Lab 2

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February 7, 2015

2: Explain the distinctions among the terms primary key, candidate key, and superkey.

> **Solution:** Keys are a vital part of the structural layout of relational databases. They provide identification for unique tables. The *primary key* is the key used as the main reference key for the table. The primary key must contain unique values, can't be null and must uniquely identify each record in the table. The primary key is a type of *candidate key*, which are superkeys that do not contain any redundant attributes (minimal superkeys). Every table must have at least one candidate key. The candidate key is a subset of the *superkey* (superset of a key), which is just any combination of fields in a table that uniquely identifies each record within that table.

3: Data type short essay

> One example of a table might be **Book**. The book table may include the following fields: **Name**, **ID**, **Author**, **Genre**. Name, Author, and Genre would be VARCHAR data types, and all three are nullable for various reasons; all three can be *value unknown* or *value withheld*. ID would be of the INT data type and would not be nullable; every entry in the database must have an ID.

4: Relational "Rules"

1. First Normal Form (1NF): Basic rules for an organized database. The database should have well-defined data items, organized into columns (atomic values). There cannot be any repeating groups of data, and there must be a primary key. By eliminating repeating groups, 1NF is more flexible than 0NF while being easier to use when inserting and reading data since every type of data element has only one column and every column has only one piece of data for each record.

2. Access Rows by Content Only: The information for this was limited, but from what I could gather, database rows are designed to be very difficult to access by reference, making accessing by content to be the more viable choice of action. Accessing by reference causes confusion and may produce unexpected results when it comes to database rows.

3. All Rows Must be Unique: This rule eliminates the redundancy that is the bane of all database systems. Redundancy promotes confusion in that if someone is trying to access a certain data element, they may get two or more results as an output. If every row contained unique data elements, this would not be a problem.