become primary key is arbitrary; however, it is usually better to choose a primary key with a single attribute or a small number of attributes.

Another constraint on attributes specifies whether null values are or are not permitted. For example, if every STUDENT tuple must have a valid, non-null value for the Name attribute, then Name of STUDENT is constrained to be NOT NULL.

7.2.3 Relational Databases and Relational Database Schemas

So far, we have discussed single relations and single relation schemas. A relational database usually contains many relations, with tuples in relations that are related in various ways. In this section we define a relational database and a relational database schema. A **relational database schema** S is a set of relation schemas $S = \{R_1, R_2, \ldots, R_m\}$ and a set of **integrity constraints** IC. A **relational database state**[6] DB of S is a set of relation states $DB = \{r_1, r_2, \ldots, r_m\}$ such that each r_i is a state of R_i and such that the r_i relation states satisfy the integrity constraints specified in IC. Figure 7.5 shows a relational database schema

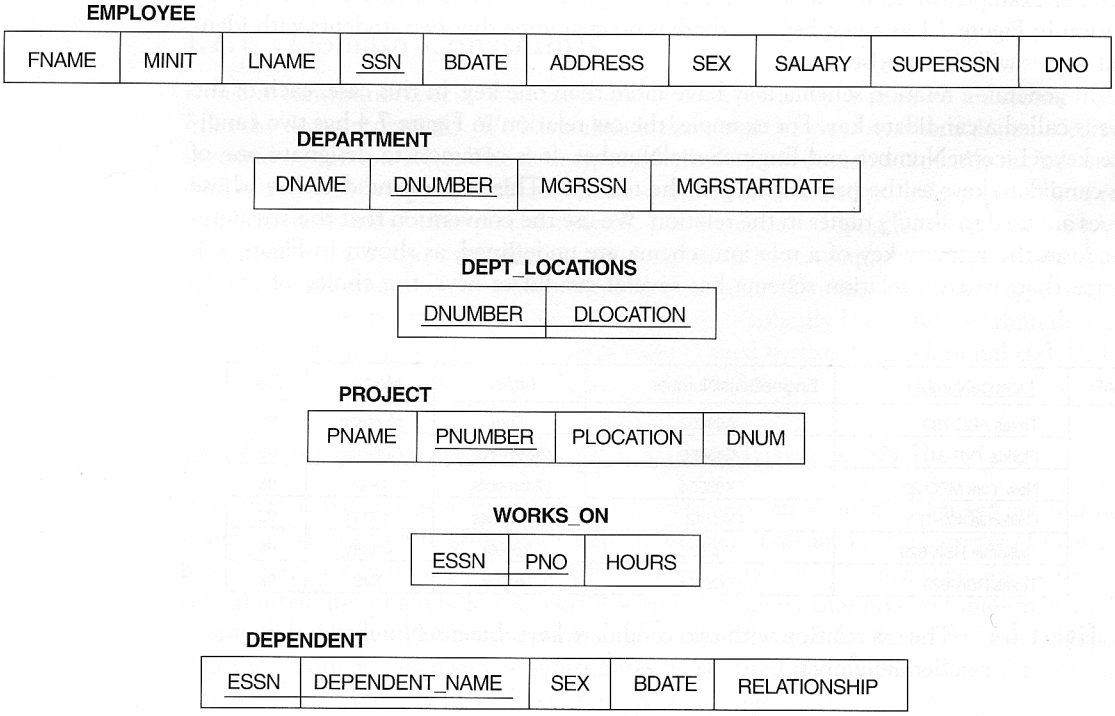

Figure 7.5 Schema diagram for the COMPANY relational database schema; the primary keys are underlined.

6. A relational database *state* is also called a relational database *instance*.