Grade 10

Worksheet no.1

1. Database Basics

- **Database**: A structured collection of data.

- **Table**: Stores data in rows and columns.

- **Record**: A single row in a table.

- **Field**: A column in a table representing one type of data.

- **Primary Key**: A unique identifier for each record.

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2. Table Design

- Define **field names** and **data types** (Text, Number, Date/Time, Currency, Yes/No).

- Set **field size**, **input masks**, and **validation rules**.

  * What Is an Input Mask?

  An **input mask** is a string of characters that defines a pattern for data entry. It guides users to enter data in a specific format.

  For example:

- A phone number mask might look like: (999) 000-0000

- A date mask might look like: 00/00/0000

* What Is a Validation Rule?

A validation rule is a condition that data must meet before it can be accepted into a field or record. If the data doesn't meet the rule, Access displays a validation message.

Common Validation Rule Examples

Rule	Description	Example
>100	Value must be greater than 100	For a price field
<Date()	Date must be in the past	For birthdate
Between 1 And 10	Value must be between 1 and 10	For rating or score
Like "J*"	Text must start with "J"	For names
Is Null	Field must be empty	For optional fields

3. 🔗 Relationships

- Link tables using **foreign keys**.
- Enforce **referential integrity** to maintain consistency.
- Relationship types:
  - One-to-One
  - One-to-Many (most common)
  - Many-to-Many (requires junction table)

* What Is a Foreign Key?

  - A foreign key is a field in one table that refers to the primary key in another table. It creates a relationship between the two tables, allowing you to connect related data.

4. 🔍 Queries

- Use **SELECT queries** to extract data.

- Apply **criteria** using:

  - Comparison operators: =, >, <, >=, <=, <>

  - Logical operators: AND, OR, NOT

  - Wildcards: * (multiple characters), ? (single character)

Criteria	Description
>25 and <50	This criterion applies to a Number field, such as Price or UnitsInStock. It includes only those records where the Price or UnitsInStock field contains a value greater than 25 and less than 50.
DateDiff ("yyyy", [BirthDate], Date()) > 30	This criterion applies to a Date/Time field, such as BirthDate. Only records where the number of years between a person's birthdate and today's date is greater than 30 are included in the query result.
Is Null	This criterion can be applied to any type of field to show records where the field value is null.
Exactly match a value, such as China	"China"
Do not match a value, such as Mexico	Not "Mexico"
Begin with the specified string, such as U	Like U*

Do not begin with the specified string, such as U	Not Like U*	Returns records for all countries/regions whose names start with a character other than "U".
Contain the specified string, such as Korea	Like "*Korea*"	Returns records for all countries/regions that contain the string "Korea".
Do not contain the specified string, such as Korea	Not Like "*Korea*"	Returns records for all countries/regions that do not contain the string "Korea".
End with the specified string, such as "ina"	Like "*ina"	Returns records for all countries/regions whose names end in "ina", such as China and Argentina.
Do not end with the specified string, such as "ina"	Not Like "*ina"	Returns records for all countries/regions that do not end in "ina", such as China and Argentina.
Contain null (or missing) values	Is Null	Returns records where there is no value in the field.
Do not contain null values	Is Not Null	Returns records where the value is not missing in the field.
Follow a value, such as Mexico, when sorted in alphabetical order	>= "Mexico"	Returns records of all countries/regions, beginning with Mexico and continuing through the end of the alphabet.

Fall within a specific range, such as A through D	Like "[A-D] *"	Returns records for countries/regions whose names start with the letters "A" through "D".
Match one of two values, such as USA or UK	"USA" Or "UK"	Returns records for USA and UK.
Contain one of the values in a list of values	In("France", "China", "Germany", "Japan")	Returns records for all countries/regions specified in the list.
Match a specific pattern	Like "Chi??"	Returns records for countries/regions, such as China and Chile, whose names are five characters long and the first three characters are "Chi". Note: The characters ? and _, when used in an expression, represent a single character — these are also called wildcard characters. The character _ cannot be used in the same expression with the ? character, nor can it be used in an expression with the * wildcard character. You may use the wildcard character _ in an expression that also contains the % wildcard character.

5. 📝 Forms

- Used for **data entry** and **navigation**.
- Can include:
  - Labels
  - Text boxes
  - Combo boxes
  - Command buttons
- Design for ease of use and clarity.

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6. 📄 Reports

- Present data in a structured format.
- Include:
  - Grouping
  - Sorting
  - Headers and footers
  - Calculated fields
- Useful for printing and sharing summaries.