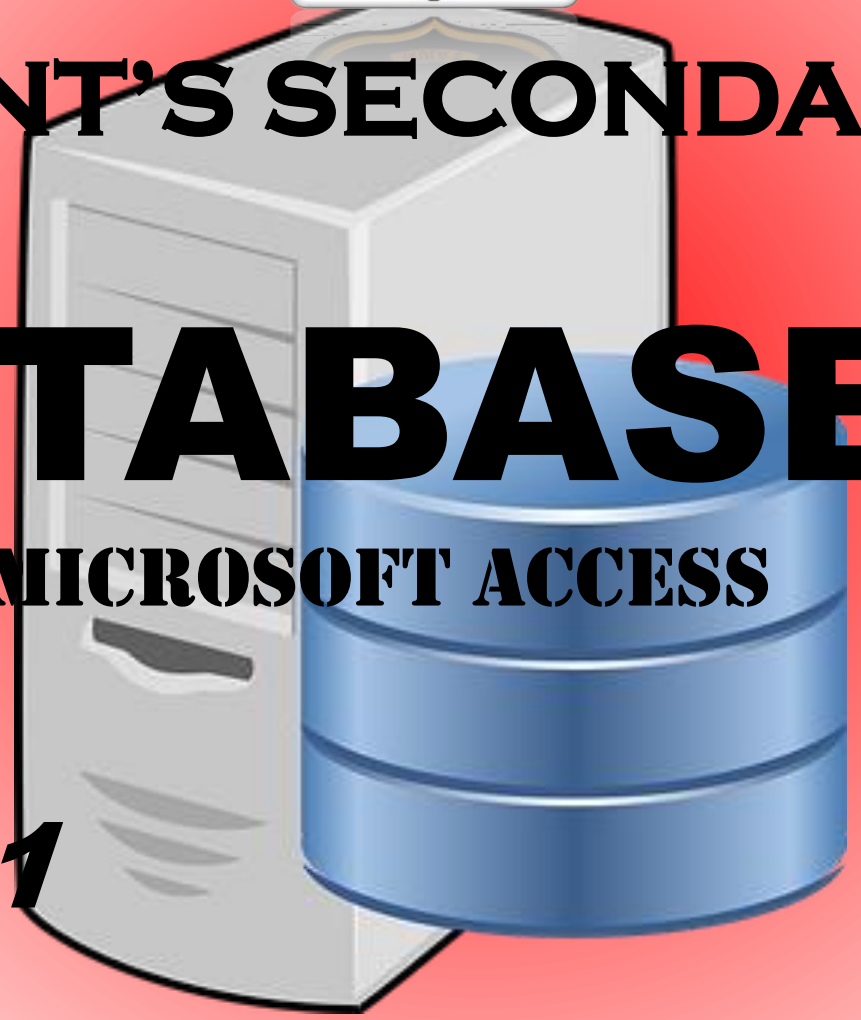
ST CLEMENT'S SECONDARY SCHOOL



DATABASES

MICROSOFT ACCESS

Grade 11

MARIO@2023

DESIGN DATABASES

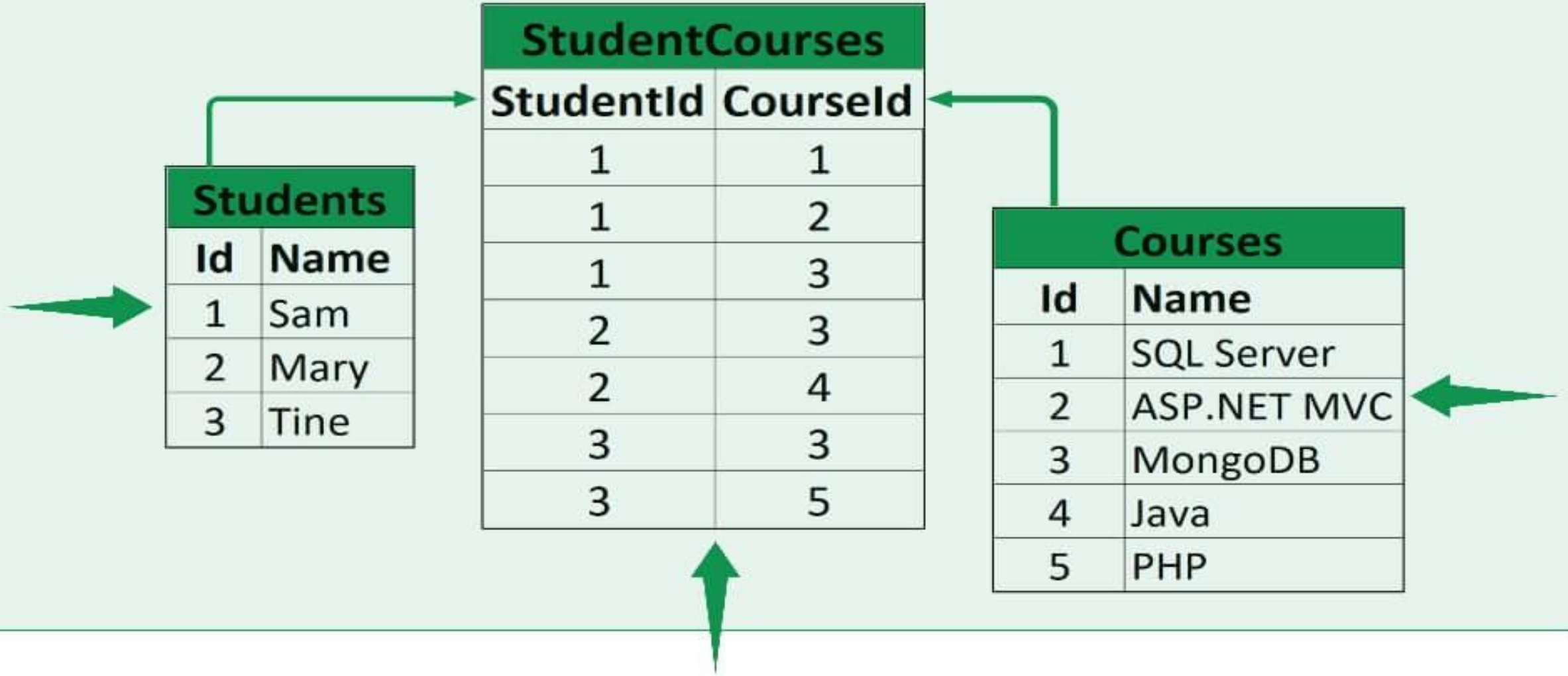
Database

- A database is an organized collection of structured information, or data, typically stored electronically in a computer system

Relational database

- A relational database is a collection of data items with pre-defined relationships between them.
- These items are organized as a set of tables with columns and rows.
- Tables are used to hold information about the objects to be represented in the database.

Relational Database



Students

Id	Name
1	Sam
2	Mary
3	Tine

StudentCourses

StudentId	CourseId
1	1
1	2
1	3
2	3
2	4
3	3
3	5

Courses

Id	Name
1	SQL Server
2	ASP.NET MVC
3	MongoDB
4	Java
5	PHP

Microsoft Access

- Microsoft Access is a popular information management tool that helps you store all kinds of information for reporting, analysis, and reference.
- With Microsoft Access, you can manage data more efficiently and analyse large amounts of information.

- Database tables are collections or lists of *records*, each record holding individual pieces of information in *fields*
- As a database Management System (DBMS), Access enables a user to create and maintain these tables, employing sophisticated, yet easy-to-use, tools to facilitate defining, constructing, and manipulating data

Identifying Basic Database Structure

- In a relational database, all data are stored is tables.
- A table is a major database object that stores all data in subject-based list of rows and columns.
- Tables are made of records and fields.
- A record is a complete set of related data about one entity or activity. e.g. sales transaction, phone directory.

DATA HIERARCHY

Fields → Records → Tables → Database

Data organisation

TABLE

fields

FIRST NAME	SURNAME	DATE OF BIRTH	TOWN	CLASS
LUMUNO	BWEENDO	22/02/2013	MANSA	11 G
KANDALA	IAN	12/04/2012	LUSAKA	12M
MWANSA	HENRY	28/12/2015	MONZE	10 S

Record

Working with Microsoft Access Database

- When a database is open it cannot be moved nor renamed.
- It does not have certain file operations that are available for other applications such as word or excel.

Exercise

1. Define relational database
2. Explain the use of DBMS
3. Explain two uses of Microsoft Access.
4. Draw database hierarchy

ACCESS DATABASE OBJECTS

Access database objects

- Tables
- Forms
- Queries
- Reports
- Pages
- Macros
- Modules

Tables

- Store data about people activities, items and events.
- It consists of records made up fields.
- The information in a table appears in rows (records) and Columns (fields)

Queries

- Queries display and organise data depending on the question being queried.
- You can specify criterial or condition to show records and fields.
- You can create queries to perform actions

Forms

- Forms display data on the screen in a user-friendly formats.
- Forms make data entry and editing simpler.
- With forms, you can view, add, delete and edit fields and records.

Reports

- Reports organise and format data to be used as printable documents.
- Reports are professional looking, formal documents that display information derived from database queries.
- Reports can only display recordsets.
- Recordsets

Exercise

1. State for major database objects.
2. In two sentences write about the following
    (a) forms
    (b) queries
    (c) reports

BUILD A DATABASE

Create new Database

1. Click start button and choose all programs
2. Click Microsoft Office folder and choose Microsoft Access

Access

Good evening

Home

New

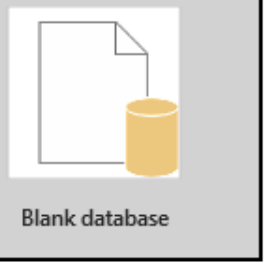
Open

Account

Feedback

Options

New


Blank database


Asset tracking


Contacts


Students


Event management

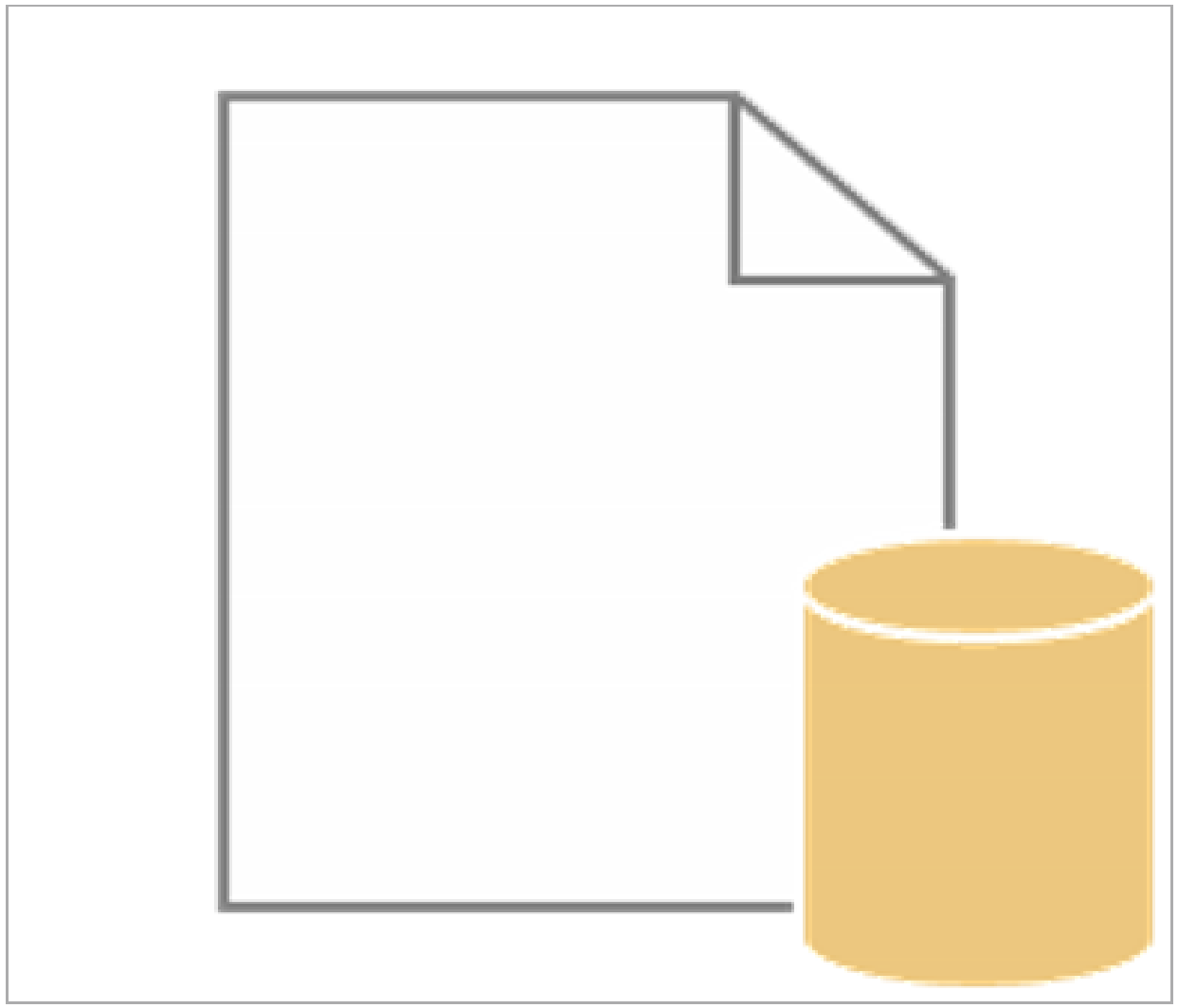

Task management

More templates →

Recent Pinned

Name	Date modified
st clements Documents	Fri at 8:56 am
Database2 Documents	Thu at 7:28 pm
Database1 Documents	14/10/2022

More databases →



Blank database

File Name

ST CLEMENTS TEACHERS.accdb

C:\Users\chong\OneDrive\Desktop\

Create

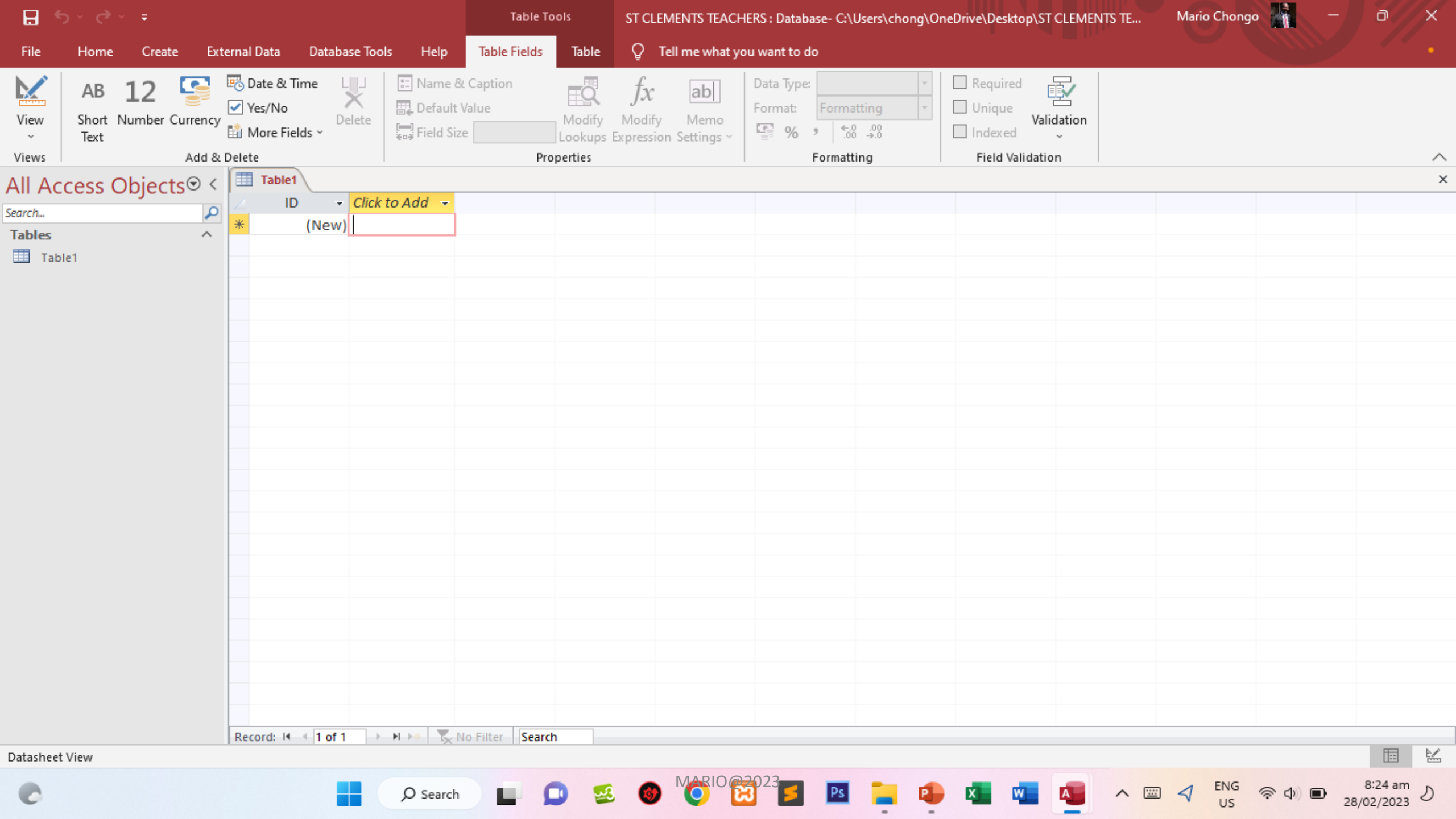


Table Tools
ST CLEMENTS TEACHERS : Database- C:\Users\chong\OneDrive\Desktop\ST CLEMENTS TE...
Mario Chongo
File
Home
Create
External Data
Database Tools
Help
Table Fields
Table
Tell me what you want to do
View
Views
Short Text
Number
Currency
Date & Time
Yes/No
More Fields
Delete
Add & Delete
Name & Caption
Default Value
Field Size
Modify Lookups
Modify Expression
Memo Settings
Properties
Data Type:
Format:
Formatting
Formatting
Required
Unique
Indexed
Validation
Field Validation
All Access Objects
Search...
Tables
Table1
Table1
ID
Click to Add
(New)
Record:
1 of 1
No Filter
Search
Datasheet View
MARIO@2023
Search
ENG
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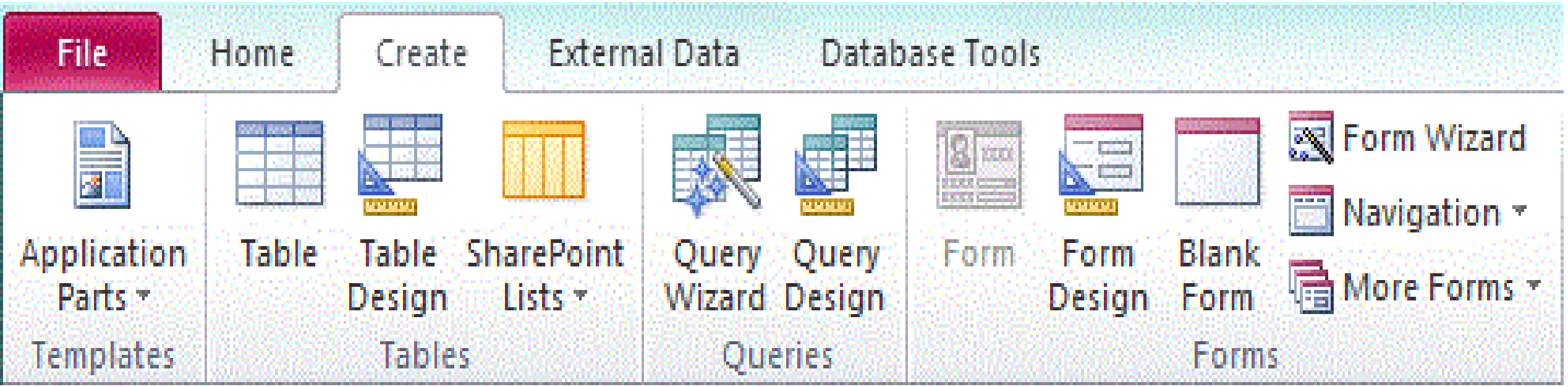
8:24 am
28/02/2023

Components of Access



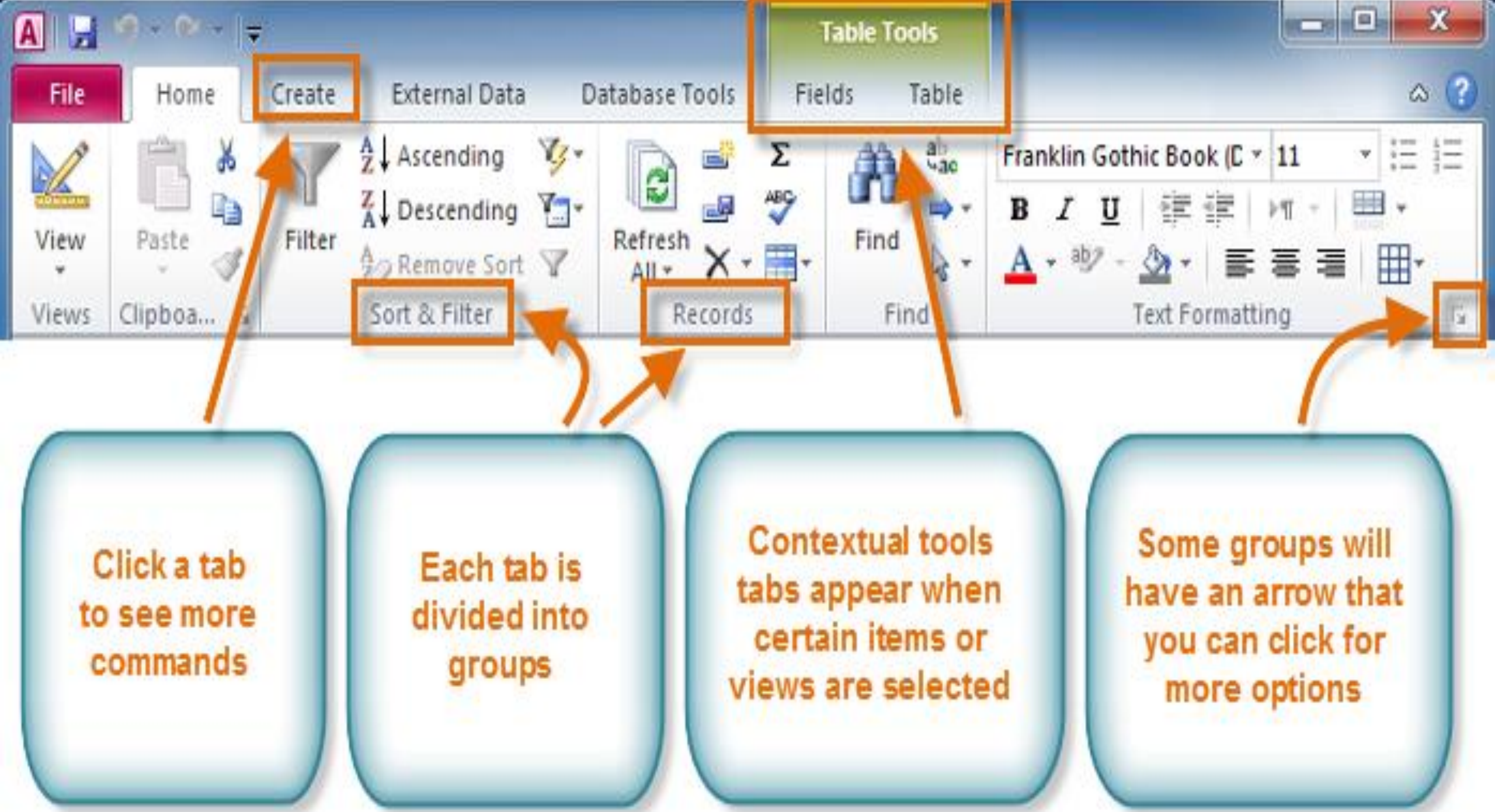


Table Tools
File
Home
Create
External Data
Database Tools
Fields
Table
View
Views
Paste
Clipboa...
Filter
Ascending
Descending
Remove Sort
Sort & Filter
Refresh All
Records
Find
Find
Franklin Gothic Book (C
11
Text Formatting
Click a tab to see more commands
Each tab is divided into groups
Contextual tools tabs appear when certain items or views are selected
Some groups will have an arrow that you can click for more options

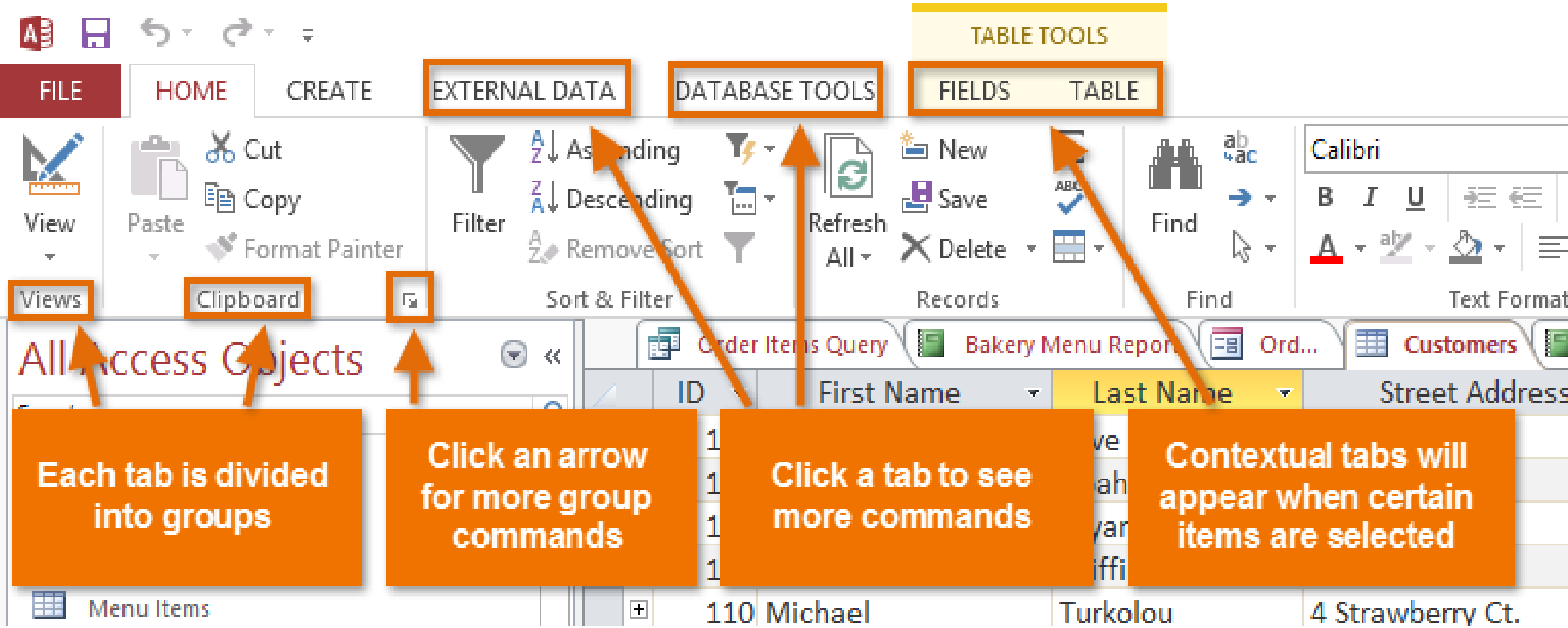


TABLE TOOLS
FILE
HOME
CREATE
EXTERNAL DATA
DATABASE TOOLS
FIELDS
TABLE
View
Paste
Cut
Copy
Format Painter
Filter
Ascending
Descending
Remove Sort
Refresh All
New
Save
Delete
Find
Calibri
Views
Clipboard
Sort & Filter
Records
Find
Text Format
All Access Objects
Order Items Query
Bakery Menu Report
Ord...
Customers
ID
First Name
Last Name
Street Address
Menu Items
110
Michael
Turkolou
4 Strawberry Ct.
Each tab is divided into groups
Click an arrow for more group commands
Click a tab to see more commands
Contextual tabs will appear when certain items are selected

MANIPULATING DATABASES

MICROSOFT ACCESS DATA TYPES

- When creating tables in Access, you need to select a data type for each column of data.
- The Short Text data type is a popular choice since it lets you enter almost any character (letter, symbol, or number).

DATA TYPES

Data Type	Usage	Size
Number	Numeric data.	1, 2, 4, 8, or 16 bytes.
Date/Time	Dates and times.	8 bytes.
Currency	Monetary data	8 bytes.
AutoNumber	Unique value	4 bytes (16 bytes for ReplicationID).

Data Type	Usage	Size
Short Text (formerly known as “Text”)	Alphanumeric data (names, titles, etc.)	Up to 255 characters.
Long Text (formerly known as “Memo”	Large amounts of alphanumeric data: sentences and paragraphs.	Up to about 1 gigabyte (GB)
Yes/No	Boolean (true/false) data	1 byte.

Hyperlink	A link address to a document or file on the Internet	contain up to 2048 characters).
Attachment	You can attach files such as pictures, documents	Up to about 2 GB.

Calculated	You can create an expression that uses data from one or more fields.	Dependent on the data type of the Result Type property.

Exercise

A database below was created to show statistics for teachers at St Canisius.

Name	Dept	amount	Ts number
Mario MKC	M	K1250	20202
Mwinga S	SS	K1500	10874
Mbinji M	L	K 1000	2345
Chibwe BC	NS	K 2000	08762

(a) How many records are shown in the database above?

(b) Name the validation method on Ts number field.

(c) How many fields are in the database above?

(d) State data types you would choose for each of the following fields.

(i) Ts number

(ii) Amount

DATA VALIDATION AND DATA CHECK

Data validation

- Data validation refers to **the process of ensuring the accuracy and quality of data**.
- Data validation makes Access test data to make sure that it conforms to what you want to appear in the table.
- Data validation works best in number, currency, and date/time fields.

Validation rules

1.Field validation rules

- Use a field validation rule to check the value that you enter in a field when you leave the field.

2. **Record validation rules**

- Use a record validation rule to control when you can save a record (a row in a table).

3. **Validation on a form**

- You can use the **Validation Rule** property of a control on a form to specify a criterion that all values input to that control must meet.

Types of data validation

- Data type validation
- Range and constraint validation
- Code and cross-reference validation
- Structured validation
- Consistency validation

Example of data validation

For example, when signing up for a user account on a website, the validation might include:

- presence check - a username must be entered.
- length check - a password must be at least eight characters long.

Benefits of data validation

- Data validation provides accuracy, cleanness, and completeness to the dataset by eliminating data errors from any project to ensure that the data is not corrupted.

Data validation check

- Data validation refers to the process of ensuring the accuracy and quality of data.
- It is implemented by building several checks into a system or report to ensure the logical consistency of input and stored data.

Data Type Check

- A data type check confirms that the data entered has the correct data type. For example, a field might only accept numeric data.
- If this is the case, then any data containing other characters such as letters or special symbols should be rejected by the system.

Range Check

- A range check will verify whether input data falls within a predefined range. For example, latitude and longitude are commonly used in geographic data.
- A latitude value should be between -90 and 90, while a longitude value must be between -180 and 180. Any values out of this range are invalid.

Format Check

- Many data types follow a certain predefined format. A common use case is date columns that are stored in a fixed format like “YYYY-MM-DD” or “DD-MM-YYYY.”
- A data validation procedure that ensures dates are in the proper format helps maintain consistency across data and through time.

Consistency Check

- A consistency check is a type of logical check that confirms the data's been entered in a logically consistent way. An example is checking if the delivery date is after the shipping date for a parcel.

check digit

- A check digit is a digit added to a string of numbers for error detection purposes. Normally, the check digit is computed from the other digits in the string.
- A check digit helps digital systems detect changes when data is transferred from transmitter to receiver.

Presence Check

- A method of validation that checks if the user has entered some data.

EXERCISE

Mr. Chongo has decided to set up a database to keep information about the books in his shop for Sale. The database table BOOKS will contain the following fields:

Title; Author; Description; Catalogue Number; Size (area in square centimetres) Price; Arrived (Date the book arrived in the shop); Sold (whether the book is already sold)

(a)(i) state what data type would you choose for each field.

Title……

Author ……

Description……

Catalogue Number ……

Size ……

Price ……

Arrived ……

Sold ……

(ii) State which field you would for primary key

(b) Give validation check that you can perform on each of these fields. Each Validation check must be different.

Catalogue Number .....

Size .....

Price .....

Arrived .....

DATABASE KEYS

Keys

- Keys play an important role in the relational database.
- It is used to uniquely identify any record or row of data from the table.
- It is also used to establish and identify relationships between tables.

Types of Keys in DBMS

- Primary Key.
- Super Key.
- Candidate Key.
- Alternate Key.
- Foreign Key.
- Composite Key.
- Unique Key.

Primary key

- It is the first key used to identify one and only one instance of an entity uniquely. An entity can contain multiple keys, as we saw in the PERSON table.
- The key which is most suitable from those lists becomes a primary key.
- License_Number and Passport_Number as primary keys since they are also unique.

Super Key

- A super key refers to the set of all those keys that help us uniquely identify all the rows present in a table.
- It means that all of these columns present in a table that can identify the columns of that table uniquely act as the super keys.

Candidate Key

- The candidate keys refer to those attributes that identify rows uniquely in a table.
- In a table, we select the primary key from a candidate key. Thus, a candidate key has similar properties as that of the primary keys that we have explained above.
- In a table, there can be multiple candidate keys.

EXERCISE

1. List three keys in Database.
2. Define a key
3. Explain what primary key means.
4. Give an example of a key that can be a primary key

Alternate Key

- As we have stated above, any table can consist of multiple choices for the primary key. But, it can only choose one.
- Thus, all those keys that did not become a primary key are known as alternate keys.

Foreign Key

- We use a foreign key to establish relationships between two available tables.
- The foreign key would require every value present in a column/set of columns to match the referential table's primary key.
- A foreign key helps us to maintain data as well as referential integrity.

Composite Key

- The composite key refers to a set of multiple attributes that help us uniquely identify every tuple present in a table.
- The attributes present in a set may not be unique whenever we consider them separately.
- Thus, when we take them all together, it will ensure total uniqueness.

Unique Key

- A unique key refers to a column/a set of columns that identify every record uniquely in a table.
- All the values in this key would have to be unique.
- Remember that a unique key is different from a primary key. It is because it is only capable of having one null value.
- A primary key, on the other hand, cannot have a null value.

EXERCISE

A database below was created to show statistics for provinces in Zambia.

REF	PROVINCE	POPULATION	NUMBER OF HOUSES
LP	LUAPULA	30, 000	23,000
SP	SOUTHERN	24, 000	20, 000
LP	LUSAKA	70, 000	62, 000
CP	CENTRAL	22, 000	15, 000
WP	WESTERN	16, 000	10, 000
EP	EASTERN	10, 000	5, 000

(a) Explain what unique key mean.

(b) How many records are shown in the database above?

(c) Name one validation method for the number houses field.

(d) How many fields are in the database above.

(e) Differentiate between unique key and primary key

CREATE TABLE

TABLE

1. In the Open dialog box
2. select the database that you want to open
3. then click Open on the Create tab
4. In the Tables group, click Table.
5. A new table is inserted in the database and the table opens in Datasheet view.

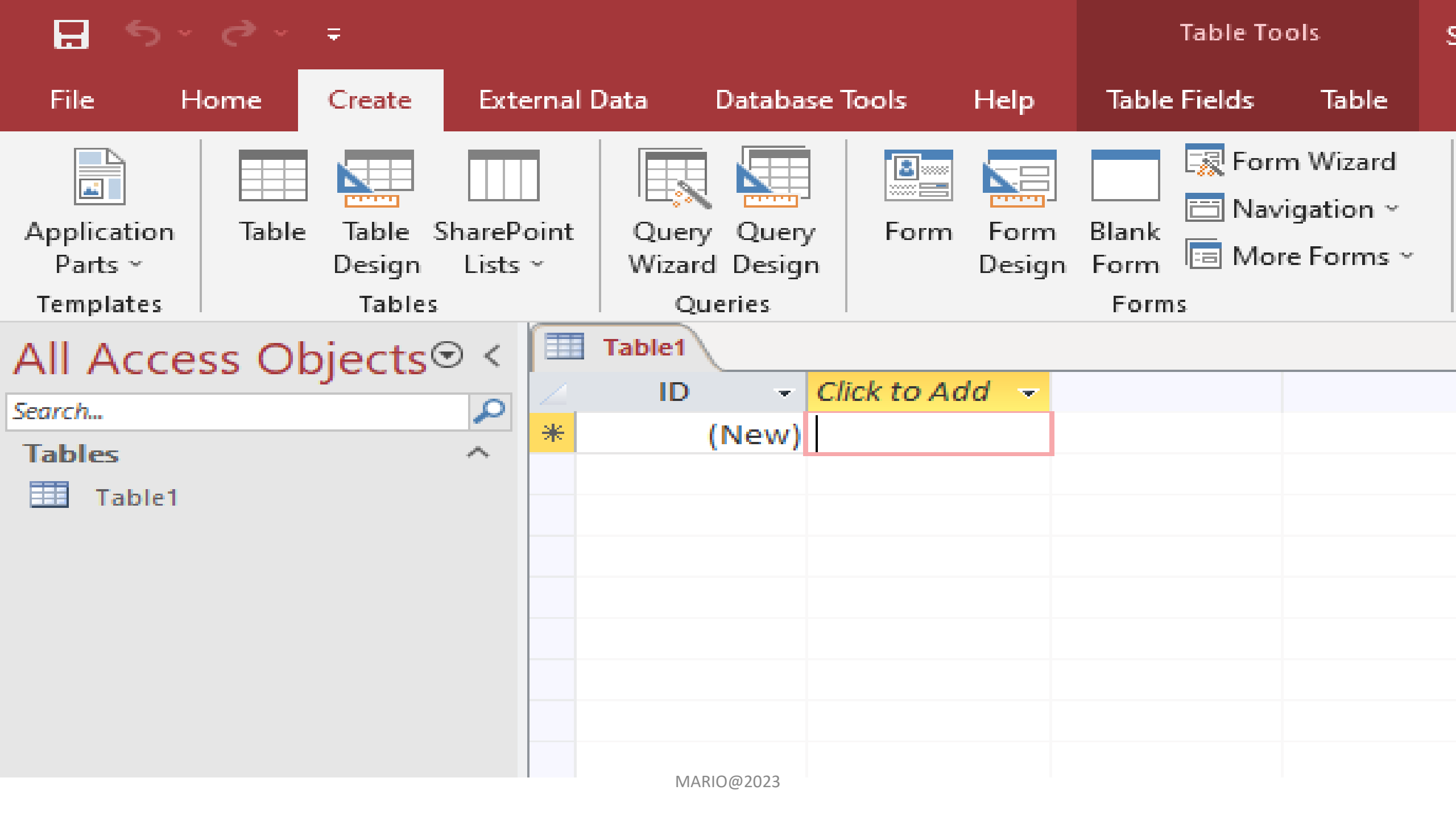
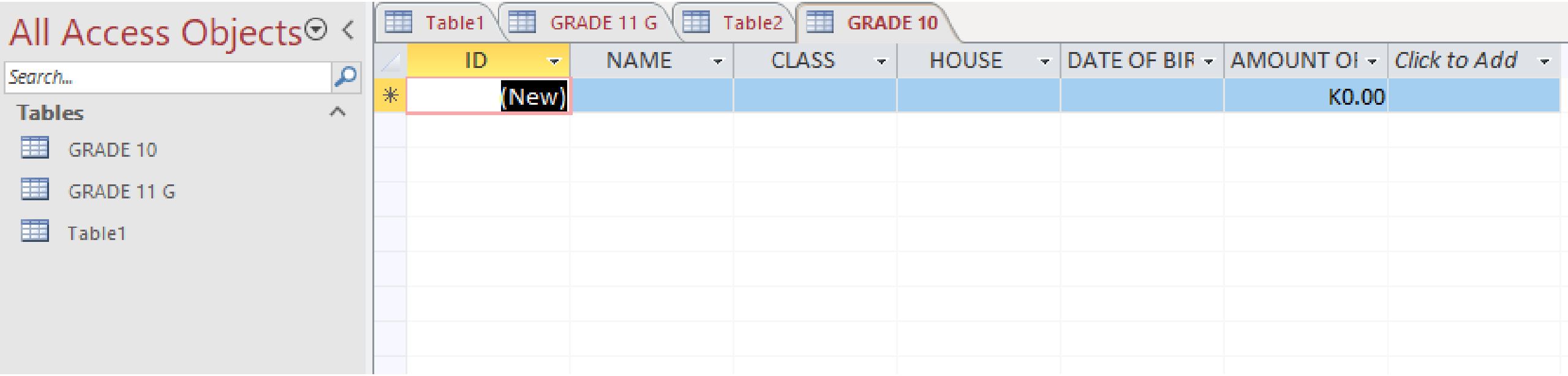


Table Tools
File
Home
Create
External Data
Database Tools
Help
Table Fields
Table
Application Parts
Templates
Table
Table Design
SharePoint Lists
Tables
Query Wizard
Query Design
Queries
Form
Form Design
Blank Form
Form Wizard
Navigation
More Forms
Forms
All Access Objects
Search...
Tables
Table1
Table1
ID
Click to Add
(New)

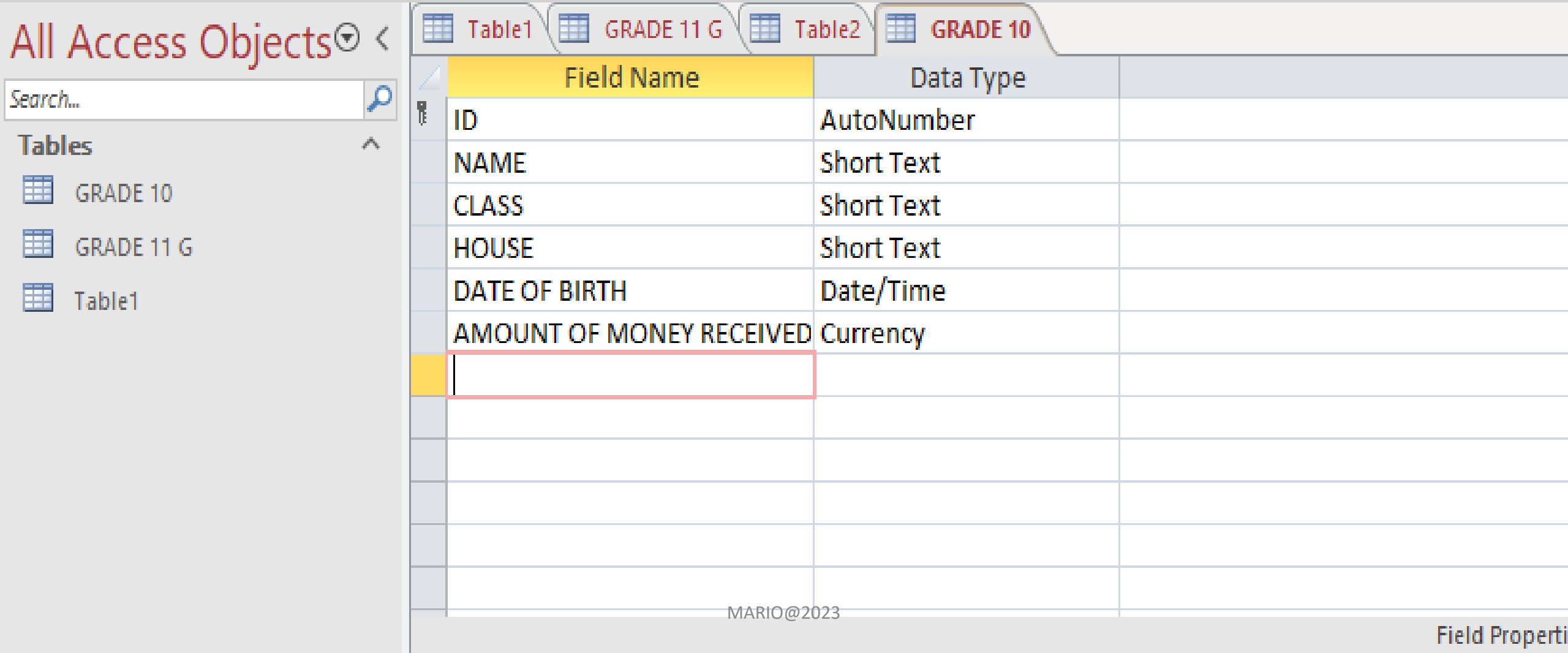
TABLE VIEWS

- Datasheet view
- Design view

DATASHEET VIEW



DESIGN VIEW


All Access Objects
Search...
Tables
GRADE 10
GRADE 11 G
Table1
Table1
GRADE 11 G
Table2
GRADE 10
Field Name
Data Type
ID
AutoNumber
NAME
Short Text
CLASS
Short Text
HOUSE
Short Text
DATE OF BIRTH
Date/Time
AMOUNT OF MONEY RECEIVED
Currency
Field Properti

Data entry and edit

(1) (i) Create a table as shown below

Field Name	Data type	Field size
Staff_ID	Text/short text	4
Data	Date/time	
Booking	Text/short text	6
Week	Number/integer	
Price	Number/integer	
Number	Number/integer	
Tour	Look up wizard	

(ii) select an appropriate key field for the table structure.

(b) Enter the following records

Staff_ID	Date	Booking	Price	Week	Number	Tour
MC01	02/02/2023	Mansa	700	1	3	Yes
JB02	13/05/2023	Mongu	340	1	3	No
AC03	24/04/2023	Solwezi	600	1	6	No
DMC04	20/10/2023	Sesheke	550	2	2	No
DC05	16/12/2023	Lusaka	400	2	7	Yes
GMC06	03/01/2023	Ndola	400	2	7	No
MBC07	17/09/2023	Mbala	750	1	2	No

(2) Create the database tables below. Fields are indicated for each table

StudentFields	**Lesson Fields**	**Instructor fields**	**Lesson Type Fields**
StudentId	LessonNo	InstructorId	LessonType
Title	StudentID	Title	Cost
Surname	InstructorId	Surname	
Firstname	Datestarted	Firstname	
	Starttime	Address	
	Lengthoflesson	HometelNo	
	Lesson type	MobileNo	

(b) Select primary key for each of the tables in **(a)**

(c) (i) enter the following data in the table instructor

instuctorId	Title	Surname	Firstname	address	Hometel	Mobile
1	Mr	Makangha	Mario	Kitwe	2690	0978
2	Mrs	Mudenda	Choolwe	Mansa	2297	0950
3	Mr	Bwalya	John	Kaoma	02111	0767

(ii) Enter the following data in the table lesson

Lesson No	Student ID	Instructor	date	starttime	Length of Lesson	Collection Point	Drop Point	Lesson Type
1	1	1	1/2/23	08 hrs	1	Home Add	Home	standard
2	2	1	2/3/23	10 hrs	2	Home Add	Home	Standard
3	3	1	4/3/23	14 hrs	1	Home Add	Home	standard

(iii) Enter the following data in the table Lesson Type

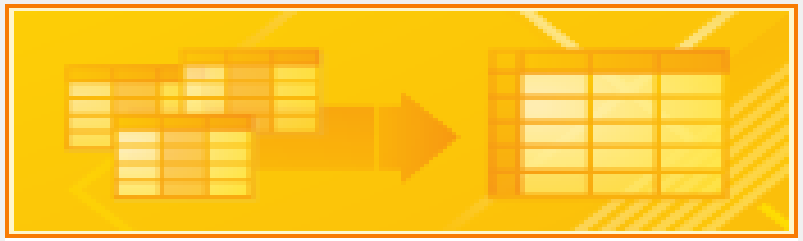
Lesson type	**Cost**
Introductory	900
Pass plus	800
Standard	1000
Test	1500

CREATE QUERY

Create a select query

1. Select Create > Query Wizard .
2. Select Simple Query, and then OK.
3. Select the table that contains the field
4. Add the Available Fields you want to Selected Fields
5. Select Next.
6. Choose whether you want to open the query in Datasheet view or modify the query in Design view,
7. Select Finish.

Simple Query Wizard



Which fields do you want in your query?

You can choose from more than one table or query.

Tables/Queries

Table: GRADE 10

Available Fields:

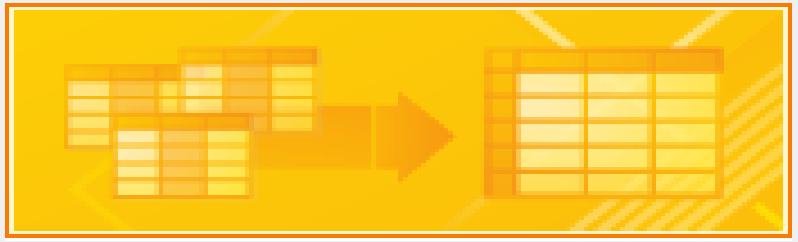
ID
NAME
CLASS
HOUSE
DATE OF BIRTH
AMOUNT OF MONEY RECEIVED

>
>>
<
<<

Selected Fields:

Cancel | < Back | Next > | Finish

Simple Query Wizard



Which fields do you want in your query?

You can choose from more than one table or query.

Tables/Queries

Table: GRADE 10

Available Fields:

Selected Fields:

ID
NAME
CLASS
HOUSE
DATE OF BIRTH
AMOUNT OF MONEY RECEIVED

>
>>
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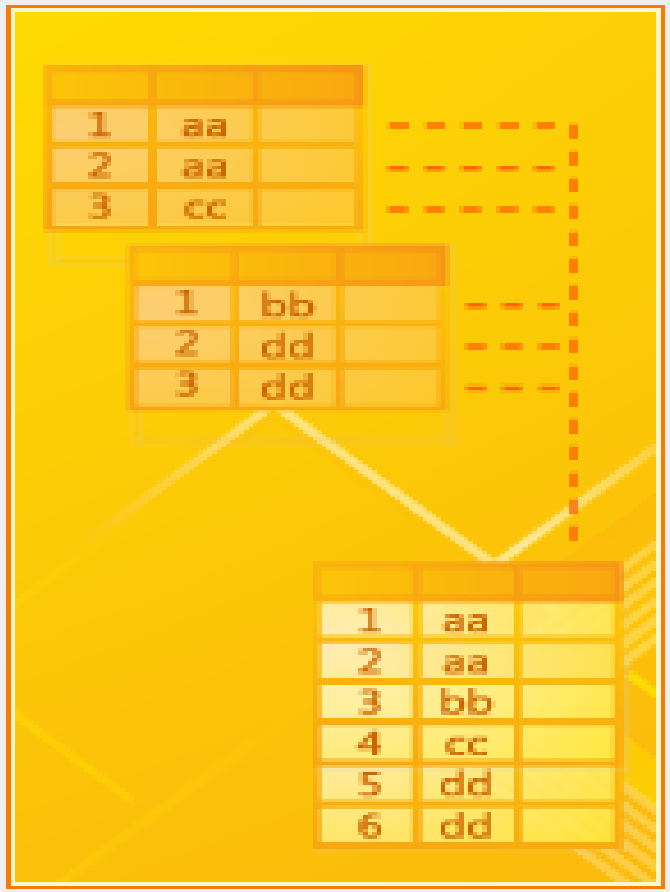
Cancel
< Back
Next >
Finish

Simple Query Wizard

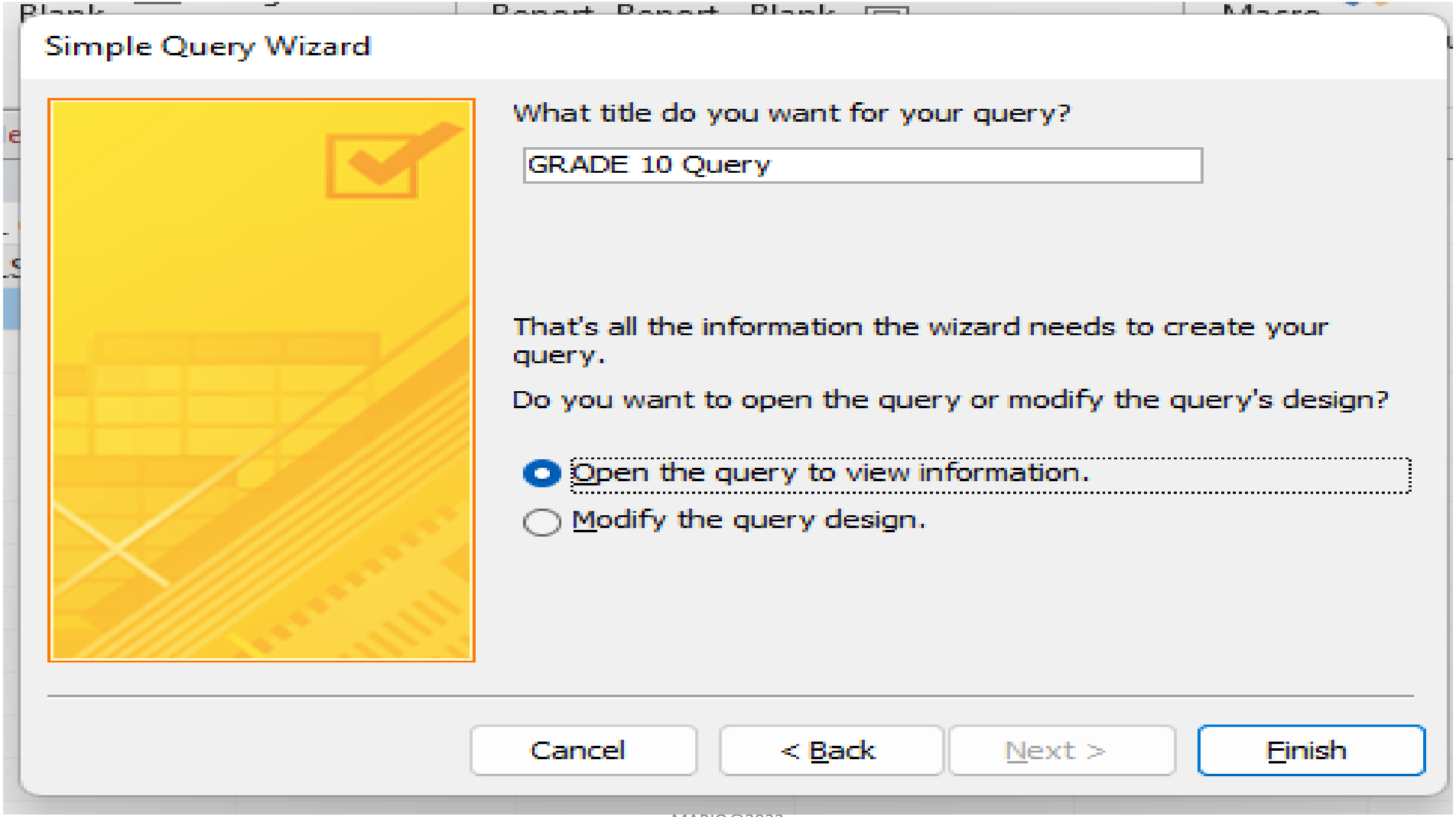


Would you like a detail or summary query?

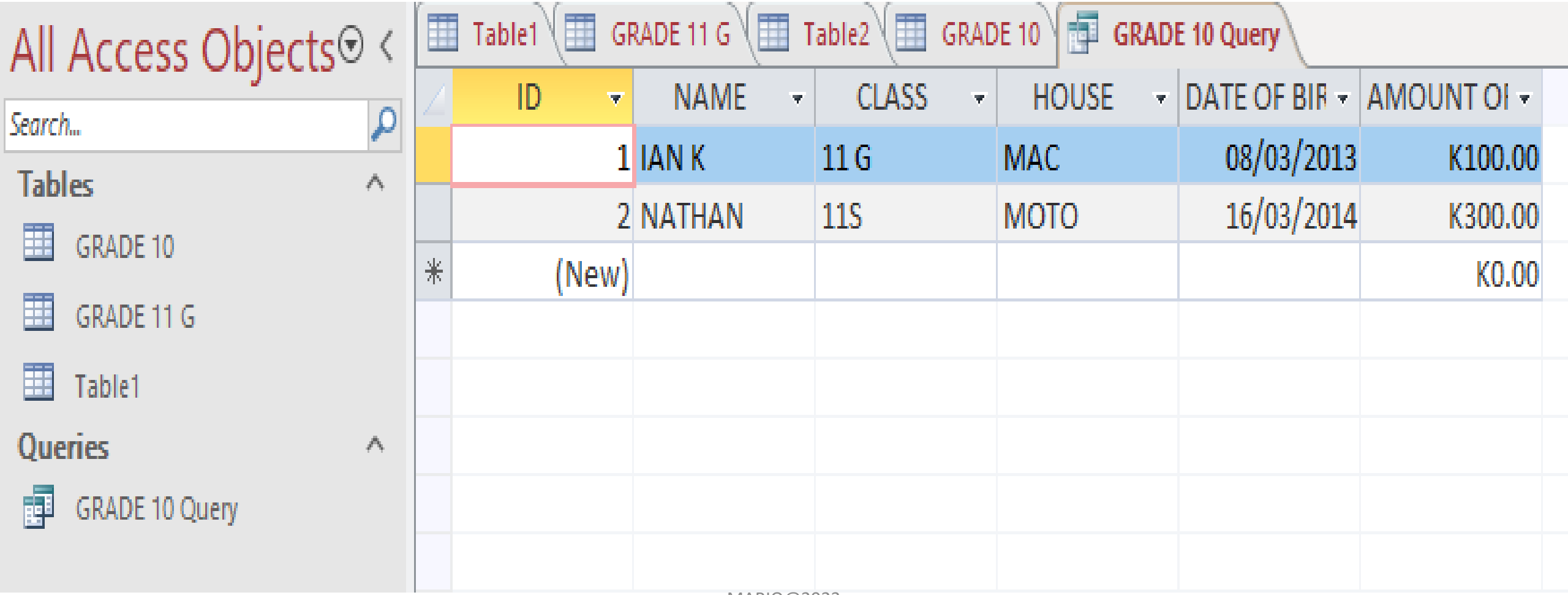
- (•) Detail (shows every field of every record)
- ( ) Summary

Summary Options ...

Cancel | < Back | Next > | Finish


Simple Query Wizard
What title do you want for your query?
GRADE 10 Query
That's all the information the wizard needs to create your query.
Do you want to open the query or modify the query's design?
Open the query to view information.
Modify the query design.
Cancel
< Back
Next >
Finish

QUERY


All Access Objects
Search...
Tables
GRADE 10
GRADE 11 G
Table1
Queries
GRADE 10 Query
Table1
GRADE 11 G
Table2
GRADE 10
GRADE 10 Query
ID
NAME
CLASS
HOUSE
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AMOUNT OI
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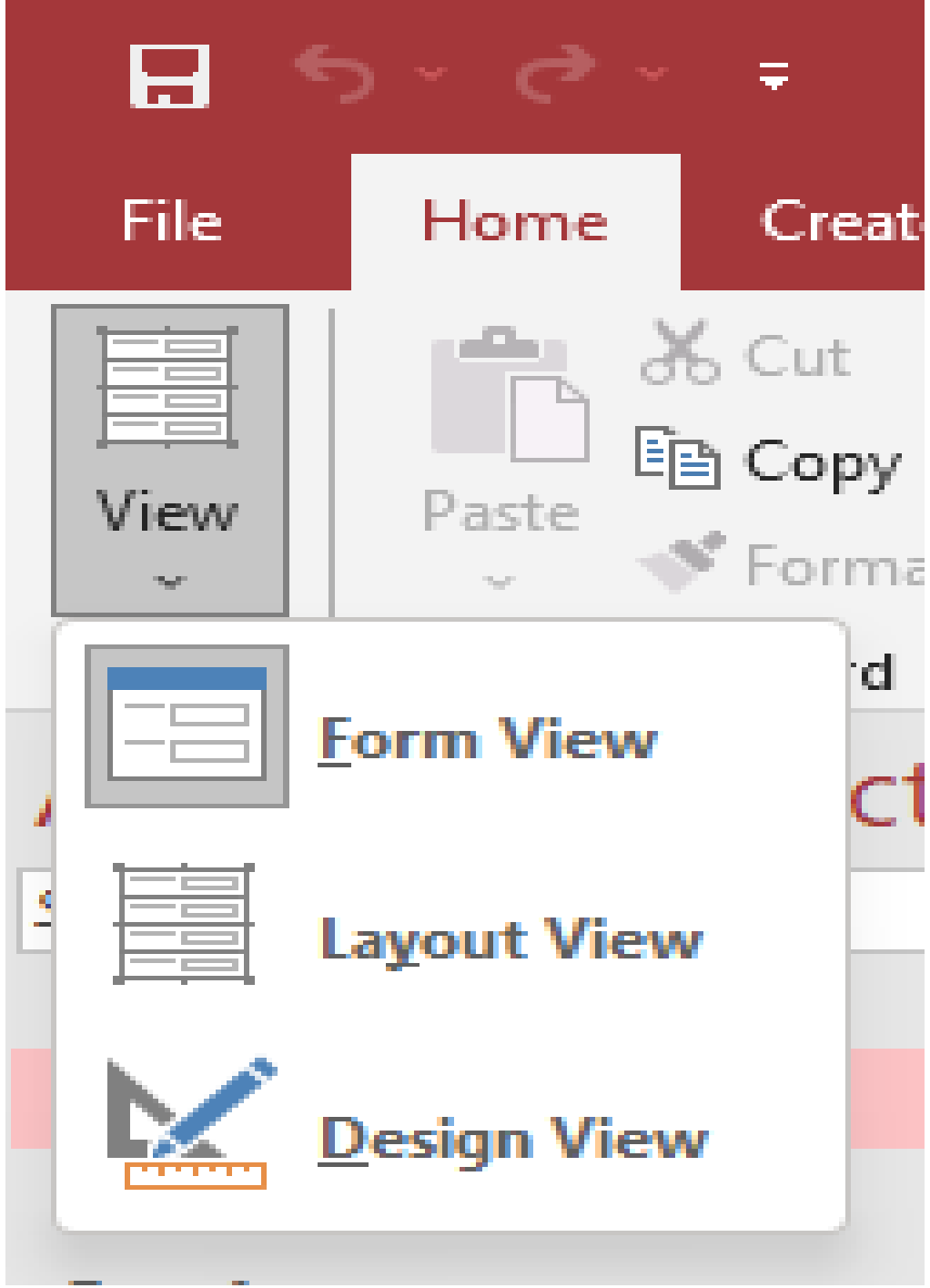
IAN K
11 G
MAC
08/03/2013
K100.00
2
NATHAN
11S
MOTO
16/03/2014
K300.00
(New)
K0.00

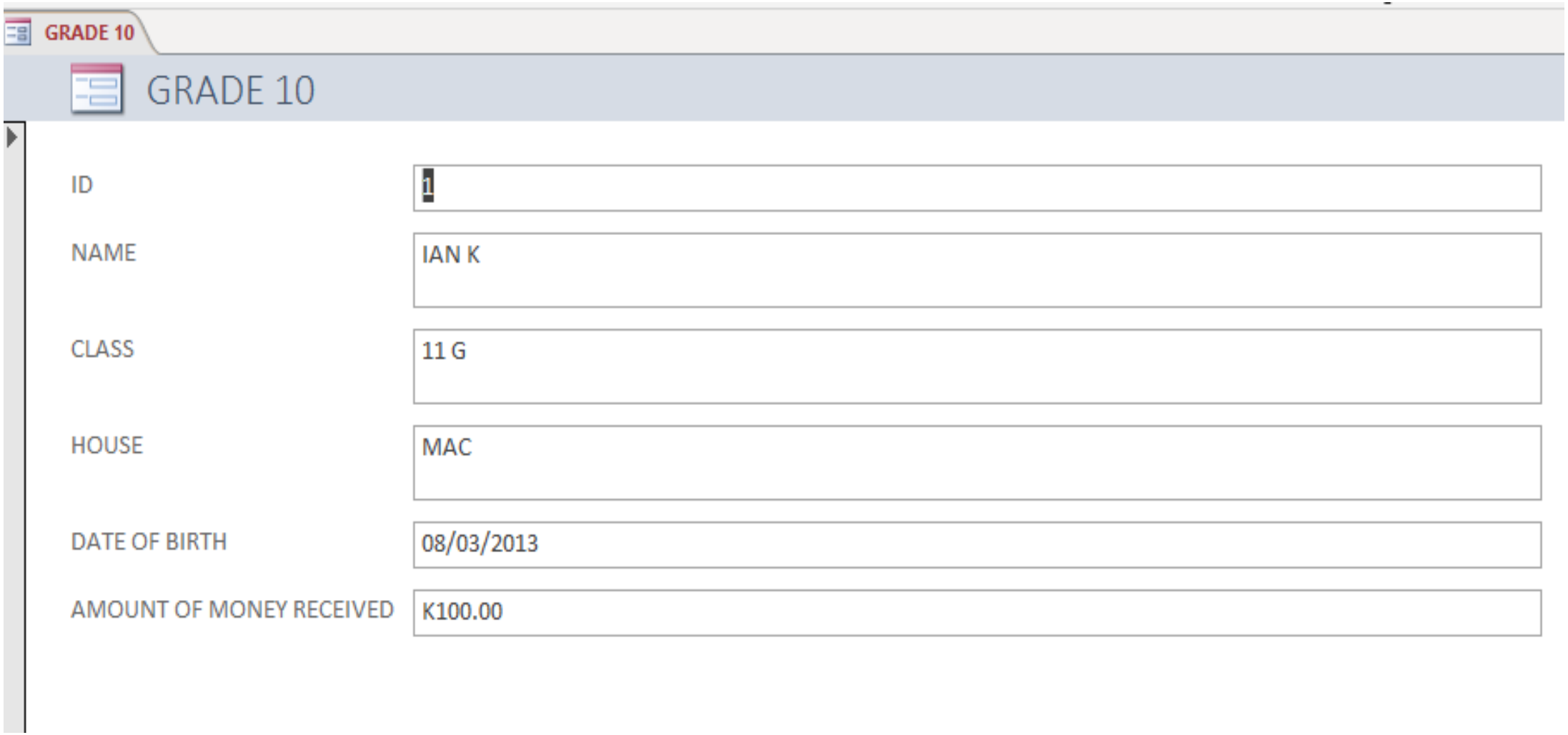
CREATE FORM

FORM

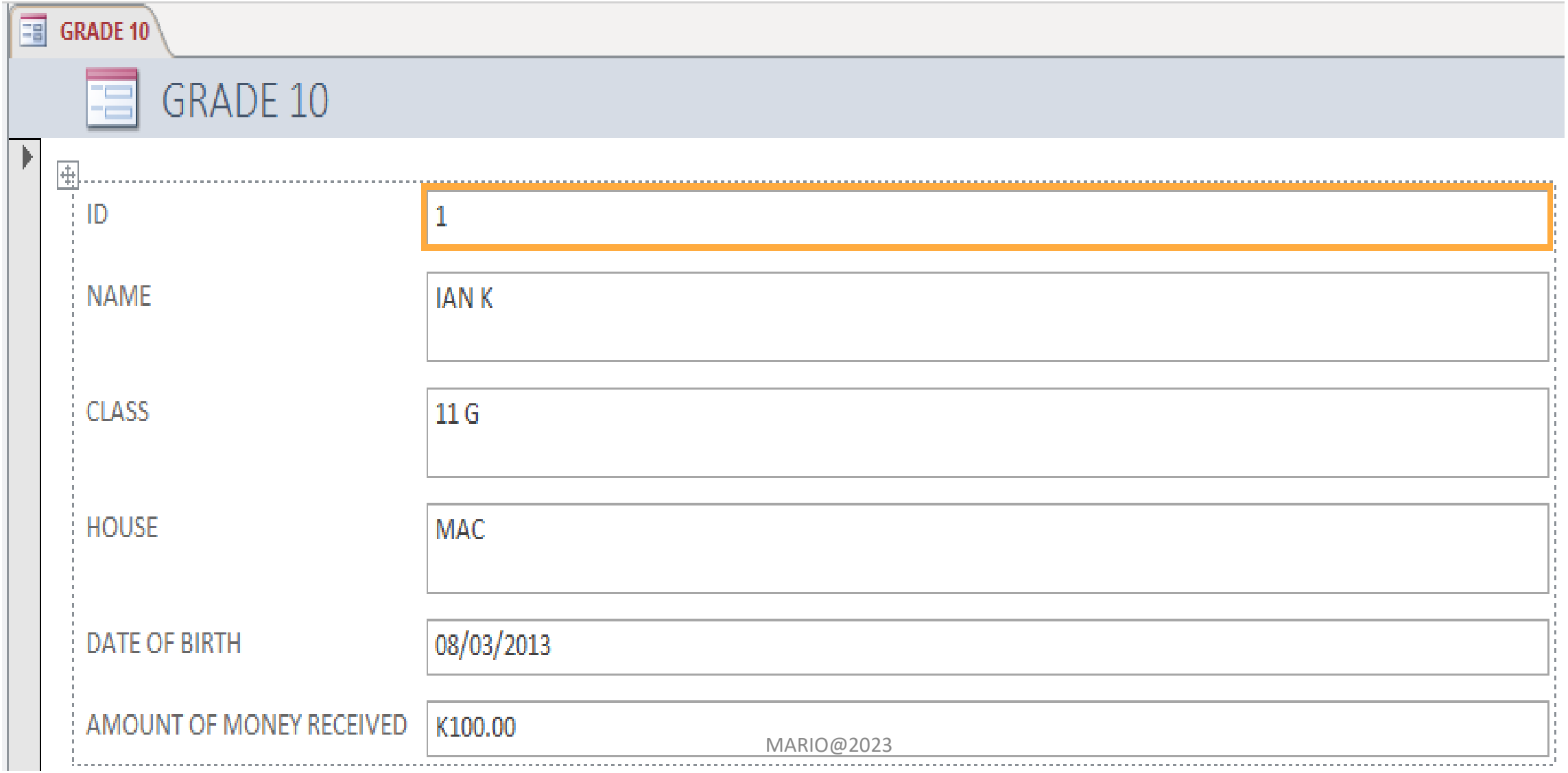
1. In the Navigation pane, select the table you want to use to create a form. ...
2. Select the Create tab, locate the Forms group, and click the Form command.
3. Your form will be created and opened in Layout view.
4. To save the form, click the Save command on the Quick Access Toolbar.


File
Home
Creat
View
Paste
Cut
Copy
Forma
Form View
Layout View
Design View

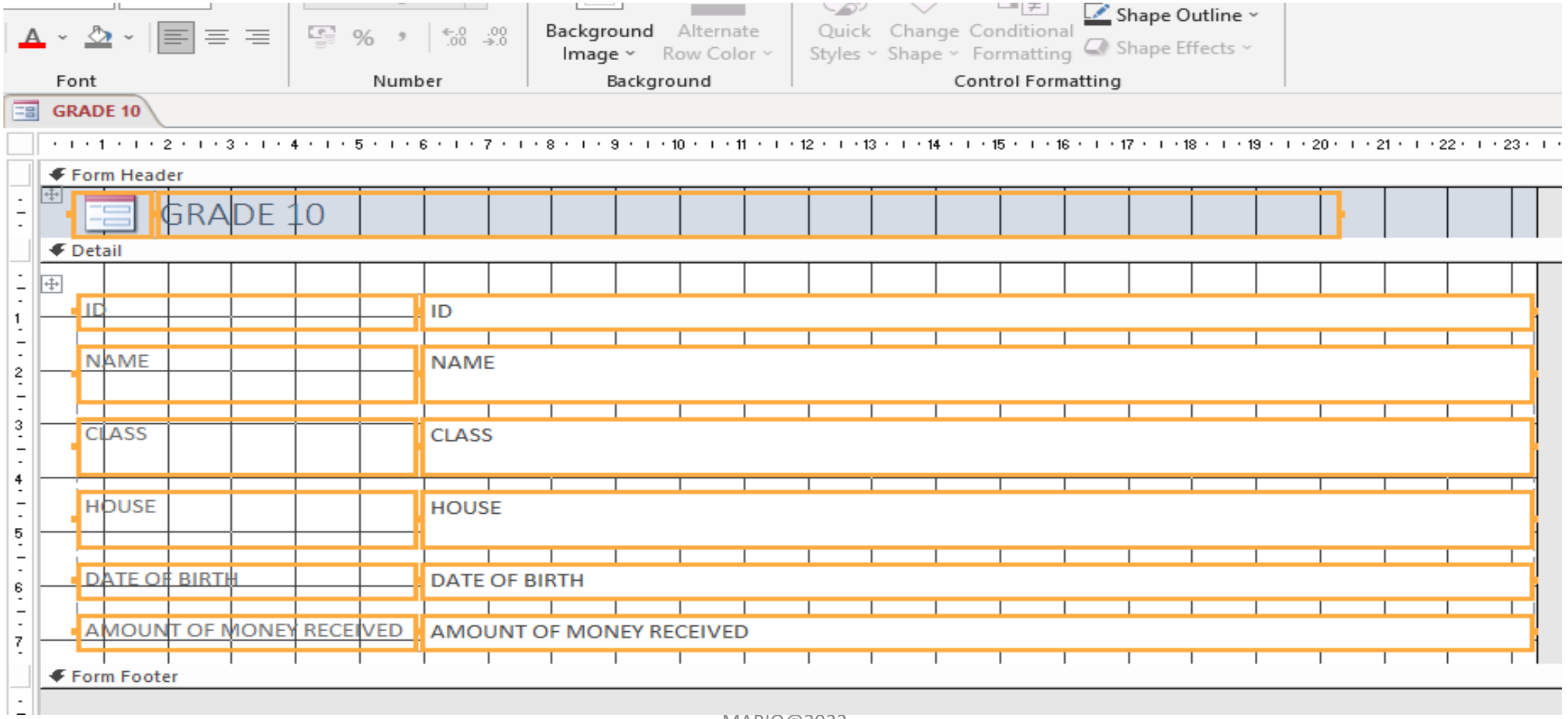
FORM VIEW


GRADE 10
GRADE 10
ID
1
NAME
IAN K
CLASS
11 G
HOUSE
MAC
DATE OF BIRTH
08/03/2013
AMOUNT OF MONEY RECEIVED
K100.00

LAYOUT VIEW



DESIGN VIEW


Font
Number
Background Image
Alternate Row Color
Background
Quick Styles
Change Shape
Conditional Formatting
Shape Outline
Shape Effects
Control Formatting
GRADE 10
Form Header
GRADE 10
Detail
ID
ID
NAME
NAME
CLASS
CLASS
HOUSE
HOUSE
DATE OF BIRTH
DATE OF BIRTH
AMOUNT OF MONEY RECEIVED
AMOUNT OF MONEY RECEIVED
Form Footer

Form layout options

- Next the Form Wizard asks how you want to lay out the data on the form.
- **Columnar:** Displays one record at a time in a format that's easy to read.
- **Tabular:** Displays multiple records at a time.
- **Datasheet:** Displays multiple records at a time and looks like a table in Datasheet view.
- **Justified:** Displays one record at a time. The format usually creates complicated forms that are difficult to work with.

Searching for records

Operators

1. Arithmetic operators (+, - , /,*, mod)
2. Comparison operators (<, >, <>, <=, >=, =)
3. Logical operators (AND, OR)

- AND, Returns True when Expr1 and Expr2 are true.)
- OR, Returns True when either Expr1 or Expr2 is true.)

Expressions

=[FirstName] & " " & [LastName]	Displays the values that reside in table fields called FirstName and LastName.
"London" Or "Hedge End"	Uses the Or operator to display orders shipped to London or Hedge End.

Examples

1. (No of doors = 4) AND (fuel used (km/lt) > 15)

Create a Calculated Field

1. In Design View, click the field row of a blank column in the design grid.
2. Enter the field name for the field that will display the results of the calculation, followed by a colon (:).
3. Enter the expression you want Access to calculate, using the proper syntax.
4. Save and run the query.

Sorting, Filtering, Copying

- **Sorting** is the process of arranging data into meaningful order so that you can analyse it more effectively.
- You can sort both text and numbers in two ways: in ascending order and descending order.
- **Ascending** means going up, so an ascending sort will arrange numbers from smallest to largest and text from A to Z.
- **Descending** means going down, or largest to smallest for numbers and Z to A for text.

Exercise

Radio Yangeni keeps a database of all music CDs. Here is part of this database.

Ref No	CD title	No of tracks	Sepcial Ed.	CD length	No of hits
1111	Nakwita	12	N	50	6
1112	Amazing grace	10	N	40	3
1113	Broke nolunkumbwa	8	N	43	5
1114	Love	15	Y	70	1
1115	Let it be	9	N	23	0
1116	Moonlight	12	N	33	2
1117	Cowboy	11	N	60	2
1118	Aftermath	14	Y	73	3

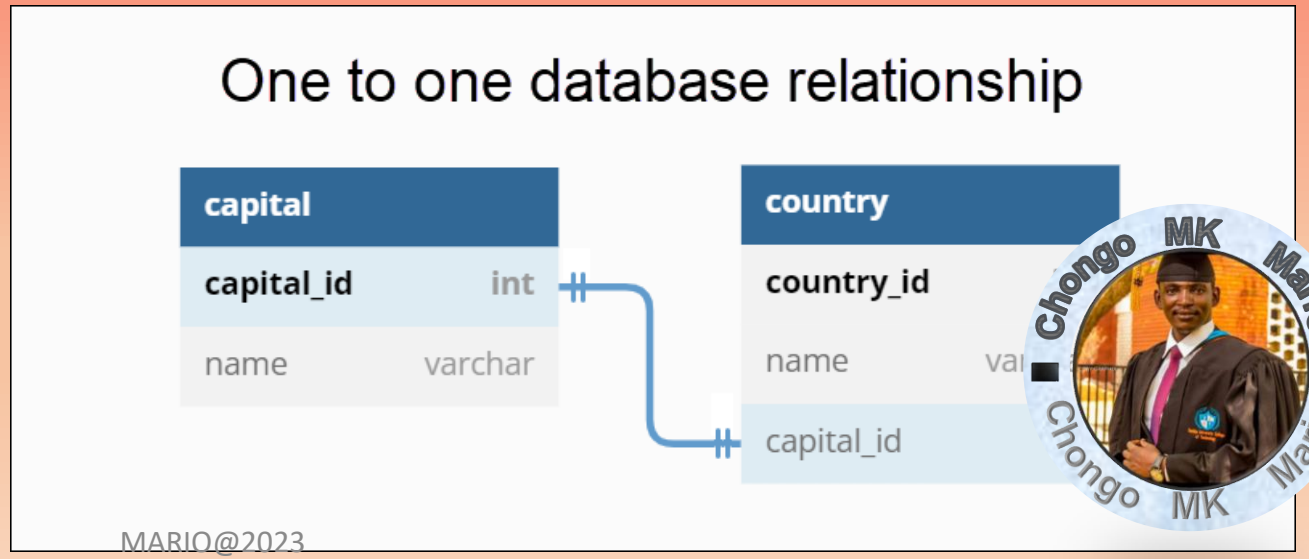
(a)If the following query was input

(CD length < 60) AND (number of hit track > 3)

(b) Write down the query to select which CDs are **special edition** or have more than 10 tracks.

(d) The Database is sorted in descending order on **CD length**. Using **Ref Number** only, write down the order of the records following this sort

Relationships



Relationships

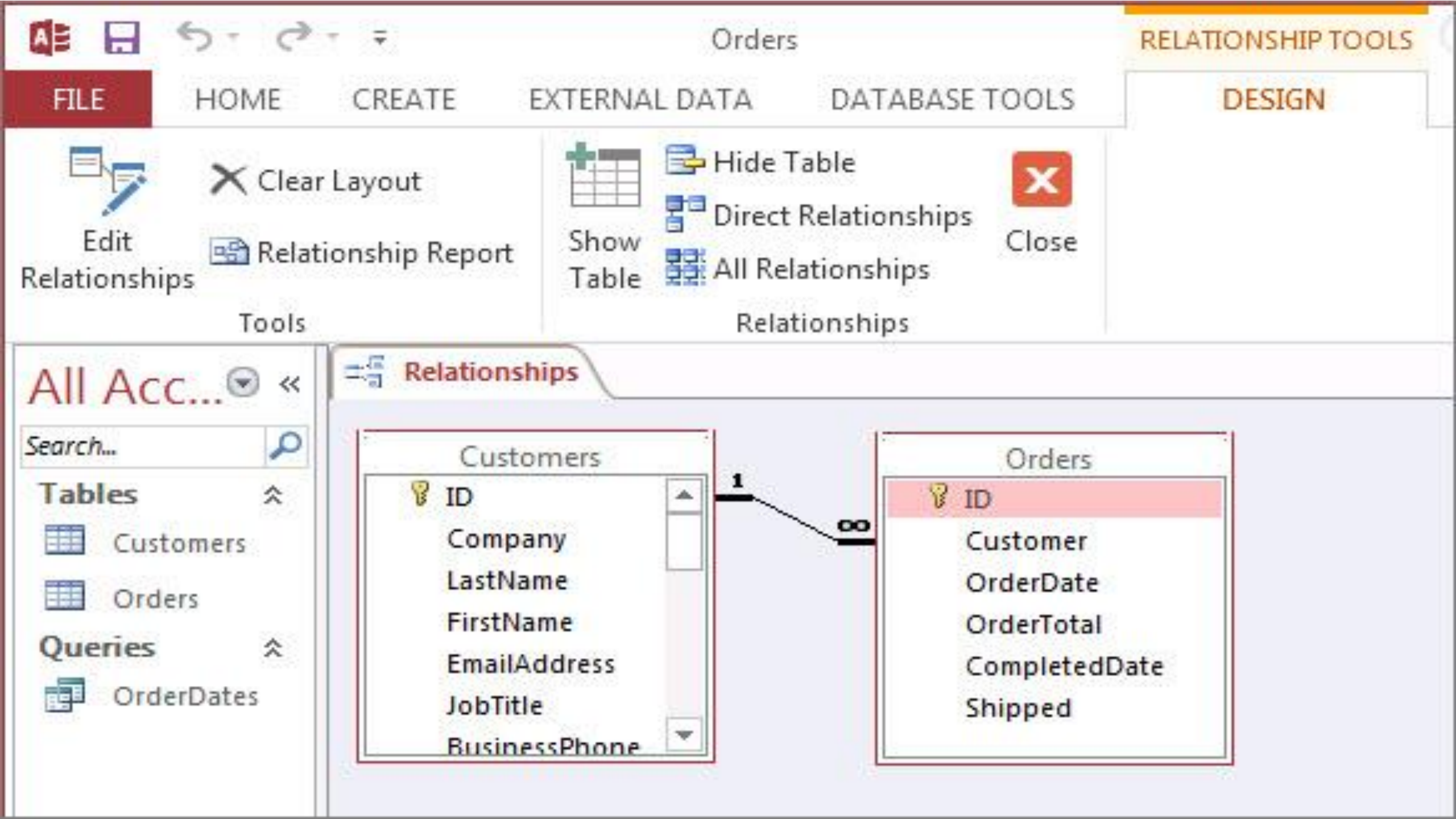
- A relationship in Access helps you combine data from two different tables.
- Each relationship consists of fields in two tables with corresponding data.
- For example, you might have a ProductID field in a Products table and in an OrderDetails table.

Types of table relationships

1. A one-to-one relationship.
2. A one-to-many relationship
3. A many-to-many relationship

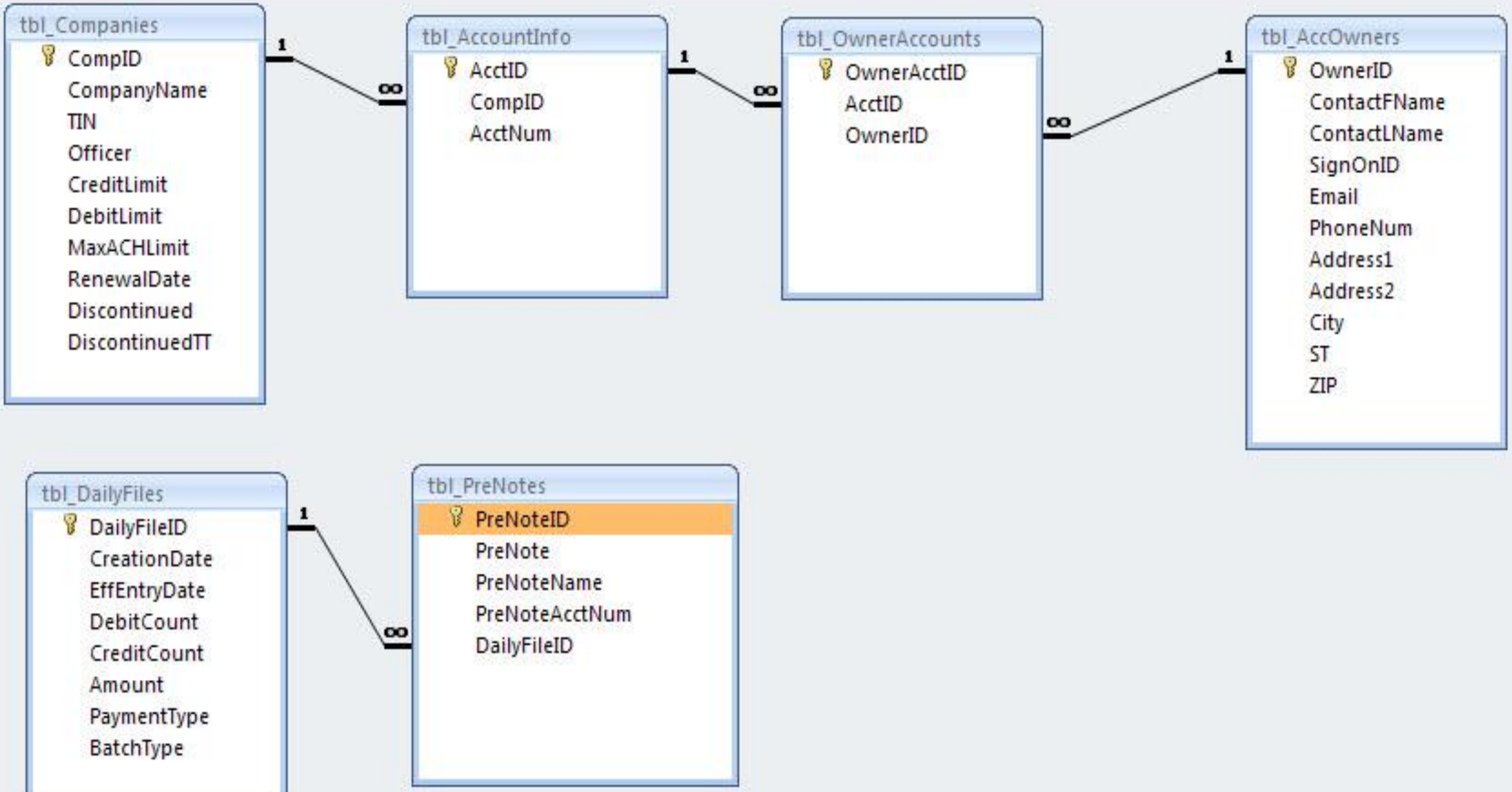
A one-to-one relationship

- A one-to-one relationship is a link between the information in two tables, where each record in each table only appears once.


Orders
RELATIONSHIP TOOLS
FILE
HOME
CREATE
EXTERNAL DATA
DATABASE TOOLS
DESIGN
Edit Relationships
Clear Layout
Relationship Report
Tools
Show Table
Hide Table
Direct Relationships
All Relationships
Close
Relationships
All Acc...
Search...
Tables
Customers
Orders
Queries
OrderDates
Relationships
Customers
ID
Company
LastName
FirstName
EmailAddress
JobTitle
BusinessPhone
1
∞
Orders
ID
Customer
OrderDate
OrderTotal
CompletedDate
Shipped

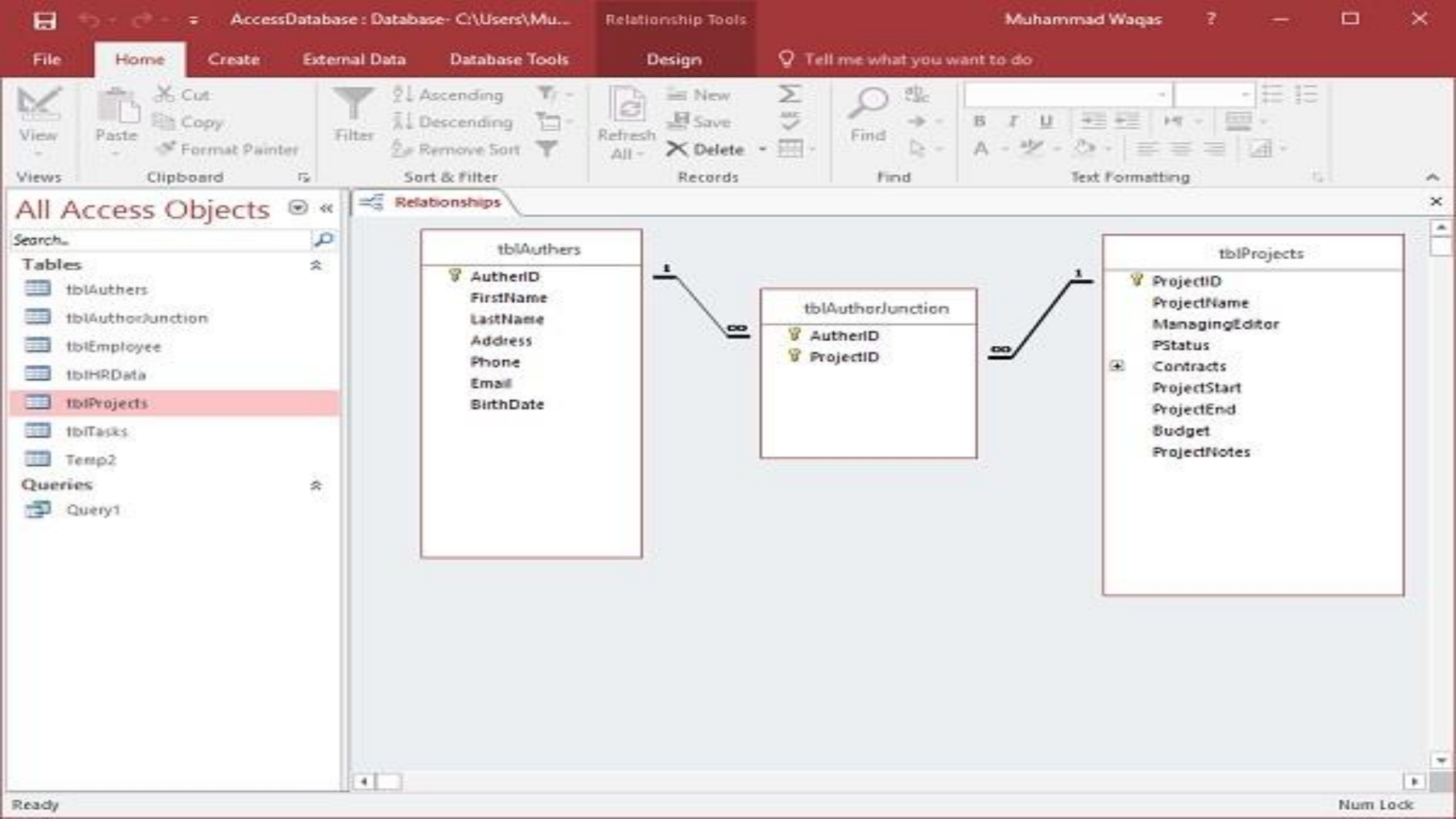
A one-to-many relationship

- A one-to-many relationship is created if only one of the related columns is a primary key or has a unique constraint.


tbl_Companies
CompID
CompanyName
TIN
Officer
CreditLimit
DebitLimit
MaxACHLimit
RenewalDate
Discontinued
DiscontinuedTT
tbl_AccountInfo
AcctID
CompID
AcctNum
tbl_OwnerAccounts
OwnerAcctID
AcctID
OwnerID
tbl_AccOwners
OwnerID
ContactFName
ContactLName
SignOnID
Email
PhoneNum
Address1
Address2
City
ST
ZIP
tbl_DailyFiles
DailyFileID
CreationDate
EffEntryDate
DebitCount
CreditCount
Amount
PaymentType
BatchType
tbl_PreNotes
PreNoteID
PreNote
PreNoteName
PreNoteAcctNum
DailyFileID
1
∞

A many-to-many relationship

- In a many-to-many relationship, a row in table A can have many matching rows in table B, and vice versa.
- You create such a relationship by defining a third table that is called a junction table.
- The primary key of the junction table consists of the foreign keys from both table A and table B.


AccessDatabase : Database- C:\Users\Mu...
Relationship Tools
Muhammad Waqas
File
Home
Create
External Data
Database Tools
Design
Tell me what you want to do
View
Paste
Cut
Copy
Format Painter
Filter
Ascending
Descending
Remove Sort
Refresh All
New
Save
Delete
Find
Views
Clipboard
Sort & Filter
Records
Find
Text Formatting
All Access Objects
Search...
Tables
tblAuthers
tblAuthorJunction
tblEmployee
tblHRData
tblProjects
tblTasks
Temp2
Queries
Query1
Relationships
tblAuthers
AutherID
FirstName
LastName
Address
Phone
Email
BirthDate
tblAuthorJunction
AutherID
ProjectID
tblProjects
ProjectID
ProjectName
ManagingEditor
PStatus
Contracts
ProjectStart
ProjectEnd
Budget
ProjectNotes
1
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1
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Ready
Num Lock

Database security

Database security

- Database security refers to the collective measures used to protect and secure a database or database management software from illegitimate use and malicious cyber threats and attacks.

- Database security covers and enforces security on all aspects and components of databases. This includes:
- Data stored in database.
- Database server.
- Database management system (DBMS).
- Other database workflow applications.

Data confidentiality

- Data confidentiality refers to protection of data from unauthorized access and disclosure, including means for protecting personal privacy and proprietary information.

Data integrity

- Data integrity refers to the overall accuracy, completeness, and reliability of data.
- It can be specified by the lack of variation between two instances or consecutive updates of a record, indicating that your information is error-free.

Threats to data security

- Accidental Exposure.
- Phishing and Other Social Engineering Attacks.
- Insider Threats.
- Ransomware.
- Data Loss in the Cloud.
- SQL Injection.
- Data Discovery and Classification.
- Data Masking.


CRACKS
DATA VIRUS
MALICIOUS SOFTWARE
THEFT
SOCIAL MEDIA ATTACKS
CYBERWARFARE
VIRUS
SOFTWARE FAILURE
NETWORK SNIFFING
DATA SECURITY THREATS
SPYWARE
HUMAN ERROR
SOFTWARE ERROR
STOLEN INFORMATION
CYBER ATTACKS
PASSWORD CRACKING
FRAUD
HACKING
CYBERCRIMINALS
TROJAN
ADWARE
SYSTEM PENETRATION
CYBERSTALKING

Exercise

1. Define database security.
2. What is data integrity?
3. List three threats to data security
4. Explain each of the threat

REFERENCE

1. Thinking process (2014-2017) Computer Science: Redspot
2. Microsoft 2016
3. Internet
4. Bookworld Africa (2018) Computer Studies
5. Jon Juarez John Carter(2010) Microsoft Office 2010 a lesson approach, complete: McGraw-Hill.


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COSY GRAPHIX
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