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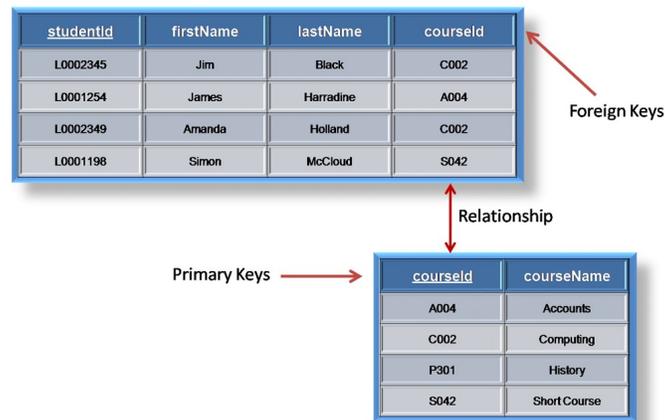ITS312: Database Designs

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Key Concepts

- **Data Redundancy:** duplication of data; non database systems maintain separate copies of data for each application; can lead to data inconsistency as there are multiple mismatching copies of the same data.

- **Data Inconsistency:** multiple mismatching copies of the same data; a situation where there are multiple tables within a database that deal with the same data but may receive it from different inputs; provides incorrect or conflicting information.

- **Data Sharing:** the process of making the same data resources available to multiple applications, users, or organizations; allows existing applications to share data within a database and allows new applications to be developed to operate against the same stored data.

- **Relational Database:** a database structured to recognize relations among stored items of information; when data is stored in multiple tables that are linked by a common field.

- **Table:** database objects that contain all the data in a database; a dataset that is organized into rows and columns.

- **Row:** (aka record) a single group of related data within a table arranged horizontally

- **Column:** a single group of related data within a table arranged vertically

- **Primary Key:** 1 or more attributes that create a unique key; uniquely identifies the record of the table.

- **Composite Key:** primary key that consists of more than one attribute; a combination of two or more columns.

- **Foreign Key:** an attribute (possibly composite) in relation that serves as the primary key

of another relation; a field that references the primary key of another table.

- **Data Structure:** Data is organized in the form of tables (rows and columns); a data organization, management, and storage format that is usually chosen for efficient access to data.

- **Data Manipulation:** Powerful operations (SQL); changing or altering data to make it more legible and organized.

- **Data Integrity:** The model includes mechanisms to specify rules (business) that maintain the integrity of data when they are manipulated.