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## Lab 2

2.

Now that we've jumped into SQL coding we can create and organize our databases, however, there are a few terms that we must understand first. These terms are similar and can be very easy to get confused with, but they are integral to understanding to make functional and useful databases. The terms that I'm referring to are the terms primary key, candidate key, and superkey. To define these we should move in hierarchical order, the superkey would be at the top because it's defined as any field or set of fields that uniquely identify every row in a table. The candidate key is defined as a minimal superkey which in other words means it's the minimal amount of fields that can be selected to uniquely identify a table. The primary key is the chosen candidate key, meaning that it's one of the candidate keys that can still be used to uniquely call the table.

3.

The databases that we are going to be creating in SQL have different data types relating to the types of data stored within a field of a data table. The three main data types are numeric, string, and then there's even date/time. The three data types will all interact differently with each other and are all dependent on their contents. Let's say I wanted to create a table with a list of ski mountains on the east coast. I would want many different categories to hold different information

about the ski mountain, for example, I would probably want categories to hold information for mountain height from base to peak, elevation at the base above sea level, elevation at the peak above sea level, ski trails, the total amount of ski trails, ski lifts, the total amount of ski lifts, skiable peaks, the total amount of skiable peaks, the total amount of lodges, and whatever other categories I would need to input information into. Each of these categories would need to have different data types depending on the information that they contain, whether it be numerical or alphabetic. For example, if we look at the field skiable peaks we would be inputting the names of the peaks that have lifts and trails to be skied, so for names, we would want this field to be containing a string data type because this tells the database that alphabetical characters will be stored here. If we were to look at a different category such as the mountain height category we would have to use a numeric data type because the height of the mountain would be stored in several feet, or miles, or something else numeric. The final data type that can be contained in the fields is date/time information, so if I wanted to keep track of temperatures of the mountain at 8 am every day of the week, then the date and time data type would be used to store this data because I would need to store both numbers and letters in this field to represent dates and times. Depending on the kind of data being stored, the data type of the field must change to indicate the information's context.

4.

The “first normal form” rule says “there can be no multi-valued attributes or values with internal structure at any intersection of a row and a column in a table”. In other words, there can't be any field that is the called the same as another in the same table in the same set of records. The second rule is the “access rows by content only” rule meaning that we can only

locate data by asking what's in the position, we cannot ask for information specifically. The third rule is the "all rows must be unique" rule, which means that each row of fields must have a unique name within it's table.