite attributes for the *instructor* entity set.

[1] We assume the address format used in the United States, which includes a numeric postal code called a zip code.