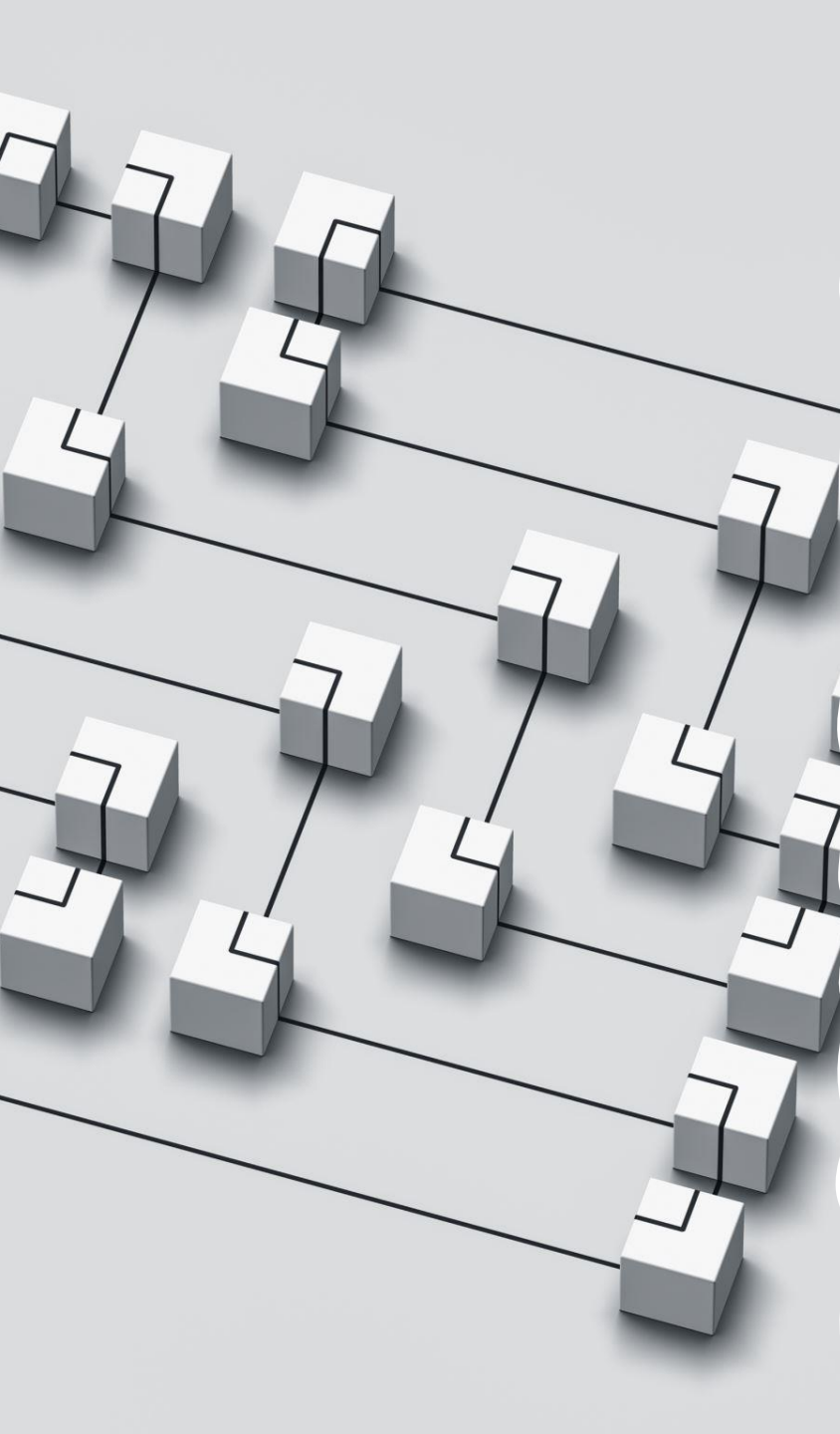# Building Database using Microsoft Access

# Introduction

- A database is a collection of information that is related. Access allows you to manage your information in one database file.

**Have you ever used a database?**

- Databases store all kinds of data.

- Databases are either low-tech (manual) or high-tech (electronic).

- Databases are highly structured and organized.

- Databases are somewhat analogous to multiple spreadsheets that are linked together.

- Databases are designed to allow easy extraction and use of the stored data.

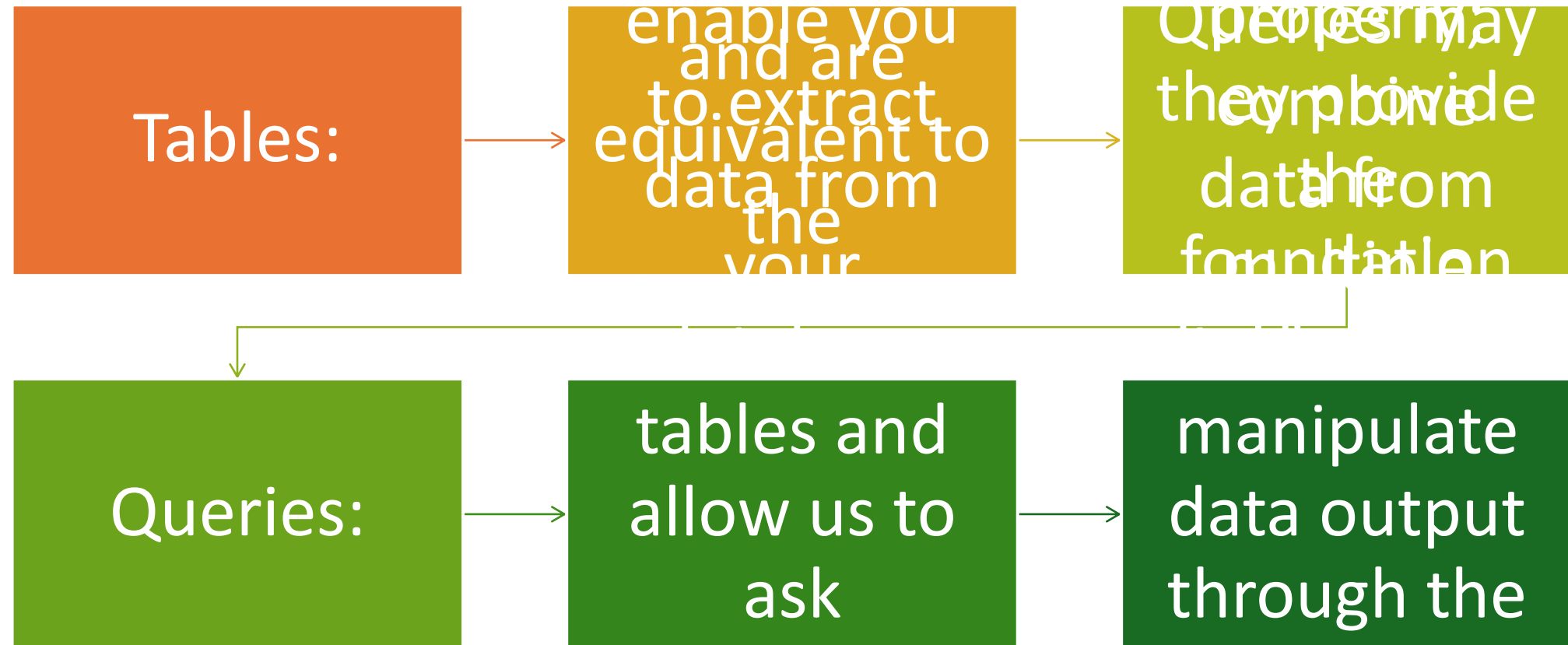# Major Objects in Microsoft Access

Tables

Queries

Forms

Reports

Macros

# Major Objects in Microsoft Access

Tables:

enable you and are to extract equivalent to data from the your

Queries may they provide data the from form title

Queries:

tables and allow us to ask

manipulate data output through the

# Major Objects in Microsoft Access

**Forms:**
are based on
tables or
queries,
and they are

**Reports:**
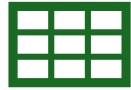allow you to
print data based
on
queries/tables

**Macros:**
are small
programs that
are build into
Microsoft

# Designing a table

**Do not store redundant data in the databaase tables.**

**Do not store calculated or derived data in database tables.**

Ensure that data are stored in their smallest parts in the table.

Reporting needs should determine the data stored in the tables.

First, you can always build a query to generate a calculated value instead of having to store it in a table.

Second, is to create a field in the table with the Calculated data type.

# Building a Table

- Tables are composed of **fields** (vertical columns) and **records** (horizontal rows), and they are used to store data in a highly structured and organized format.

- Each field is assigned a name that explains the type of data stored in that column.

    - E.g: In a table storing branch address for a company, we find details like Branch Name, Address, City, State, Zip, and Phone. If there are 30 branches across the country, how many fields and how many records do we have?
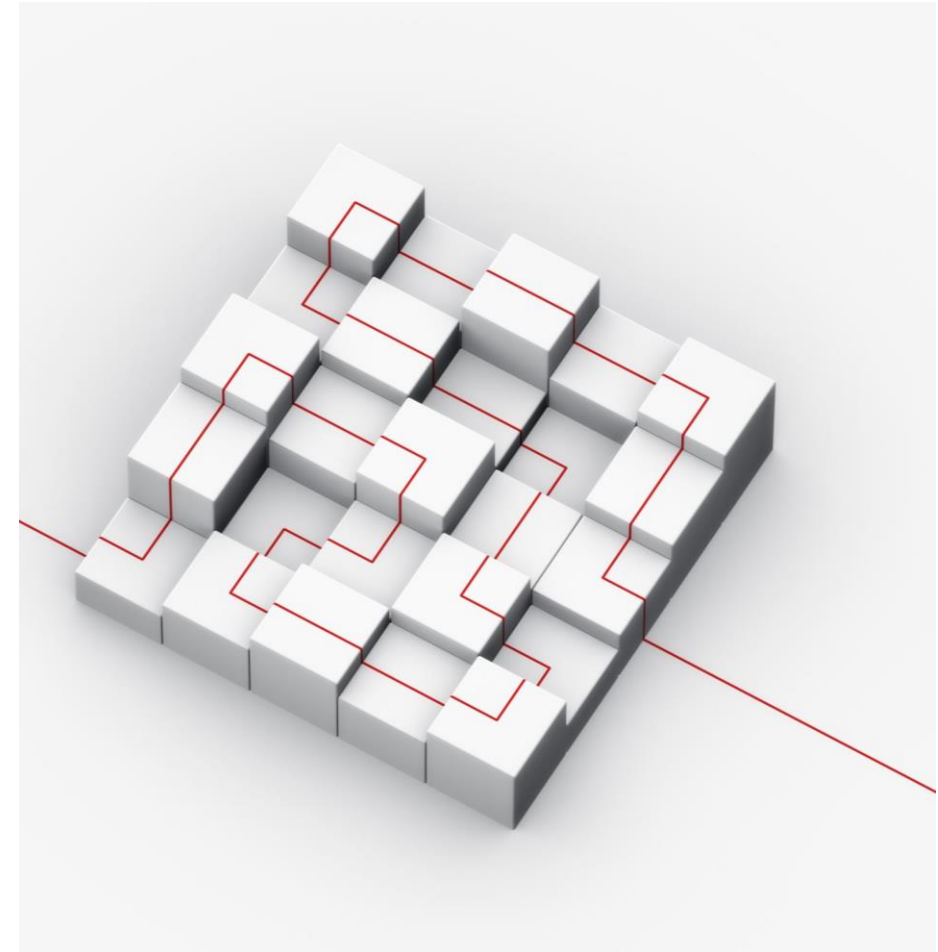
# Building a Table (Contd.)

- You can examine a table in Microsoft Access either in the **Datasheet View** or the **Design View**

- **Datasheet View:** is used to enter, delete, sort, format, filter, find, and summarize the data in the Datasheet View.

- **Design View:** is used to modify the fields, their data types, and their properties.

- A **data type** defines the type of the data that are going to be stored in that particular field. The valid data types in Microsoft Access databases are Short Text, Long Text, Number, Date/Time, Currency, AutoNumber, Yes/No, OLE Object, Hyperlink, and Attachment. Calculated and Lookup Wizard are two special data types that are also valid.
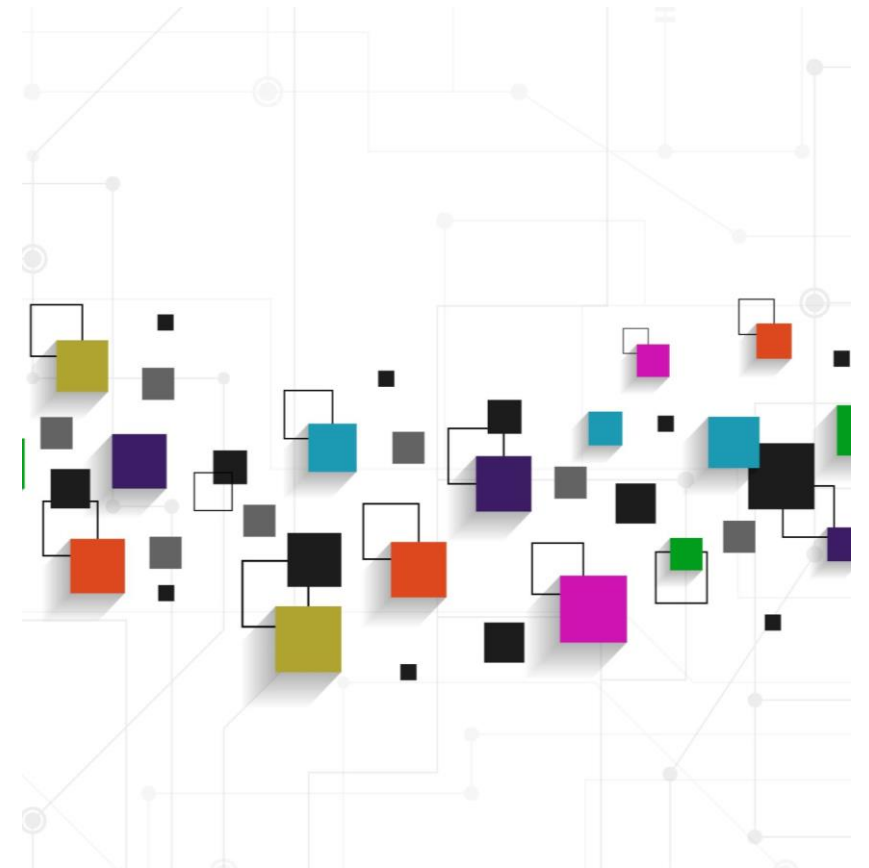
# Primary Key

- A **primary key** is a field or combination of fields that uniquely identifies a record in a table. **Every table in a database must have a primary key established.**

- Let us consider an example of a database table containing a list of vehicles registered for shuttle in University of Ibadan. The fields in the table are VIN, Make, Model, Color, LicensePlate, LicenseState, RegistrationDate, and VehicleType, and each record in the table is a separate vehicle. Given this example, the following are three ways you can set a primary key in the table.

- 1. **Use an existing field that uniquely identifies each record in the table.**
    - Example: Use Vehicle Identification Number (VIN).

- 2. **Create a new field to act as the primary key and assign it the AutoNumber data type.**
    - Example: Add a field named VehicleID and set the data type to AutoNumber.

- 3. **Combine multiple fields to create a concatenated primary key.**
    - Example: Use both LicensePlate and LicenseState as a concatenated key.

At least one of these three approaches can always be used for establishing a primary key in any table you encounter. The easiest method is to add a new field to the table and set it to the AutoNumber data type. This guarantees a primary key field every time, however, this might not be suitable all the time.

# Other Necessary Information

**Normaliz ation**
Ensure tables are normalize d to at normalize d to at

**Data Validatio n**
Impleme nt data validation rules to

**Security**
Set up user roles and permissio

**Backups**
Regularly back up the database

**Documen tation**
Maintain documen tation on the

# Practical

- Group 1: Academy Database
- Group 2: Restaurant Database
- Group 2: Hotel Database