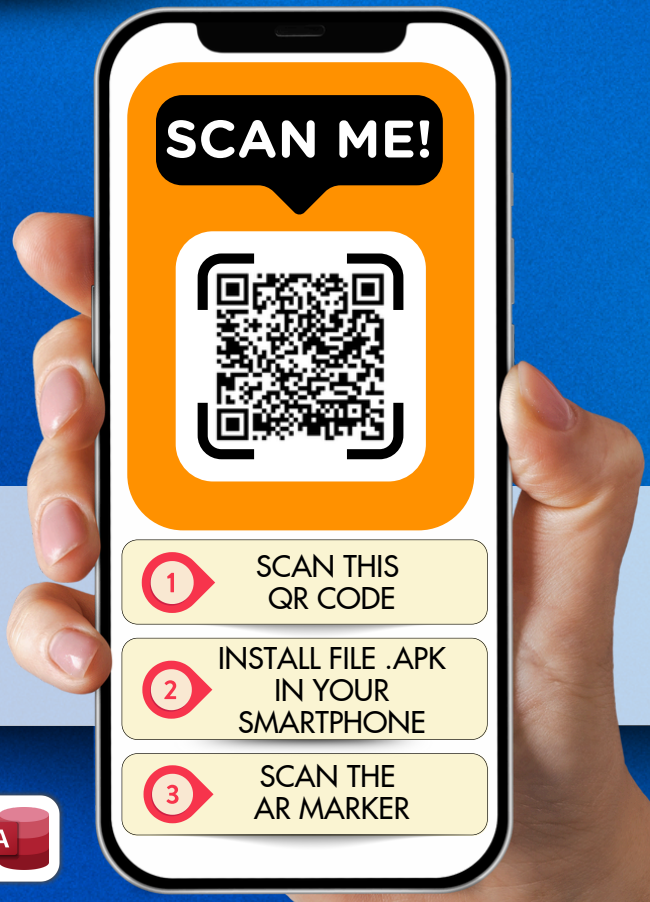
CREATING A SIMPLE DATABASE SYSTEM WITH MICROSOFT ACCESS

A Practical Guide



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A beginner's guide to develop practical database skills using Microsoft Access

FIRST EDITION

CREATING A SIMPLE DATABASE SYSTEM WITH MICROSOFT ACCESS

A Practical Guide

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SYNOPSIS

This ebook is designed as a step-by-step practical guide for beginners, especially students, who want to learn how to build a simple and functional database system using Microsoft Access. It provides clear instructions, real-life examples, and practical exercises to help readers develop essential database skills.

Readers will learn the fundamental concepts of database design and understand the importance of organizing data effectively. The guide introduces Microsoft Access as an easy-to-use tool for creating databases without advanced programming skills.

Throughout this guide, readers will be guided through a hands-on project — designing and building a Student-Course Management System. This project allows users to create and manage tables, build relationships, develop user-friendly forms, run queries and generate reports for decision-making.

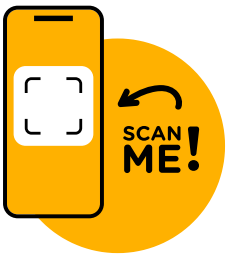
By the end of this ebook, readers will be able to:

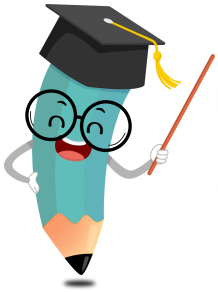
- Understand the basic components of a database system.
- Create and design tables with appropriate field data types.
- Establish relationships between tables.
- Design forms for easy data entry.
- Perform queries to search, filter, and analyze data.
- Generate reports.

This ebook is perfect for students, beginners and anyone looking to develop practical database skills using Microsoft Access.

Scan to discover Video Introduction with AR

VIDEO AR





CONTENT

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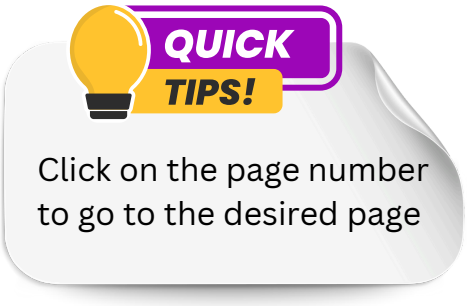
CONTENT



CHAPTER 1

1.0 INTRODUCTION

Microsoft Access is a powerful and user-friendly database management system that enables users to create, store, and manage data efficiently.

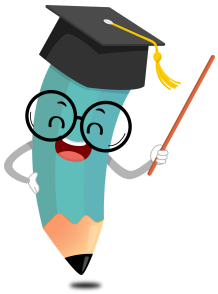
This eBook provides a step-by-step guide to designing a simple database system, covering essential components such as tables, forms, queries, and reports.

By the end of this guide, you will be able to build a fully functional database system to manage real-world data.

CHAPTER 2

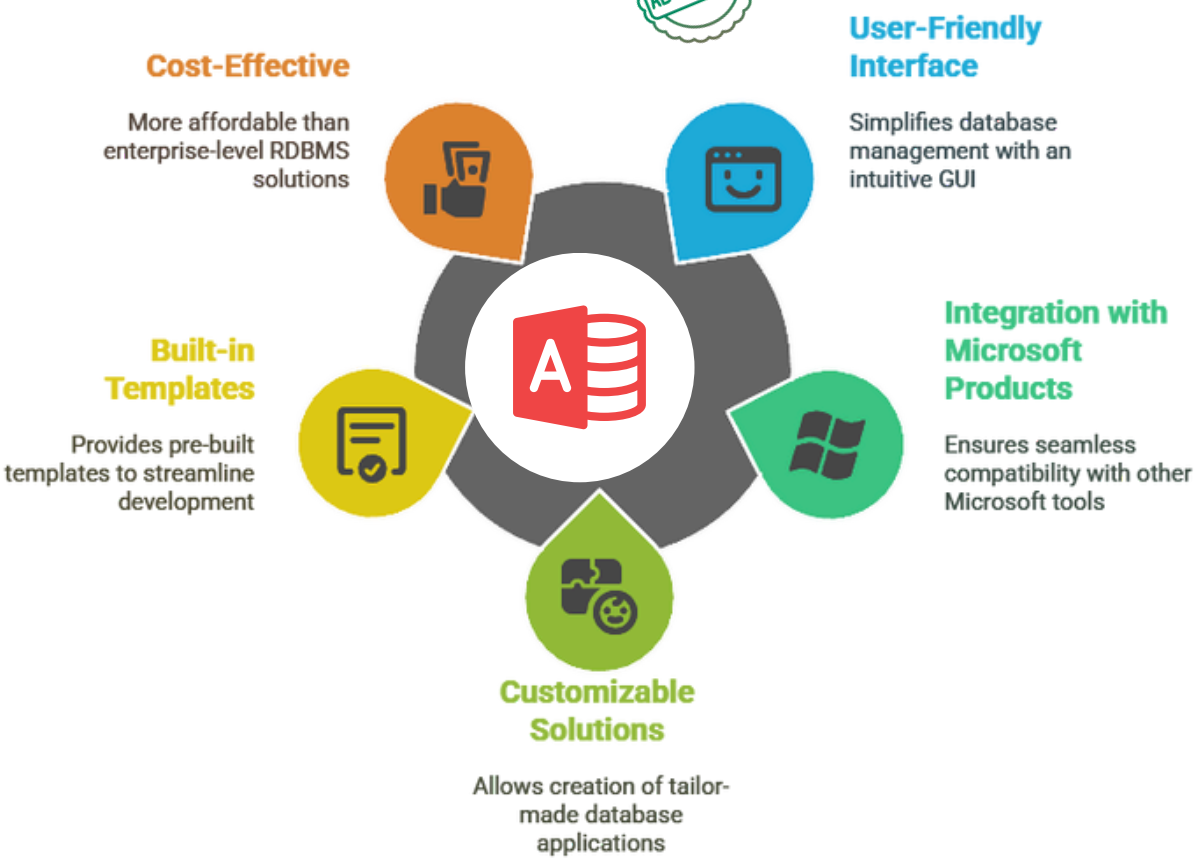
2.0 GETTING STARTED WITH MICROSOFT ACCESS

2.1 What is Microsoft Access?



Microsoft Access is a relational database management system (RDBMS) that allows users to store, retrieve, and manipulate data. It is commonly used for small to medium-scale applications, offering features such as tables, forms, queries, reports, and automation tools.

2.2 Advantages of Using Microsoft Access



2.3 Microsoft Access layout

Scan to discover Microsoft Access layout with AR

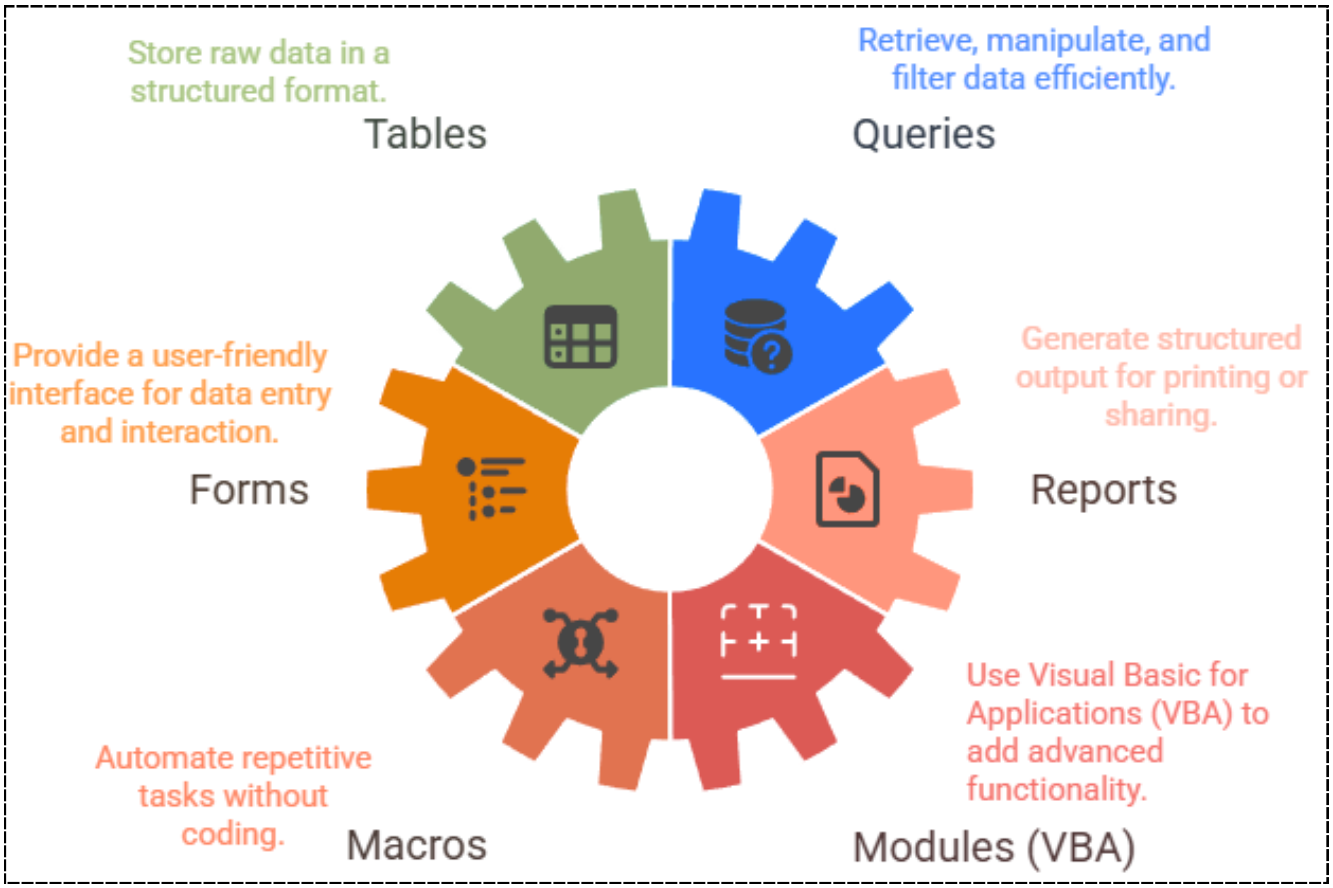
IMAGE AR

CHAPTER 3

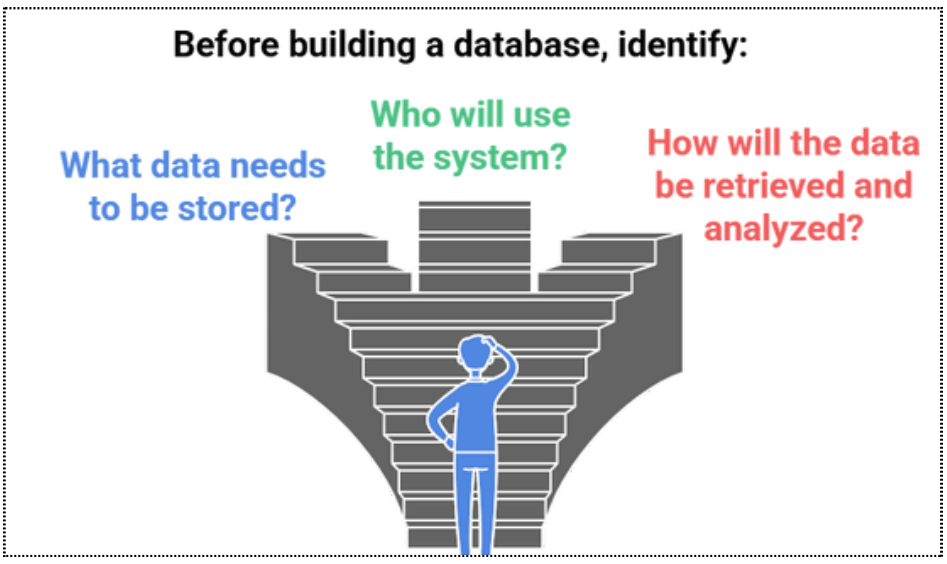
3.0 PLANNING YOUR DATABASE SYSTEM

3.1 Key Components of Microsoft Access

To understand how to build a system in Access, it is essential to familiarize yourself with its core components:

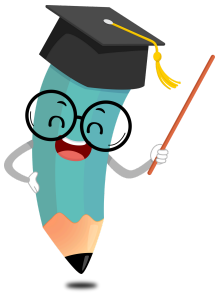


3.2 Defining the Purpose of Your Database



3.0 PLANNING YOUR DATABASE SYSTEM

3.3 Designing a Simple Database System: The Student Management System



A practical example used in this guide:

- Store student details
- Manage course enrollments
- Track student grades
- Generate reports

Scenario

You are tasked with developing a **Student Management System** using Microsoft Access. The system should **store student information, track their courses, and generate reports on student performance.**

Your database should allow users to:

1. Store student details (e.g., name, age, contact details, etc.).
2. Manage course enrollment (which students are enrolled in which courses).
3. Record student grades for each enrolled course.
4. Retrieve specific information using queries.
5. Generate reports summarizing student records and performance.

3.0 PLANNING YOUR DATABASE SYSTEM

For this task, we need to create four(4) tables:

Table Name	Fields	Description
Students	**StudentID (PK),** FirstName, LastName, DOB, Gender, Address, ContactNumber, Email	Stores student personal details
Courses	**CourseID (PK),** CourseName, CourseCode, Instructor	Stores course information
Enrollment	**EnrollmentID (PK), StudentID (FK), CourseID (FK),** EnrollmentDate	Tracks which student is enrolled in which course
Grades	**GradeID (PK), StudentID (FK), CourseID (FK),** Grade	Stores students' grades

(PK = Primary Key, FK = Foreign Key)

Scan to discover definition of Primary Key and Foreign Key with AR

IMAGE AR (PRIMARY KEY)

IMAGE AR (FOREIGN KEY)

3.0 PLANNING YOUR DATABASE SYSTEM

We need to identify the relationship between the tables. Here are the relationships between the tables:

Relationships Between Tables:

1. Students ↔ Enrollment
- **One-to-Many Relationship**
- A single student can enroll in multiple courses, but each enrollment record belongs to only one student.
- **Primary Key:** StudentID (Students)
- **Foreign Key:** StudentID (Enrollment)

2. Courses ↔ Enrollment
- **One-to-Many Relationship**
- A single course can have multiple students enrolled in it, but each enrollment entry links to only one course.
- **Primary Key:** CourseID (Courses)
- **Foreign Key:** CourseID (Enrollment)

3. Students ↔ Grades
- **One-to-Many Relationship**
- A student can receive multiple grades (one per enrolled course), but each grade entry is assigned to a single student.
- **Primary Key:** StudentID (Students)
- **Foreign Key:** StudentID (Grades)

4. Courses ↔ Grades
- **One-to-Many Relationship**
- A course can have multiple students with different grades, but each grade entry corresponds to a single course.
- **Primary Key:** CourseID (Courses)
- **Foreign Key** : CourseID (Courses)

5. Enrollment ↔ Grades
- **One-to-One Relationship**
- Each enrollment record should correspond to a grade record to track the student's performance in that course.
- **Primary Key:** EnrollmentID (Enrollment)
- **Foreign Key:** EnrollmentID (Grades)

CHAPTER 4

4.0 CREATING TABLES

4.1 Understanding Data Types

When designing tables in Microsoft Access, it's essential **to assign a data type to each column.** The Short Text data type is a common choice since it allows the entry of letters, numbers, and symbols. However, selecting the appropriate data type enhances database functionality, enabling features like data validation and built-in functions while ensuring greater accuracy in stored information.

The following table provides an overview of the data types available in Access desktop databases (.accdb and .mdb).

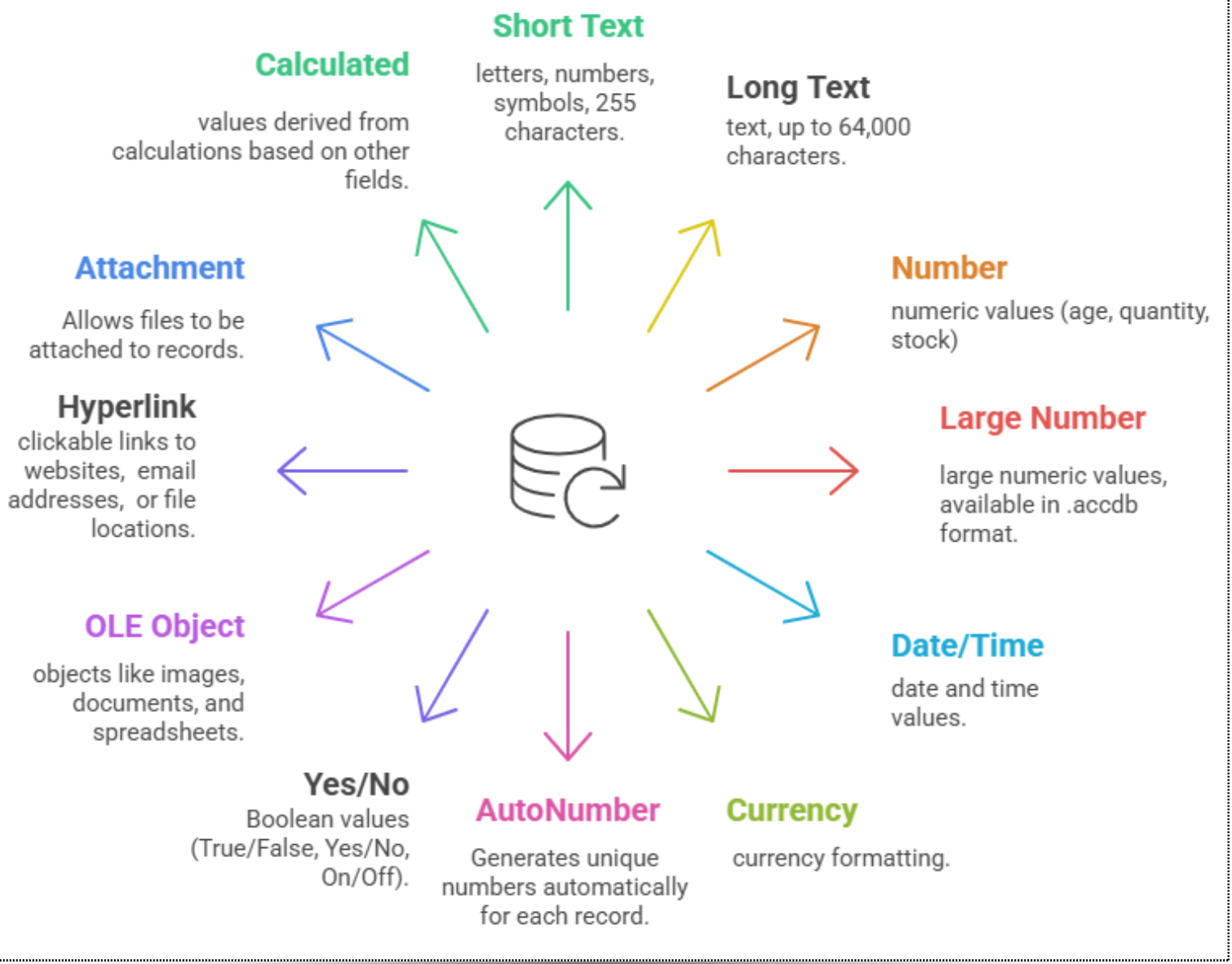
Data Type	Description	Example
Short Text	Stores alphanumeric characters (letters, numbers, symbols) with a maximum length of 255 characters.	Names, phone numbers, addresses
Long Text	Stores large amounts of text (up to 64,000 characters).	Comments, descriptions, notes
Number	Stores numeric values used in mathematical calculations.	Age, quantity, product stock
Large Number	Stores very large numeric values (available in .accdb format).	Scientific calculations, financial data
Date/Time	Stores date and time values.	Birthdate, meeting time
Currency	Stores monetary values with currency formatting.	Salary, product price
AutoNumber	Generates a unique number automatically for each record.	Customer ID, Order ID

4.0 CREATING TABLES

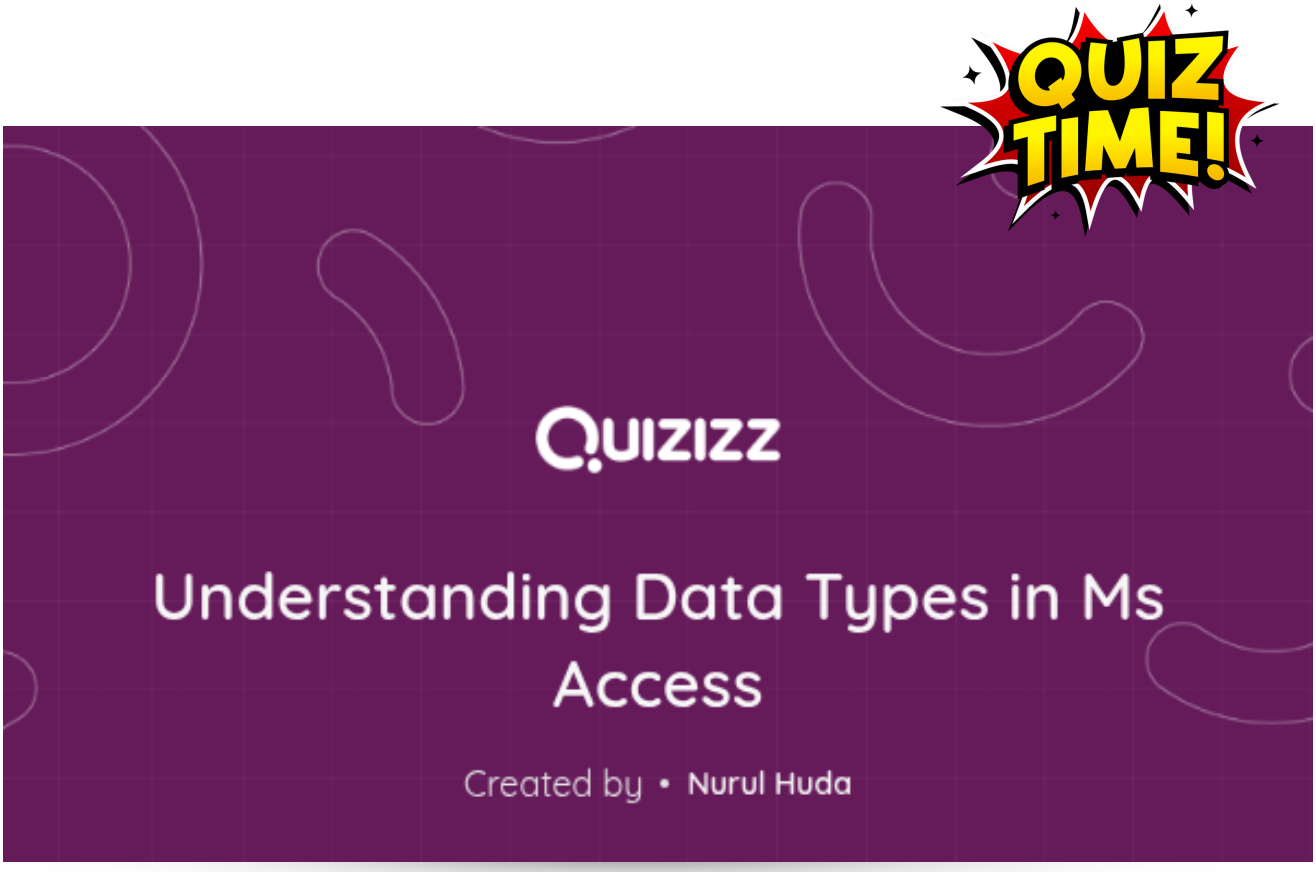
Data Type	Description	Example
Yes/No	Stores Boolean values (True/False, Yes/No, On/Off).	Active status, subscription confirmation
OLE Object	Stores objects like images, Word documents, and Excel spreadsheets.	Employee photos, scanned documents
Hyperlink	Stores clickable links to websites, email addresses, or file locations.	Website URLs, email contacts
Attachment	Allows files (images, PDFs, documents) to be attached to records.	Product images, scanned receipts
Calculated	Stores values derived from a calculation based on other fields	Total price = Quantity × Unit Price

4.0 CREATING TABLES

Data Types



4.0 CREATING TABLES



4.0 CREATING TABLES

4.2 Basic Creating Tables in Microsoft Access with AR

CREATING TABLE

4.3 Creating Tables in Microsoft Access

To understand how to build a system in Access, it is essential to familiarize yourself with its core components:

Step-by-step guide to creating the required tables:

Students Table

Stores student details essential for database management

Courses Table

Stores course information to facilitate academic tracking

Enrollment Table

Tracks student enrollments to monitor course participation

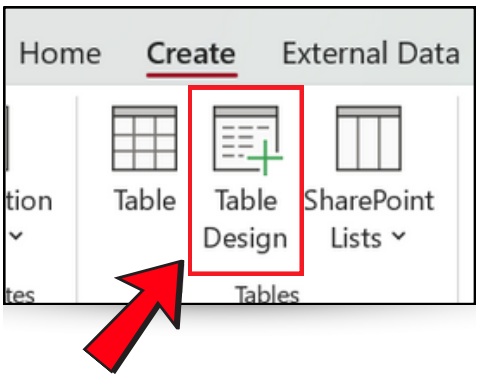
Grades Table

Records student grades to assess academic performance

4.0 CREATING TABLES

STEP 1 Create the "Students" Table

1. Open **Microsoft Access** and create **a Blank Database**.
2. Click **Table Design** to create **a new table.**

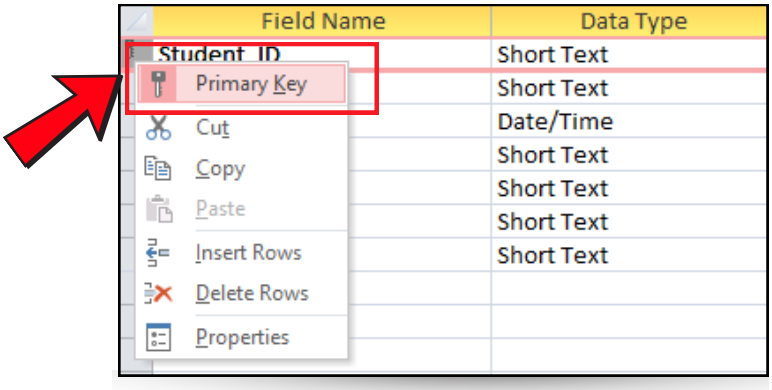


3. **Define** the fields as follows:

STUDENTS

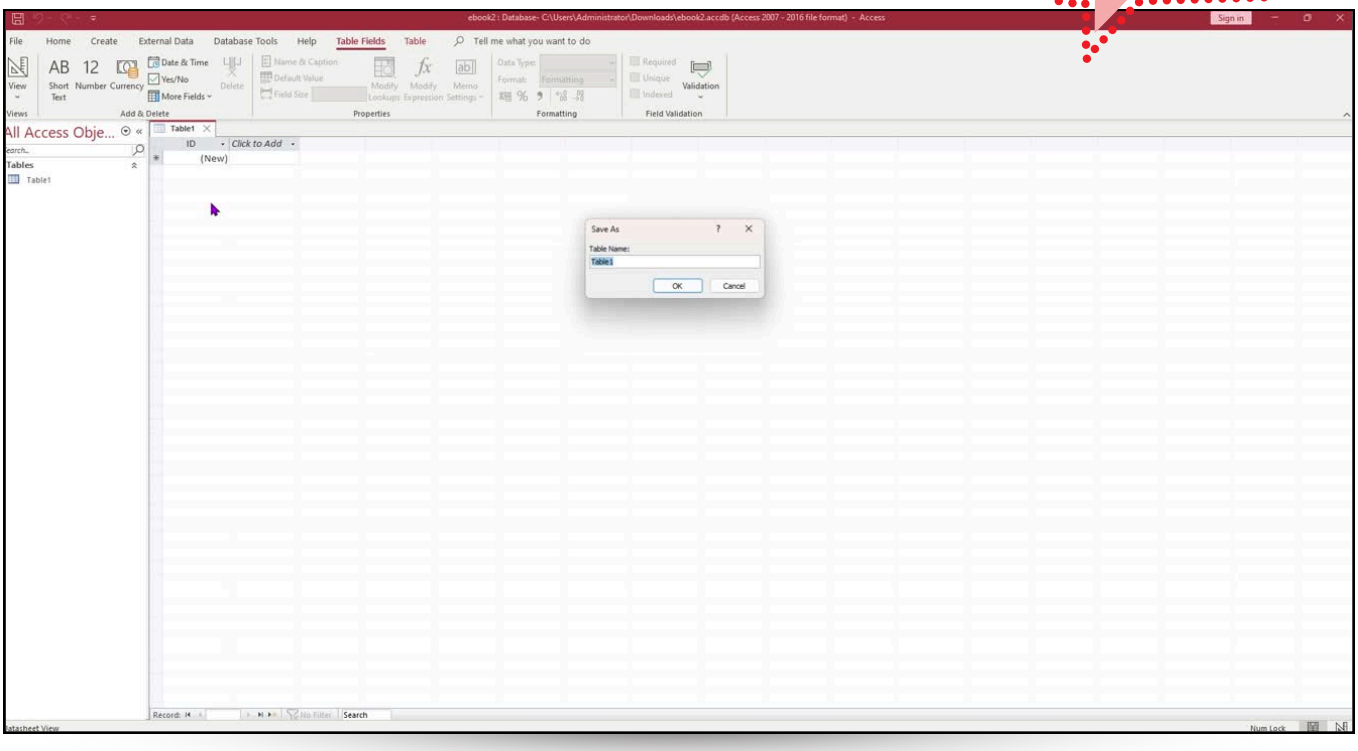
Field Name	Data Type	Description (Optional)
Student_ID	Short Text	Unique ID for each student
Name	Short Text	Student's name
DOB	Date/Time	Date Of Birth
Gender	Short Text	Male/Female
Address	Short Text	Student's home address
Contact_Number	Short Text	Phone Number
Email	Short Text	Email address

4. Set **Student_ID** as the **Primary Key** (Right-click → **Primary Key**).



4.0 CREATING TABLES

5. To save your **Table,** click the **Save** button on the Quick Access Toolbar or right click on the report's tab > select **Save**. When prompted, enter a name for your table and then click OK. For this table, name the table as **Students** and close it.



STEP 2 Create the "Courses" Table

1. Open **Table Design View**.
2. **Define** the fields as follows:

COURSES

Field Name	Data Type	Description (Optional)
Course_ID	Short Text	Unique ID for each course
CourseName	Short Text	Name of the course
CourseCode	Short Text	Course code (e.g., SFC10393)
Instructor	Short Text	Name of the instructor

3. Set **Course_ID** as the **Primary Key**. (Right-click → **Primary Key**).
4. Click **Save**, name the table **Courses**, and close it.

4.0 CREATING TABLES

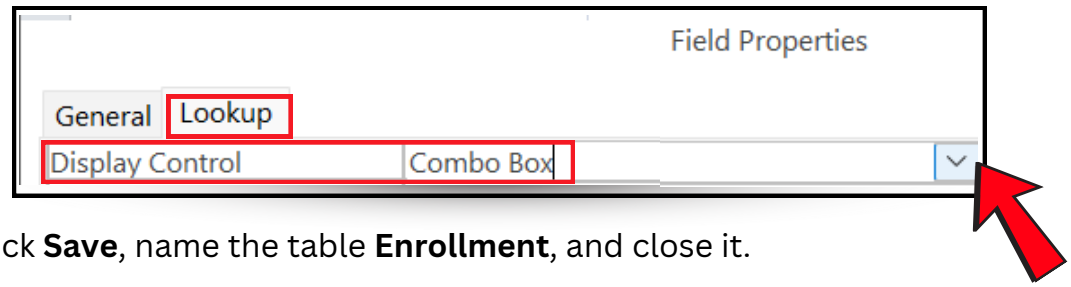
STEP 3 Create the "Enrollment" Table

1. Open **Table Design View**.
2. **Define** the fields as follows:

ENROLLMENT

Field Name	Data Type	Description (Optional)
EnrollmentID	AutoNumber	Unique ID for each enrollment record
Student_ID	Short Text	Links to Student_ID in "Students" table
Course_ID	Short Text	Links to Course_ID in "Courses" table
EnrollmentDate	Date/Time	Date the student enrolled

3. Set **EnrollmentID** as the **Primary Key**. (Right-click → **Primary Key**).
4. Now, we want to set the **Student_ID** and **Course_ID** as **Foreign Keys** by:
   - Clicking on the **Lookup** tab under Field Properties.
   - Choosing **Display Control → Combo Box** to allow selection from Students and Courses tables.



5.Click **Save**, name the table **Enrollment**, and close it.

STEP 4 Create the "Grades" Table

1. Open **Table Design View**.
2. **Define** the fields as follows:

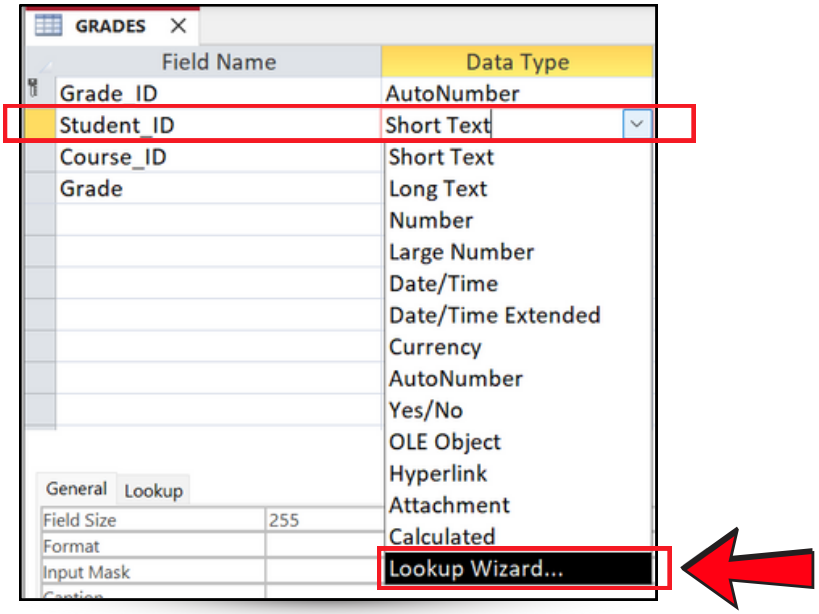
GRADES

Field Name	Data Type	Description (Optional)
Grade_ID	AutoNumber	Unique ID for each grade entry
Student_ID	Short Text	Links to Student_ID in "Students" table
Course_ID	Short Text	Links to Course_ID in "Courses" table
Grade	Short Text	Grade (e.g., A, B, C, etc.)

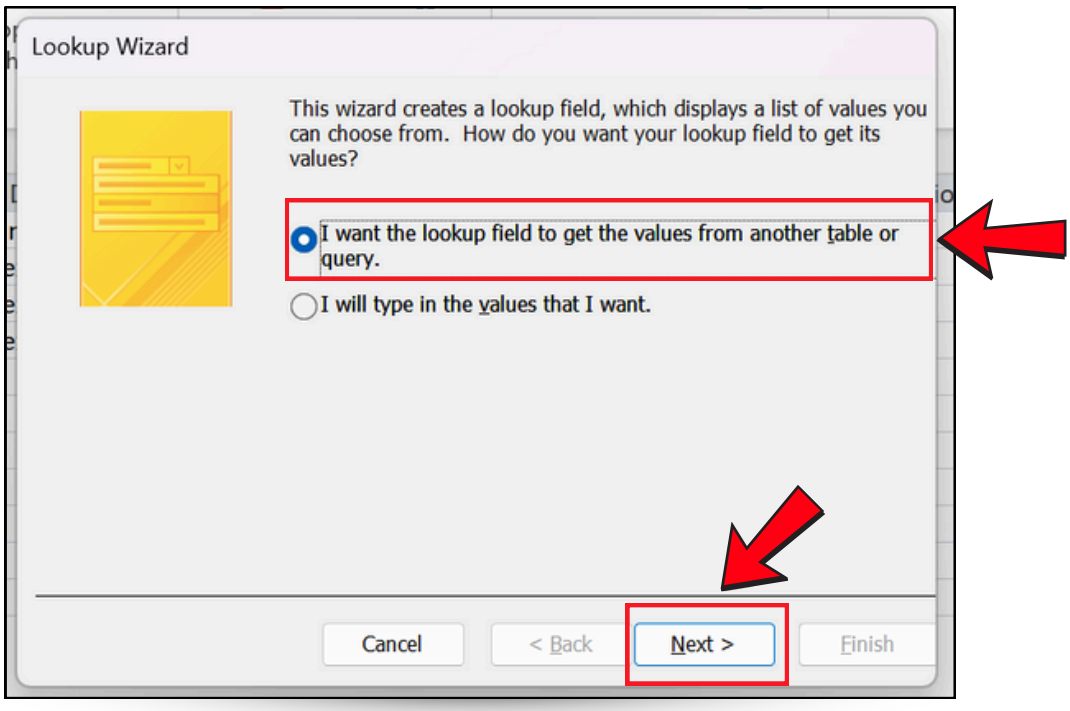
3. Set **GradeID** as the **Primary Key**. (Right-click → **Primary Key**).
4. Now, this time, we want to set **Student_ID** and **Course_ID** as **Foreign Keys** using the **Lookup Wizard**.

4.0 CREATING TABLES

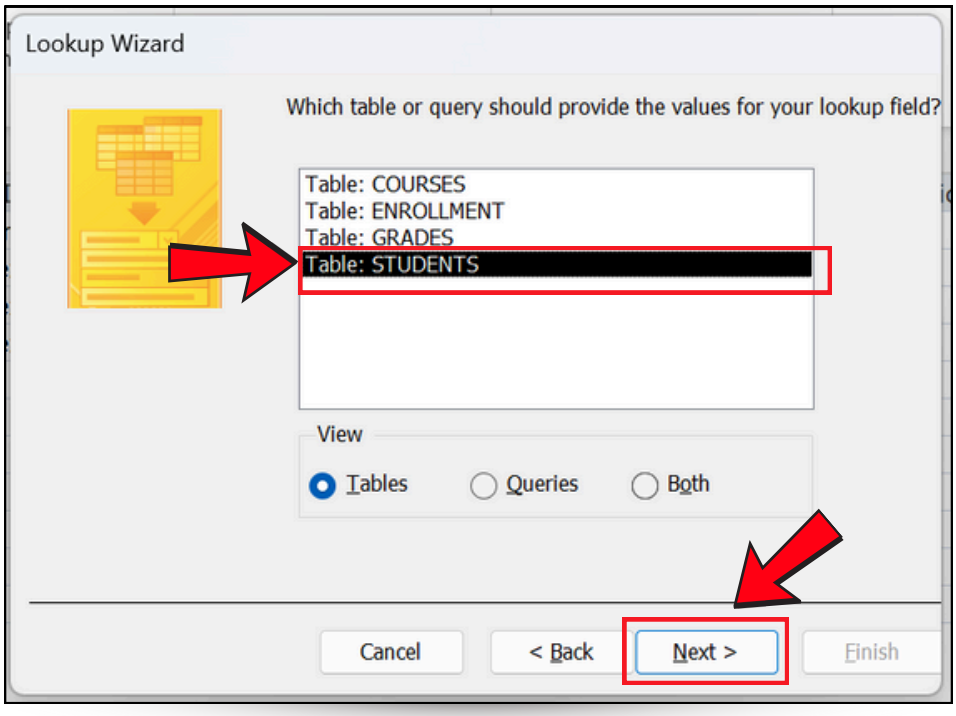
In the **Data Type** column for **Student_ID** field, click the dropdown and select **Lookup Wizard**.



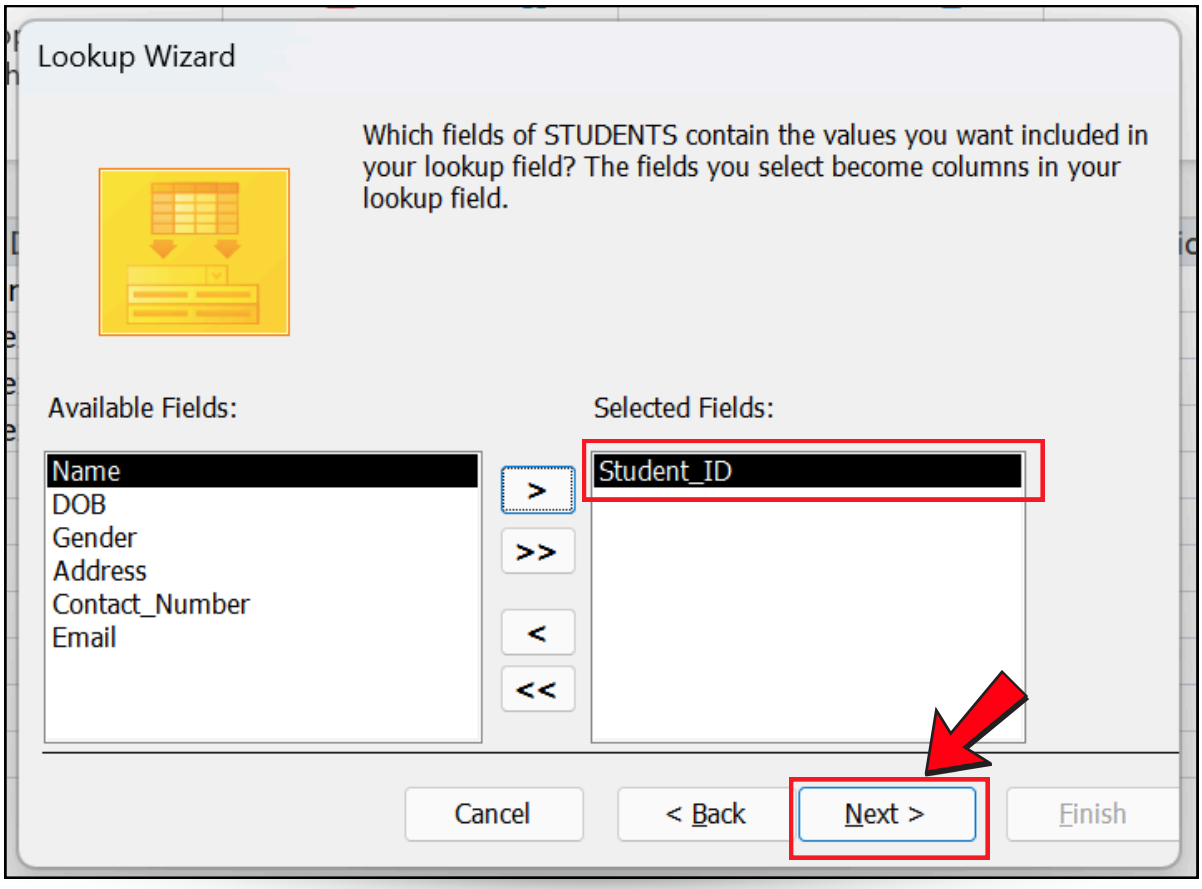
In the Lookup Wizard, select **"I want the lookup field to get the values from another table or query."** Click **Next.**



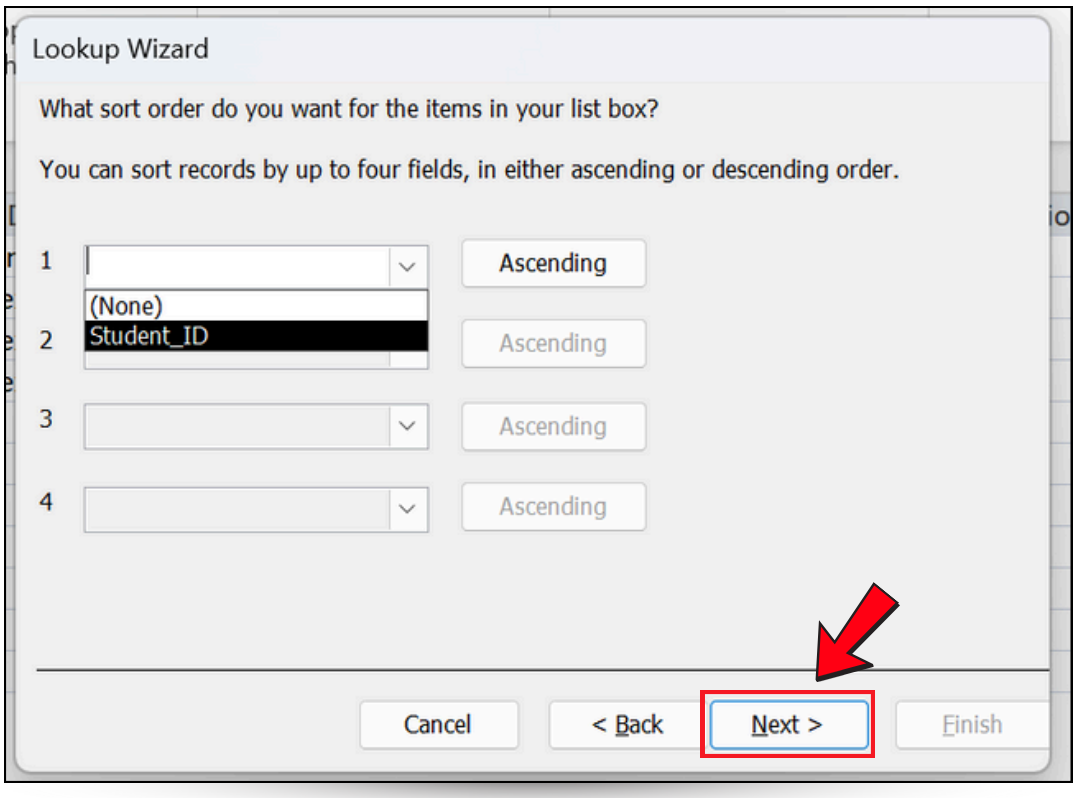
Choose the table that contains **Student_ID** (**e.g., Students Table**). Click **Next**.



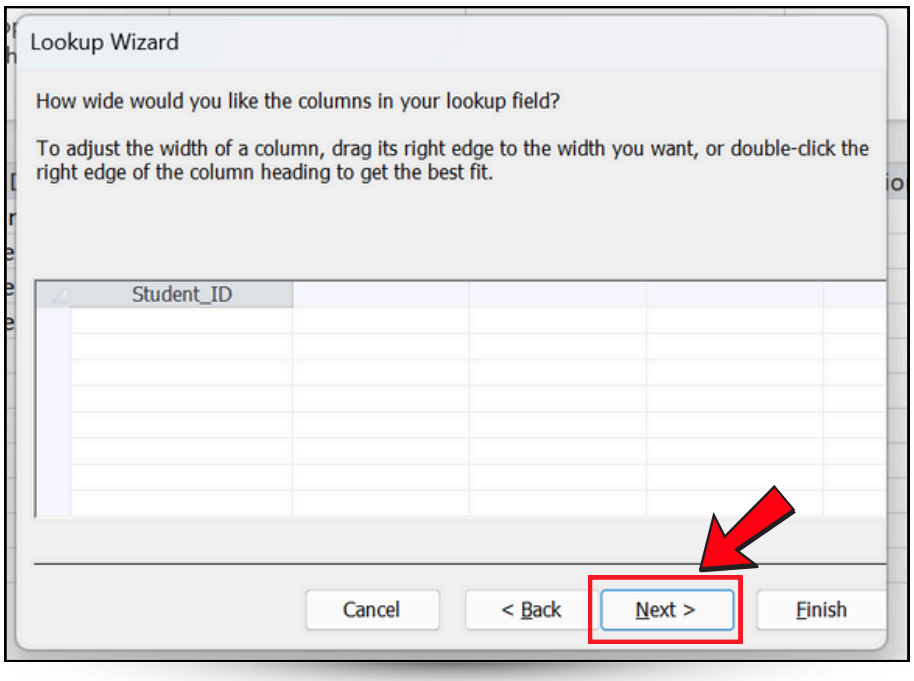
Select **Student_ID** as the field to be used for the lookup. Click **Next**.



Optionally, adjust sorting order and column width. Click **Next**.



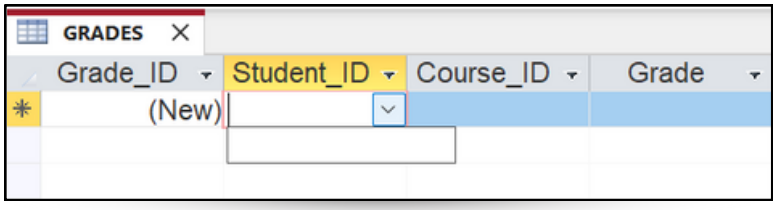
Choose whether to **store** just the **ID number** or **show additional fields** (e.g., Student Name). Click **Next**.



Click **Finish** to complete the setup.

Repeat the same steps for **Course_ID**, selecting values from the **Courses Table.**

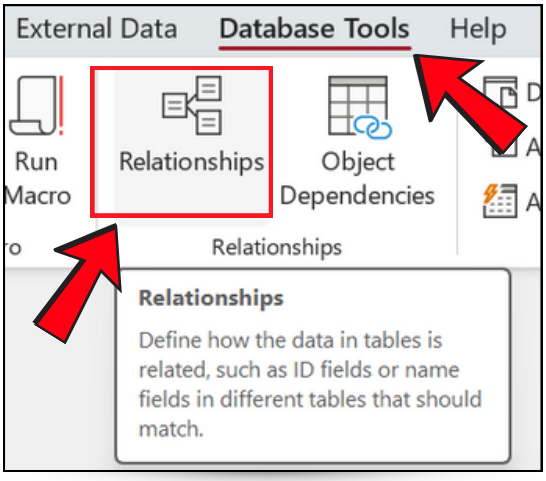
5. Click **Save**, name the table **Grades**, and close it.
6. **Open** the **Datasheet View** of your table and check that the lookup fields work correctly by selecting values from the dropdown.



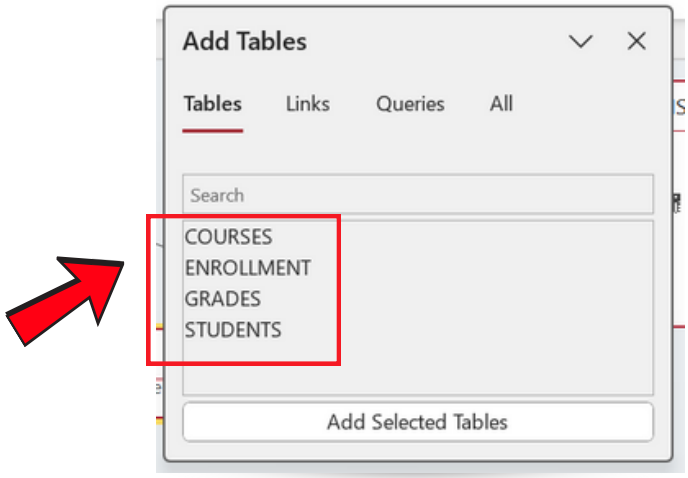
Now, **Student_ID** and **Course_ID** are **Foreign Keys** referencing the **Students Table** and **Courses Table**, respectively.

STEP 5 Establish Relationships Between Tables

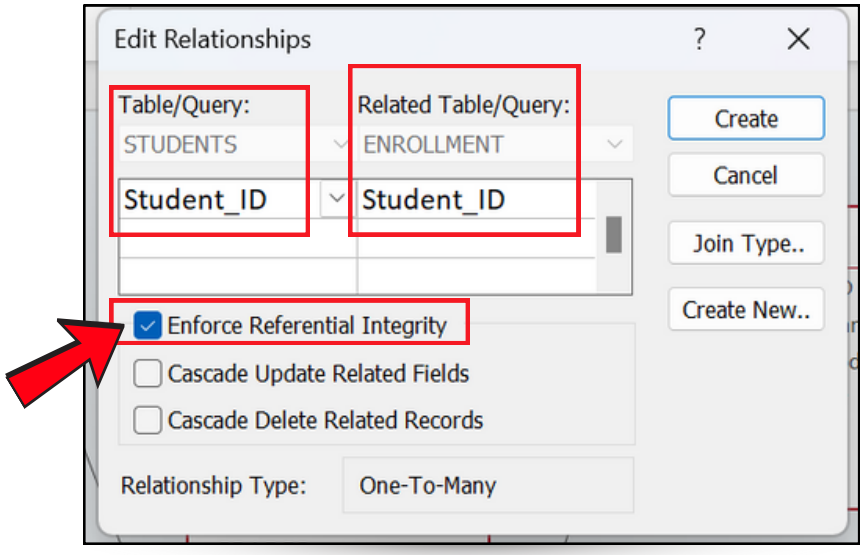
Click on **Database Tools** → **Relationships**.



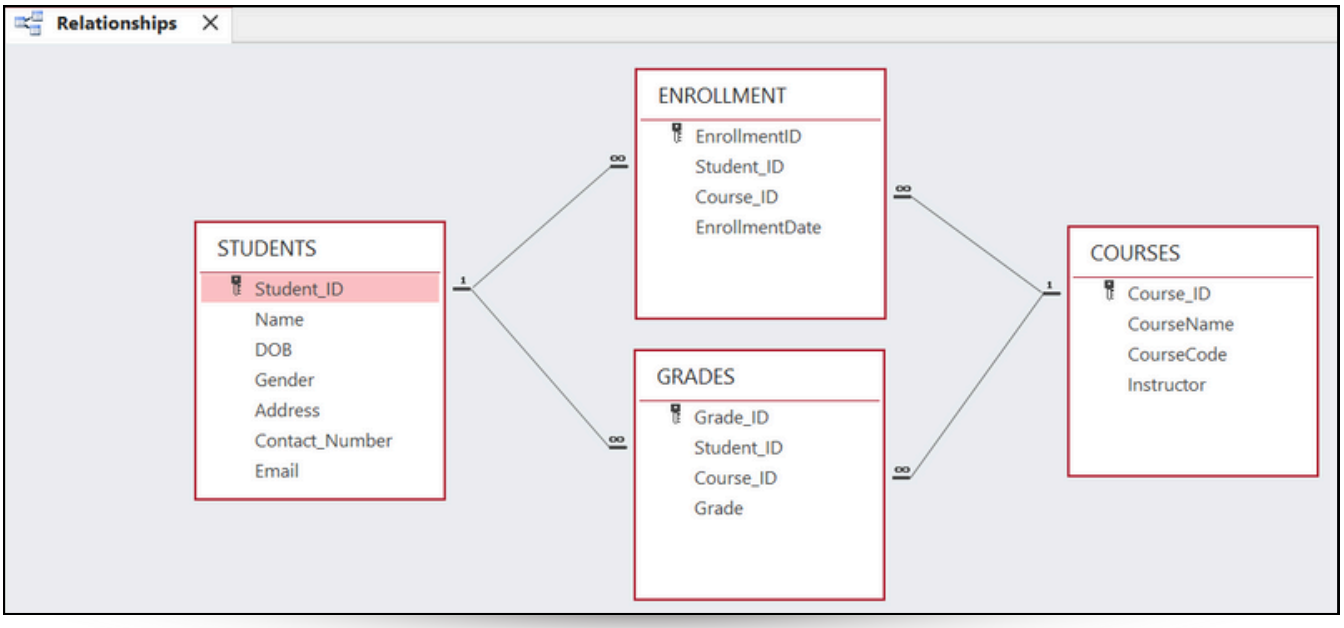
Add the **Students, Courses, Enrollment, and Grades** tables



- **Drag Student_ID** from the **Students table** to **StudentID** in the **Enrollment table** (One-to-Many).



- Check **Enforce Referential Integrity** and click **Create**.
- Drag **Course_ID** from the **Courses table** to **CourseID** in the **Enrollment table** (One-to-Many).
- Drag **Student_ID** from the **Students table** to **StudentID** in the **Grades table** (One-to-Many).
- Drag Course_ID from the **Courses table** to **CourseID** in the **Grades table** (One-to-Many).
- Check **Enforce Referential Integrity** and click **Create**.



- Click **Save** to store the relationships

CHAPTER 5

5.0 DESIGNING FORMS FOR DATA ENTRY

5.1 Importance of Forms

Creating forms in your database helps to make data entry easier and more user-friendly. Forms can be customized and designed to suit the structure of your database and to provide a clear and organized way for users to input information.

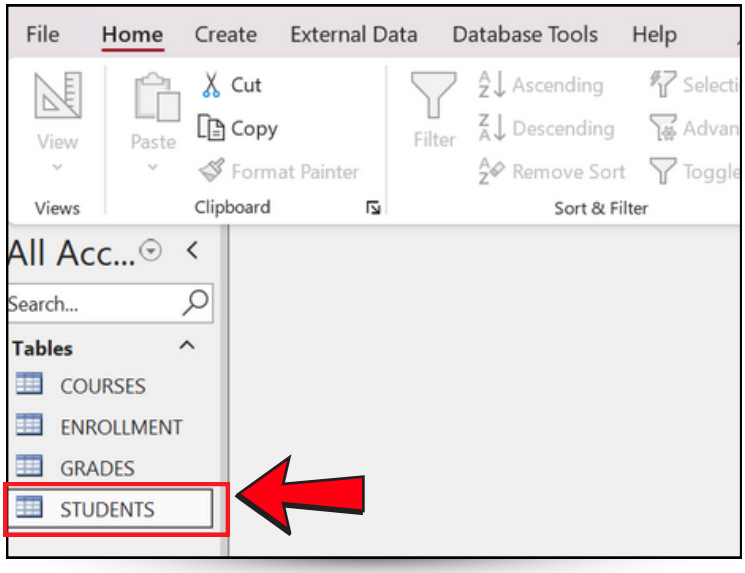
5.2 Creating Forms for the Student Management System

STEP 1 **Create a Form for Student Details**

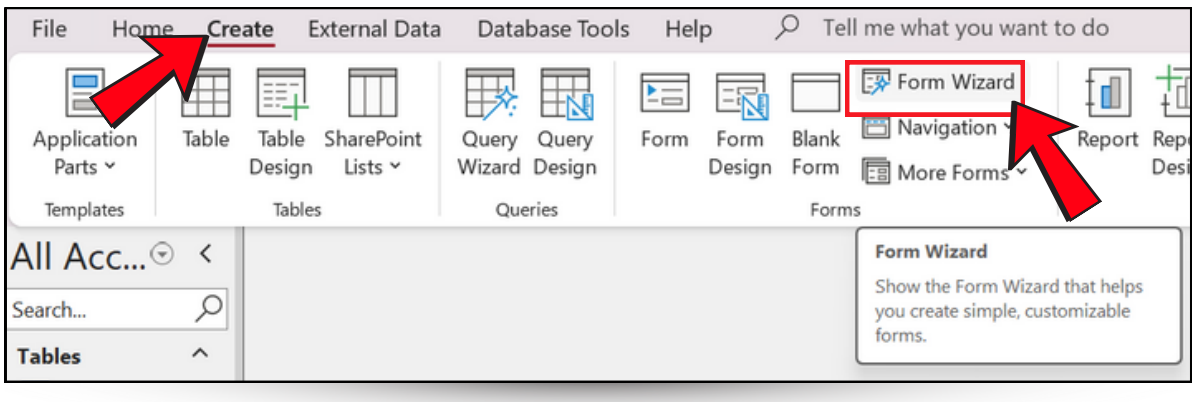
This form will allow users to enter and view student information.

Method 1: Using the Form Wizard

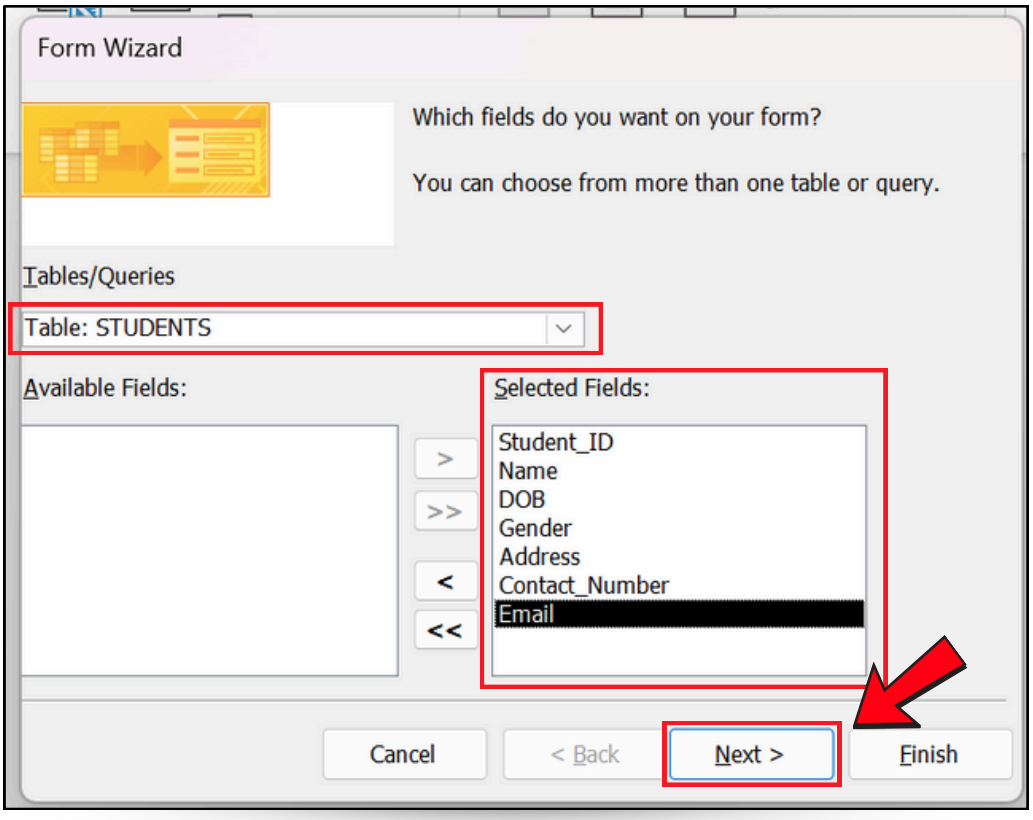
1. **Open Microsoft Access** and go to t**he Navigation Pane**.
2. **Select** the **Students Table** (which contains fields like StudentID, Name, Contact Number etc).



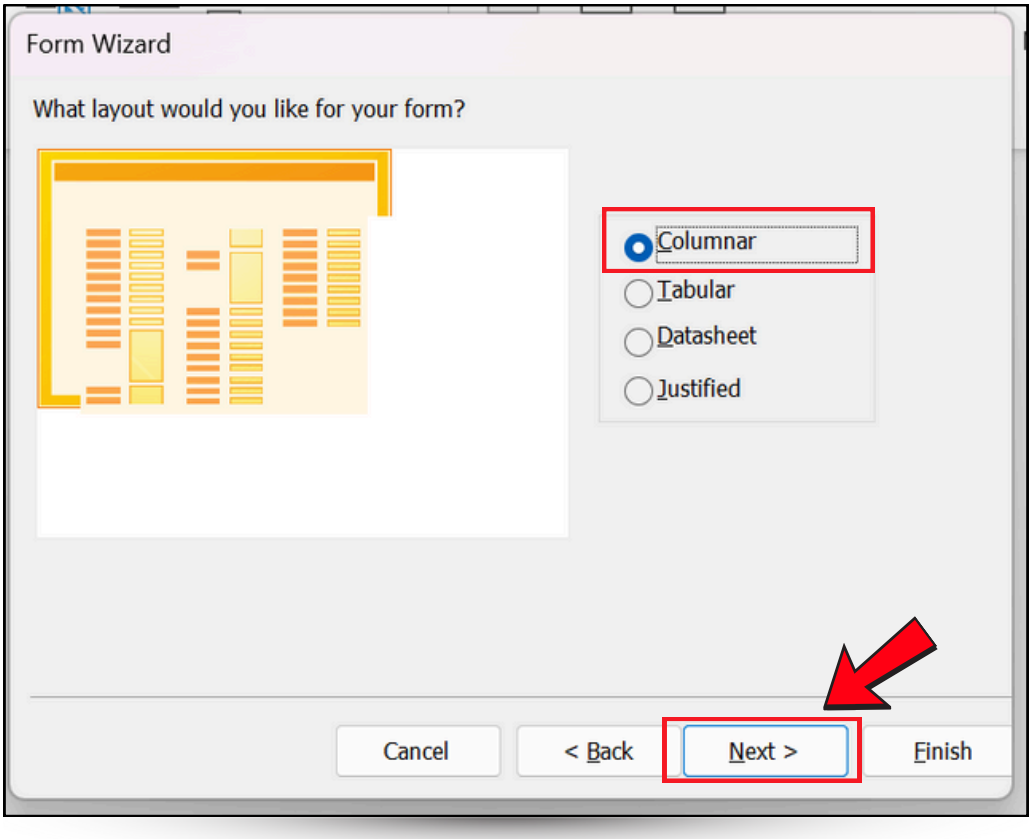
3. **Click** on the **Create tab** in the ribbon and **click Form Wizard.**



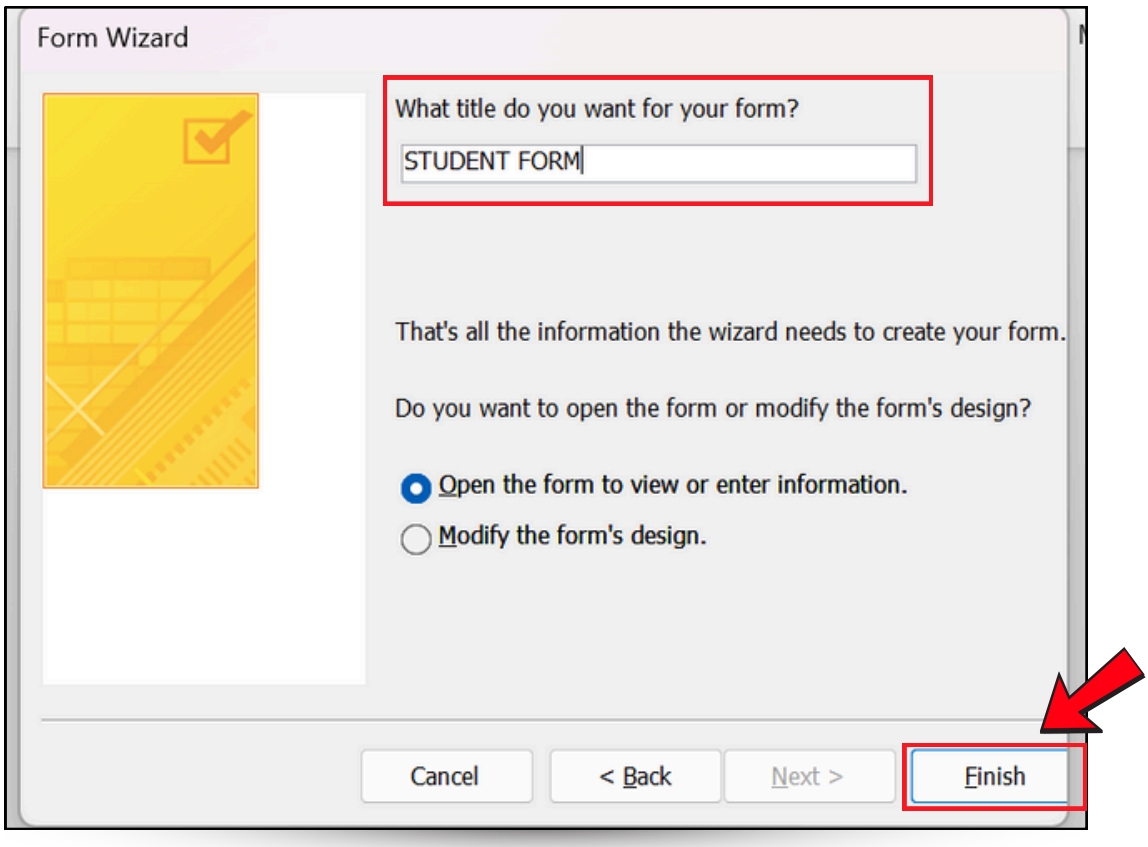
4. In the wizard, select all fields from the **Students Table** and click **Next**.



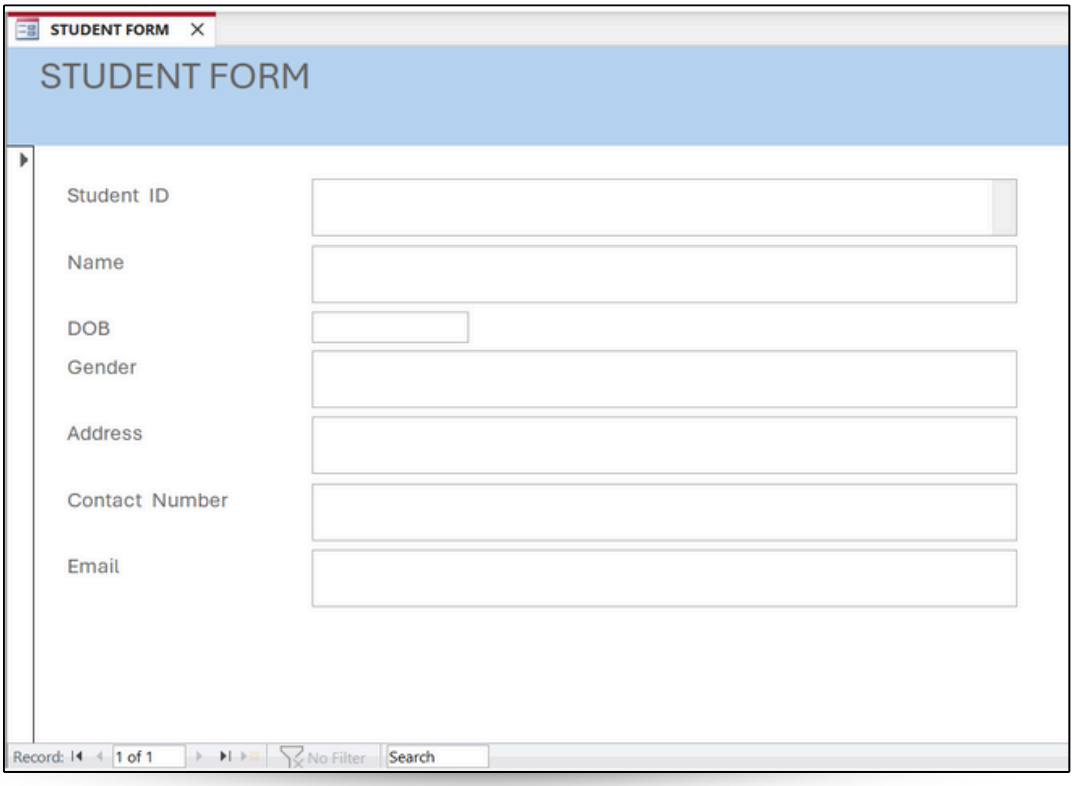
5. **Choose a layout** (e.g., Columnar) and click **Next**.



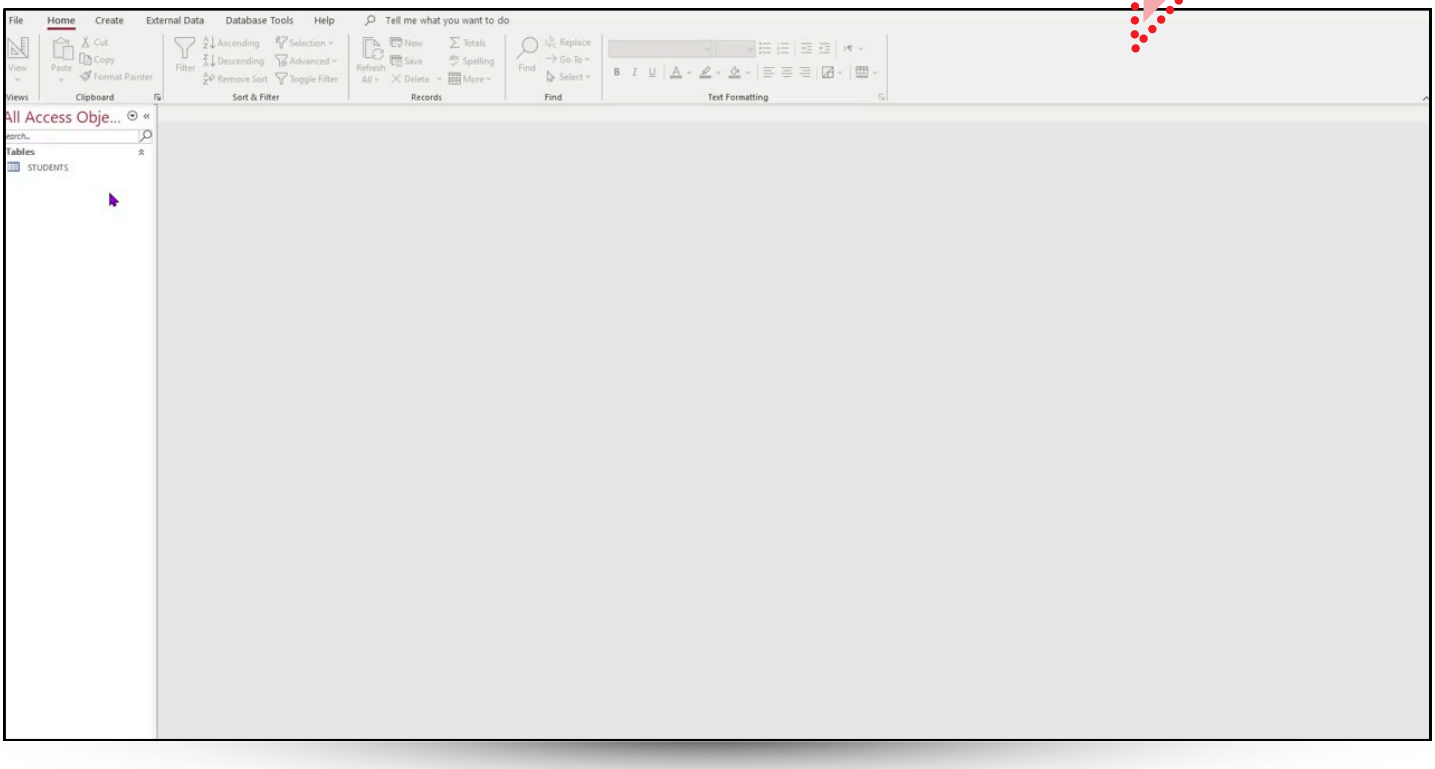
6. **Name the form** (e.g., **Student Form**) and click **Finish**.



Now, your **STUDENT FORM** is created and opened in Form View



5.0 DESIGNING FORMS FOR DATA ENTRY

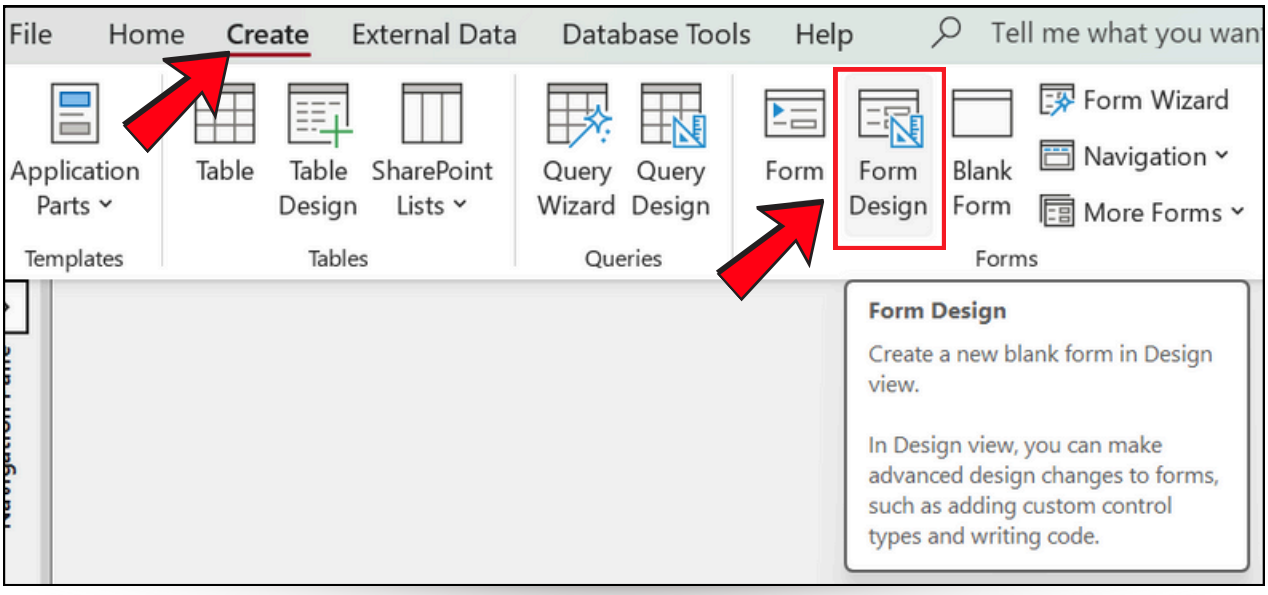


Scan to discover the step-by-step guide to creating a form with AR

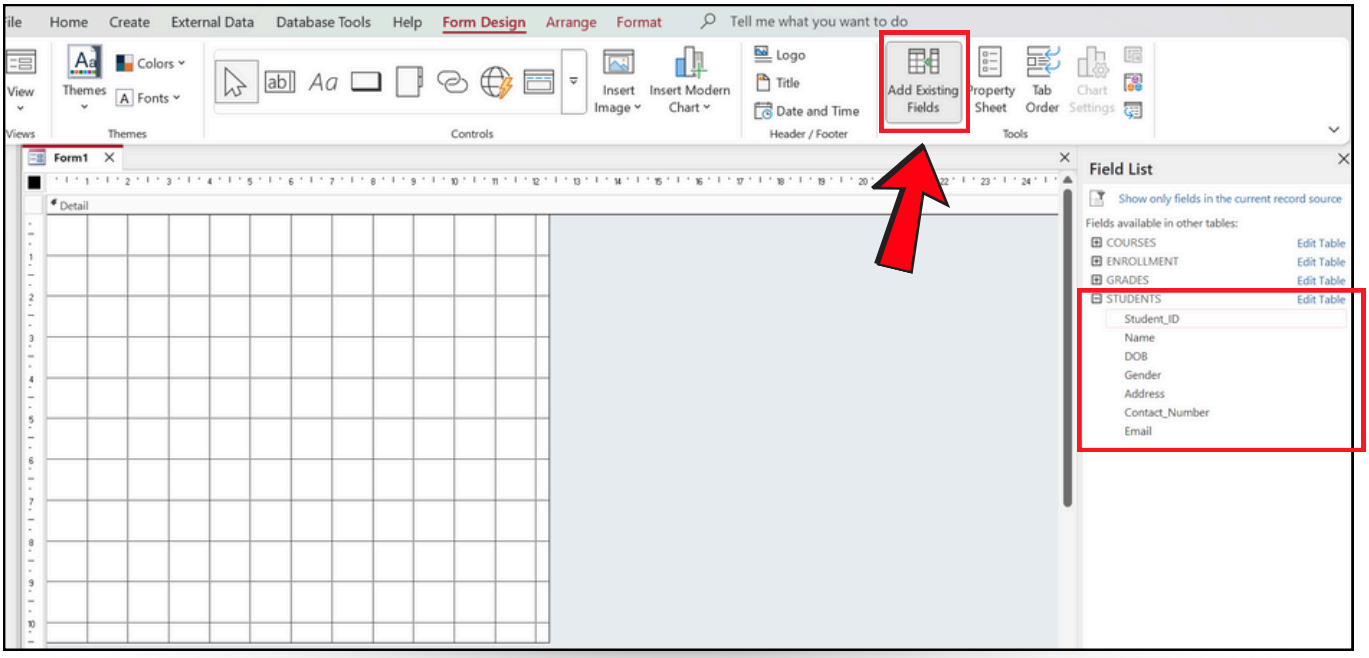
CREATING FORM

Method 2: Using the Form Design View

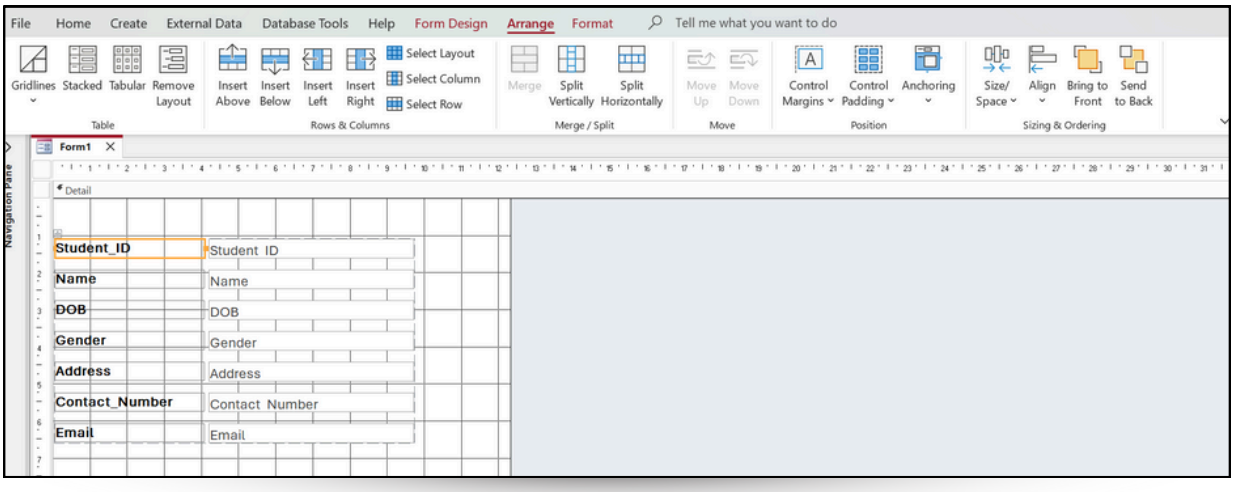
1. **Go to the Create Tab → Click Form Design.**



2. Click **Add Existing Fields** in the ribbon, then drag the fields from the **Students Table** onto the form.



3. Use the **Design Tools** to arrange labels and fields neatly.



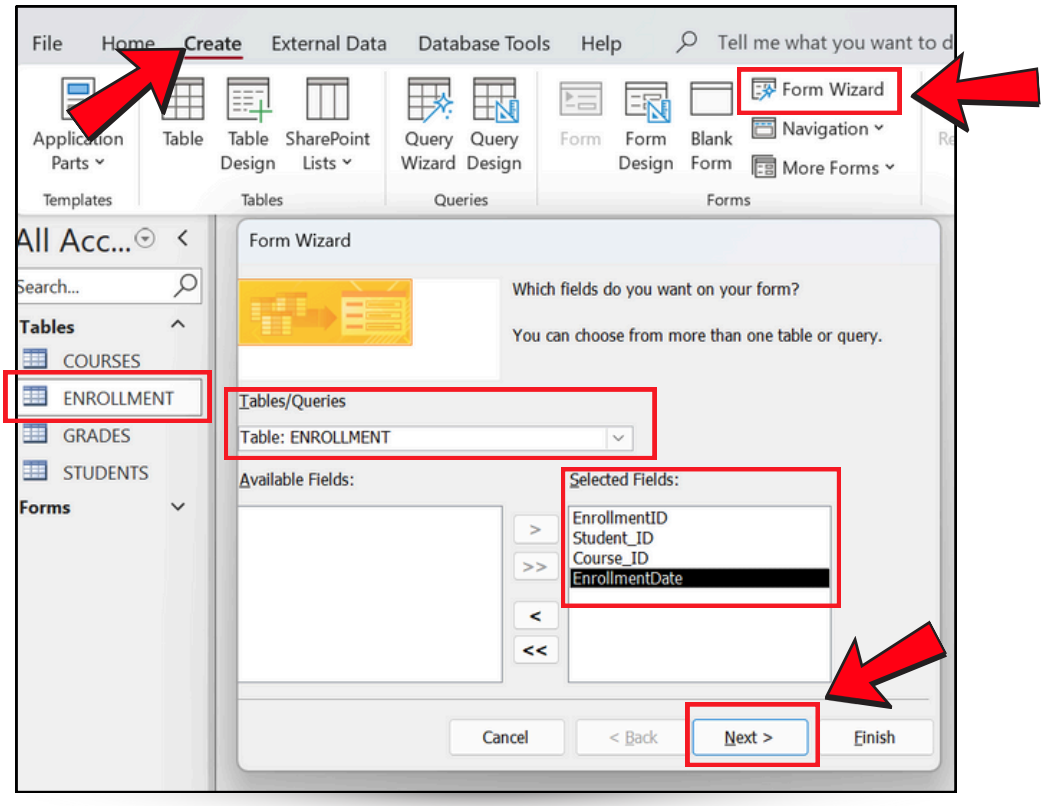
4. To save your form, click the **Save** button on the Quick Access Toolbar or right click on the form's tab > select **Save**. When prompted, enter a name for your form and then click OK. In this practical, you can save the form as **Student Form.**

STEP 2 Create a Form for Course Enrollment

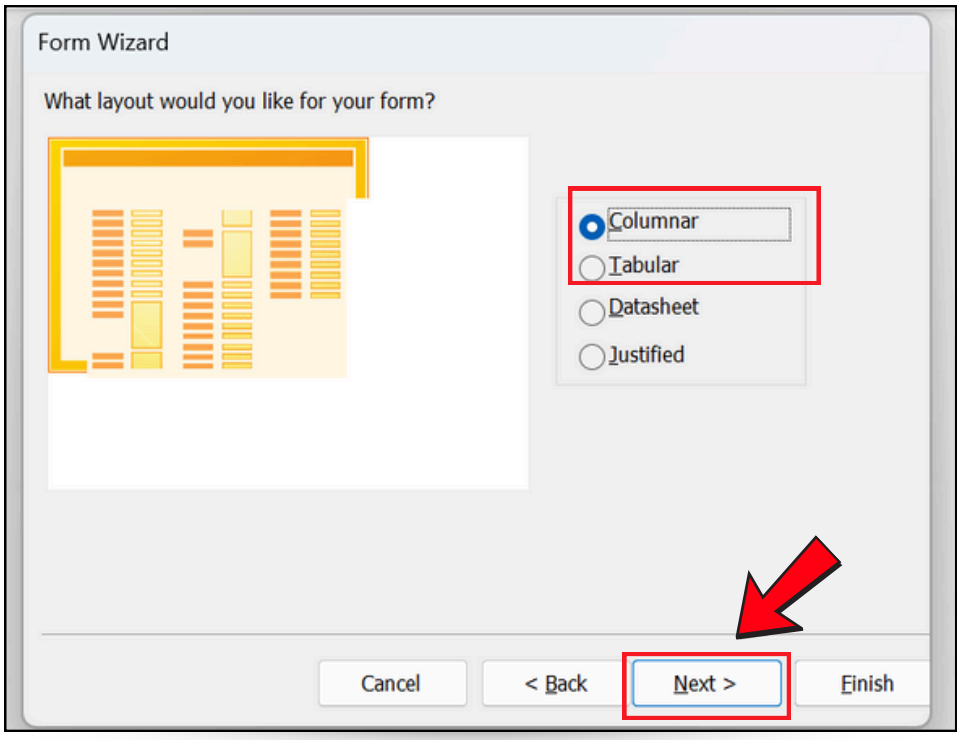
This form will allow users to enroll students in courses.

Using the Form Wizard

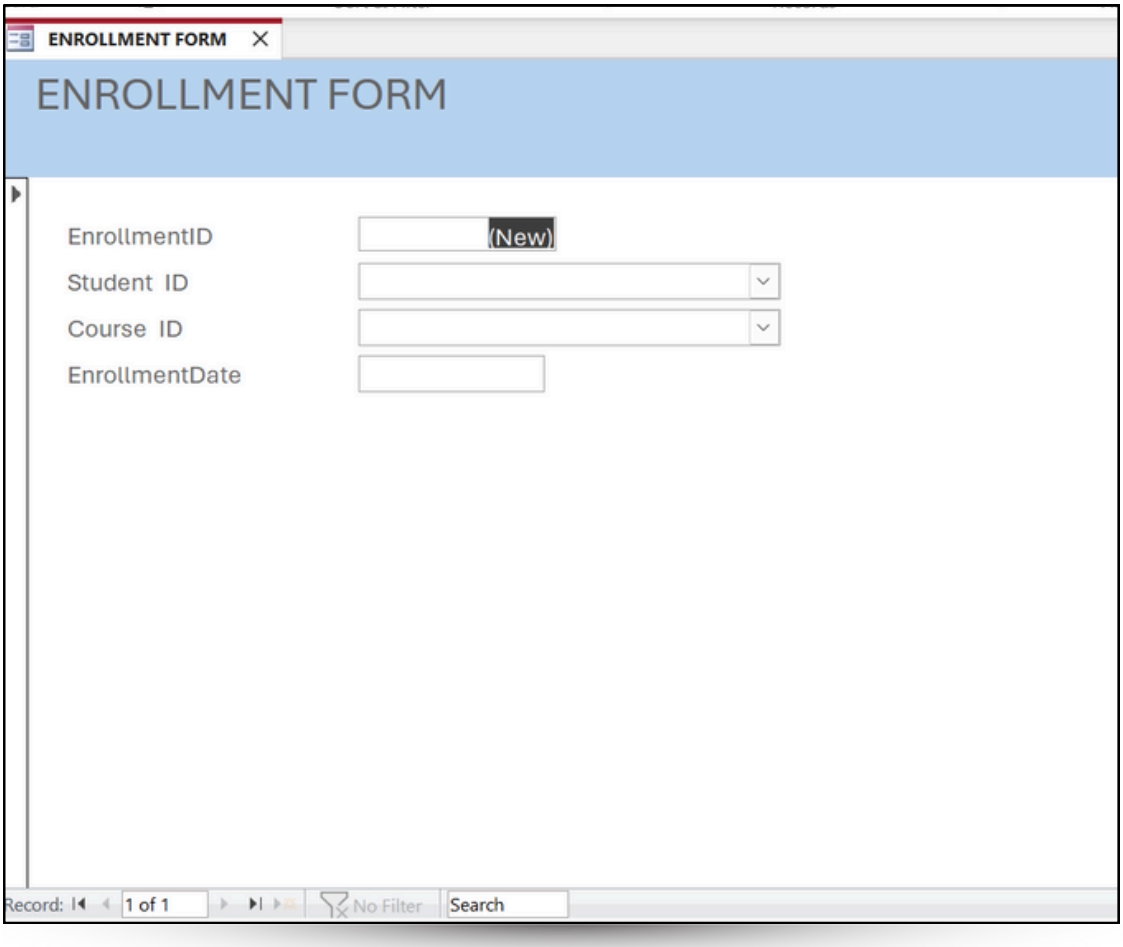
1. **Select** the **Enrollments Table** (which includes StudentID, CourseID, and EnrollmentDate).
2. Go to **Create > Form Wizard**.
3. **Choose all fields** from the **Enrollments Table** and click **Next**.



4. **Select** a **Tabular or Columnar** layout and click **Next**.

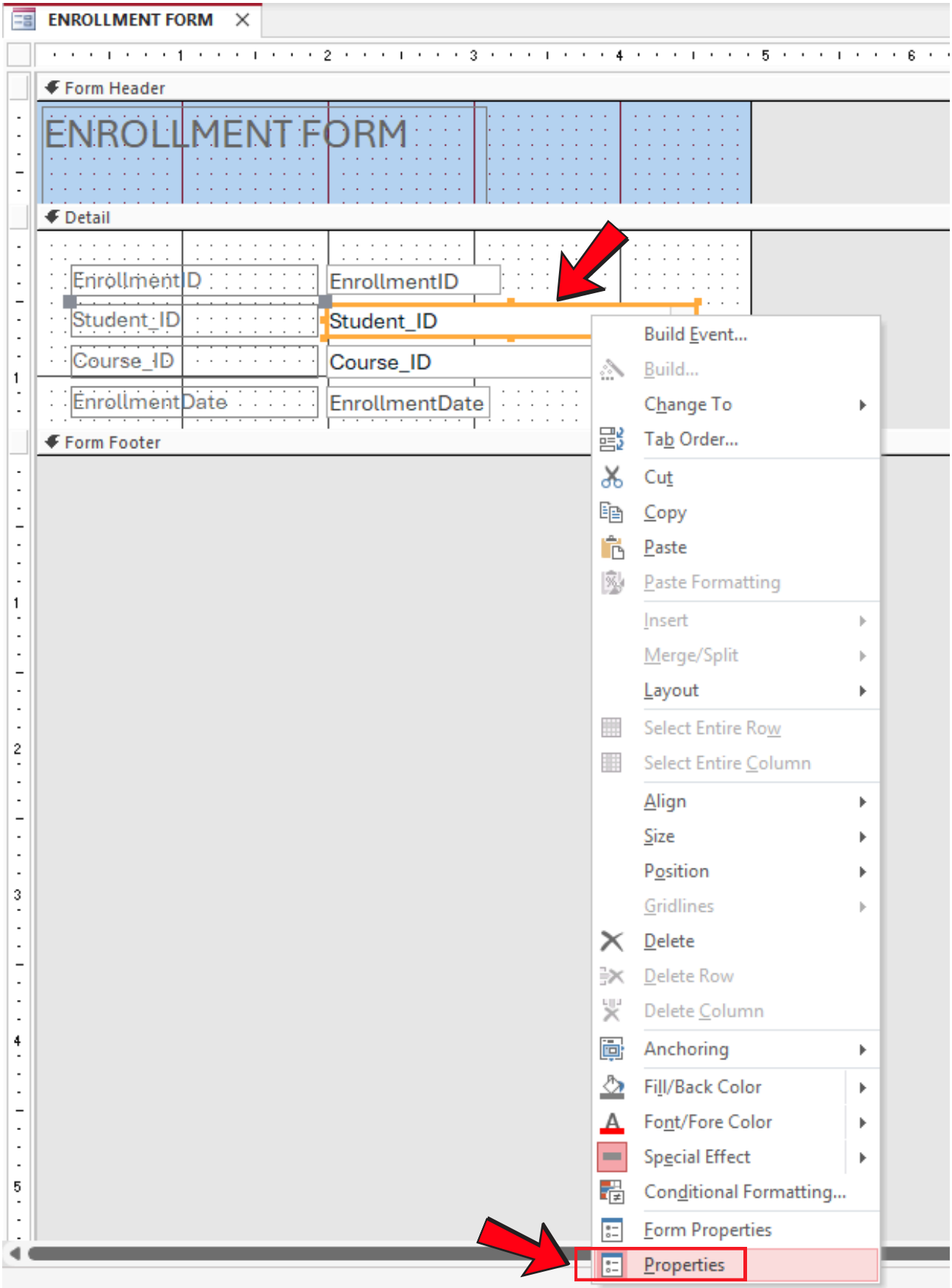


5. Name the form as **Enrollment Form** and click **Finish**.

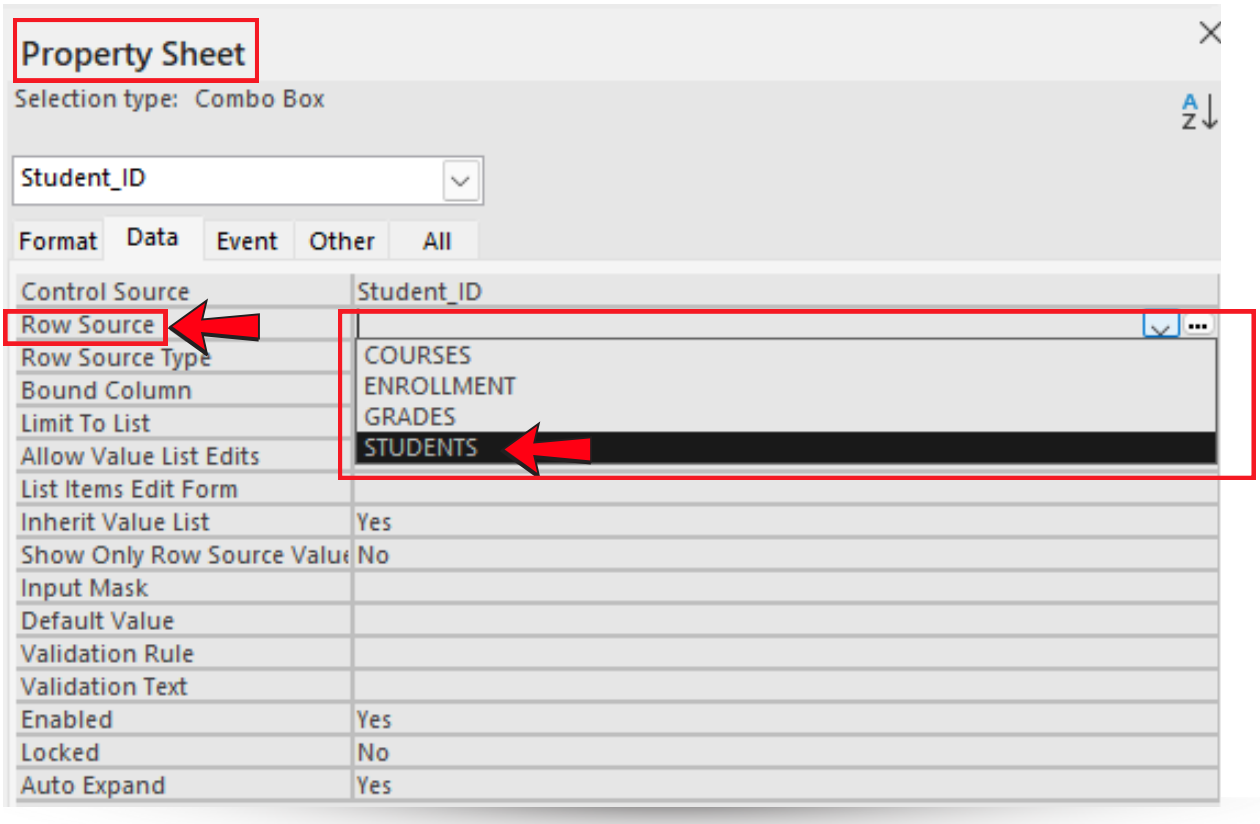


To add a Combo Box for StudentID:

1. **Open** the **Enrollment Form** in **Design View.**
2. **Right click** on **StudentID Field,** then go to **Properties.**



3. On the **Property Sheet**, **Set** the **Row Source** to **STUDENTS.**



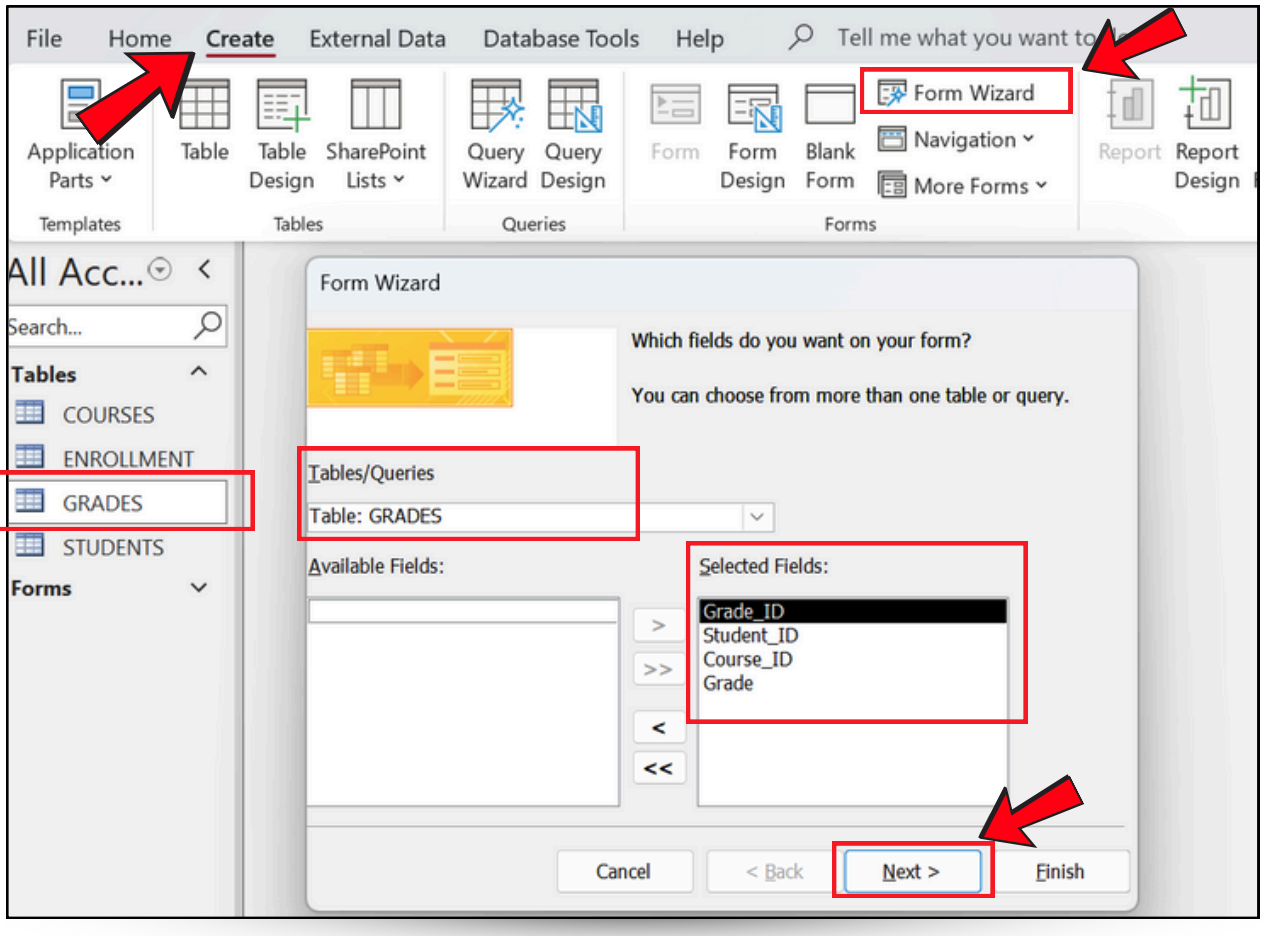
4. **Save** the changes.
5. **Repeat** for **CourseID** (using the Courses Table).

5.0 DESIGNING FORMS FOR DATA ENTRY

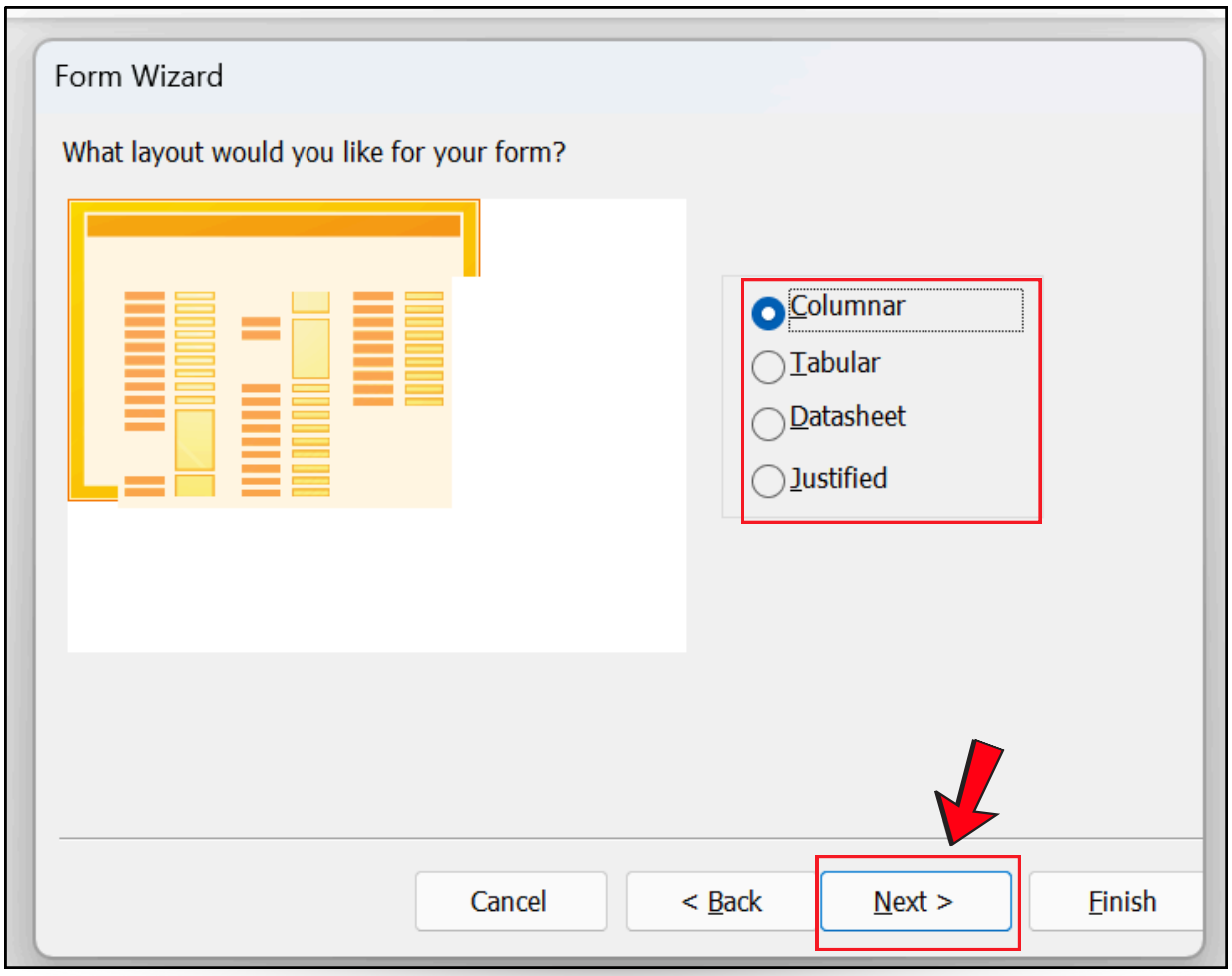
STEP 3 Create a Form for Recording Student Grades

This form will allow users to enter student grades for each course.

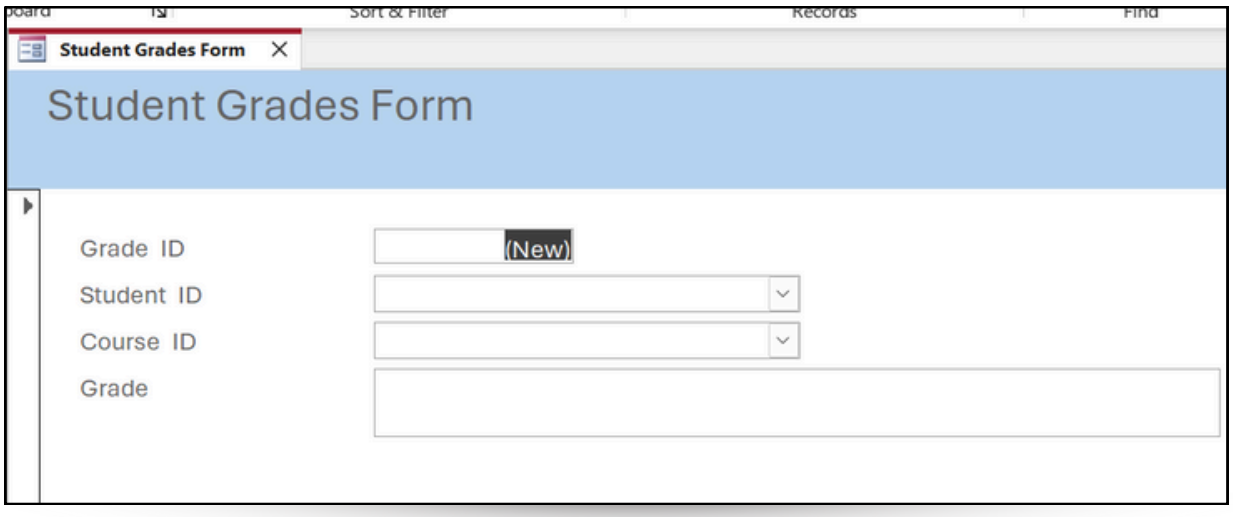
1. **Select** the **Grades Table** (which includes StudentID, CourseID, and Grade).
2. Click on the **Create** tab in the ribbon and click **Form Wizard**.
3. Choose all fields from the **Grades Table** and click **Next**.



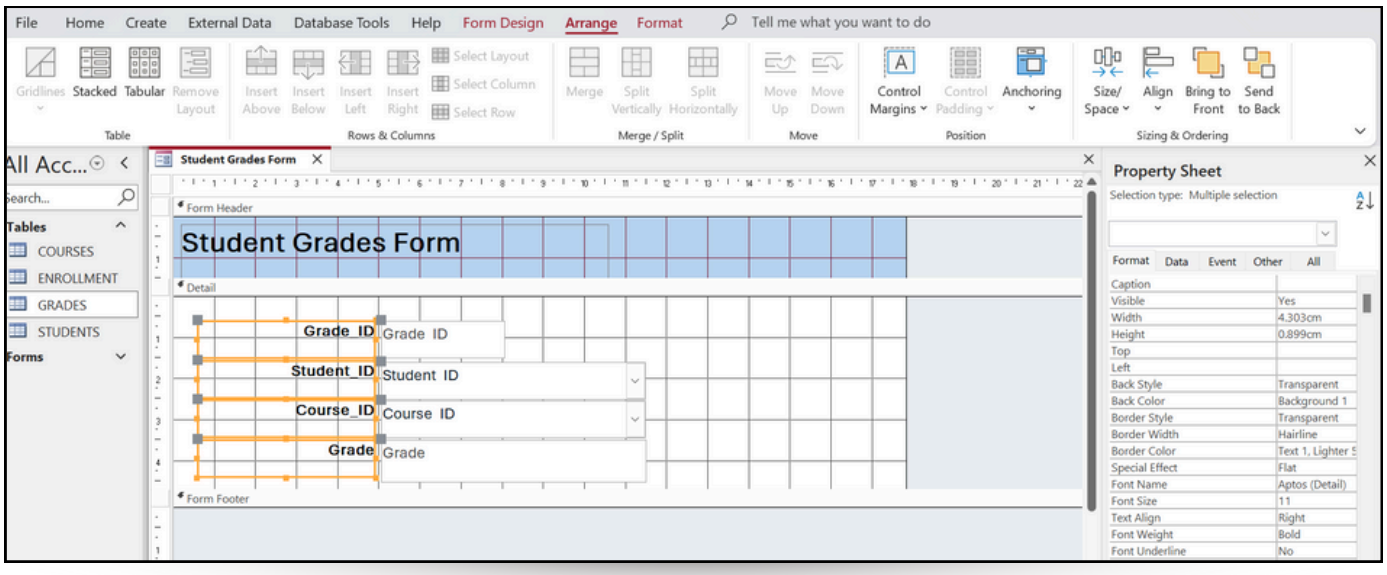
4. **Select** a **Datasheet or Columnar Layout** and click **Next**.



5. **Name** the form as **Student Grades Form** and click **Finish**.



6. **Open** the form in **Design View** and adjust the layout as needed.

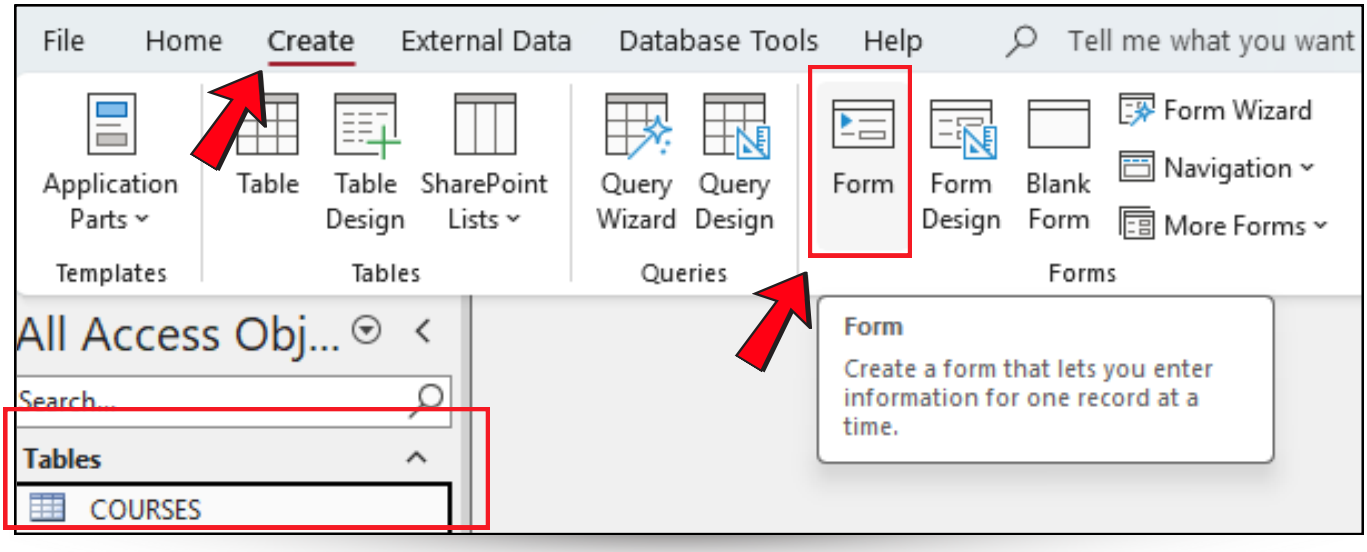


STEP 4 Create a Form for Registering the Courses

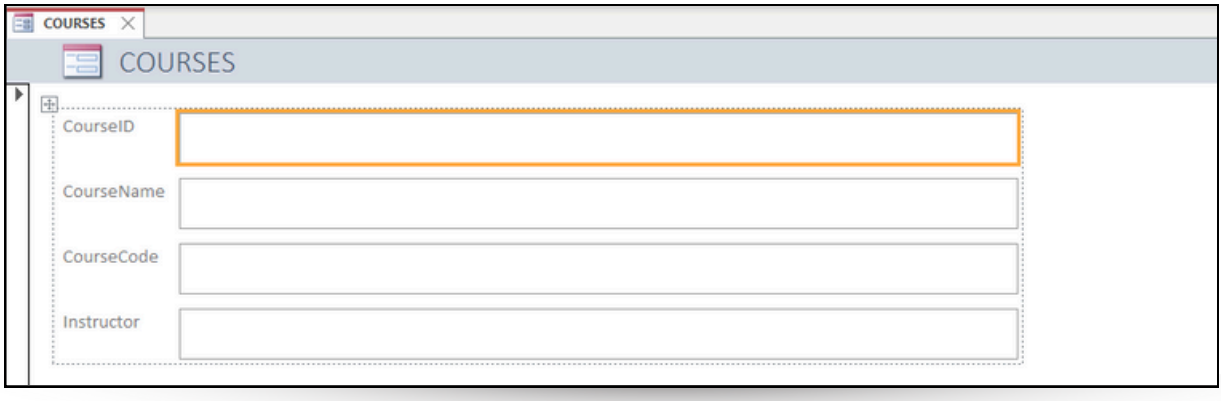
This form will allow users to register courses and instructor for each courses.

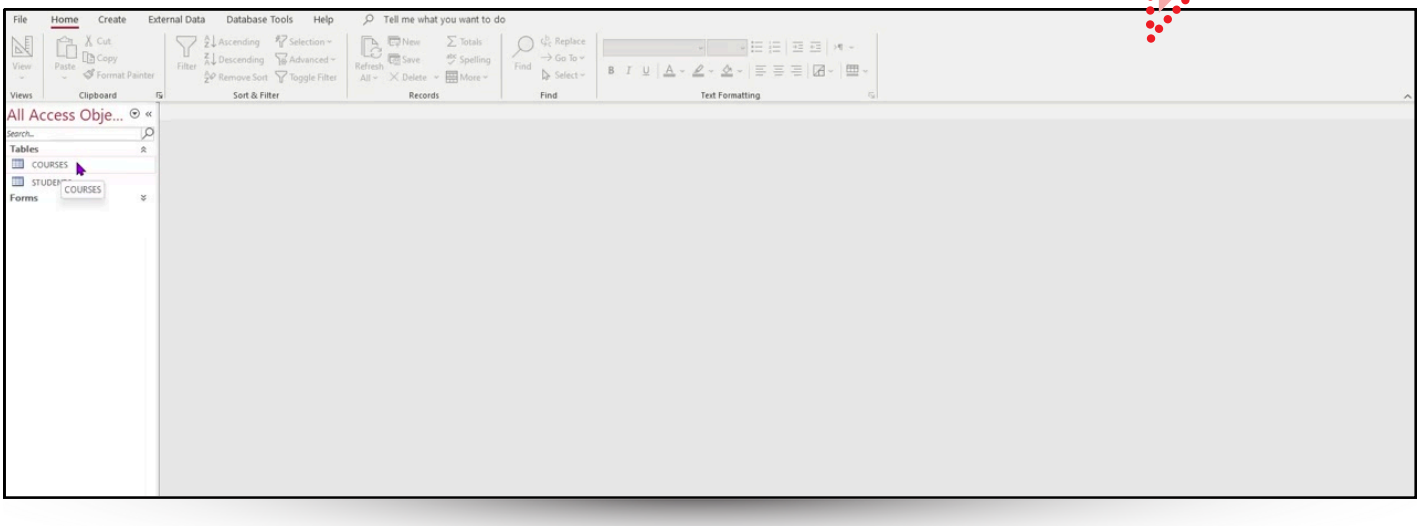
Method 3: Using the Form Command

1. **Select** the **Courses Table**
2. Click on the **Create** tab in the ribbon and click **Form** command.

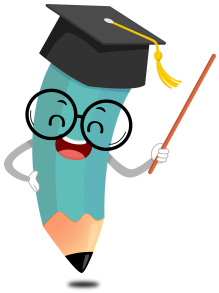


3.Now, your **COURSES FORM is created** and **opened in Layout View**. **Save** the form as **COURSES FORM.**





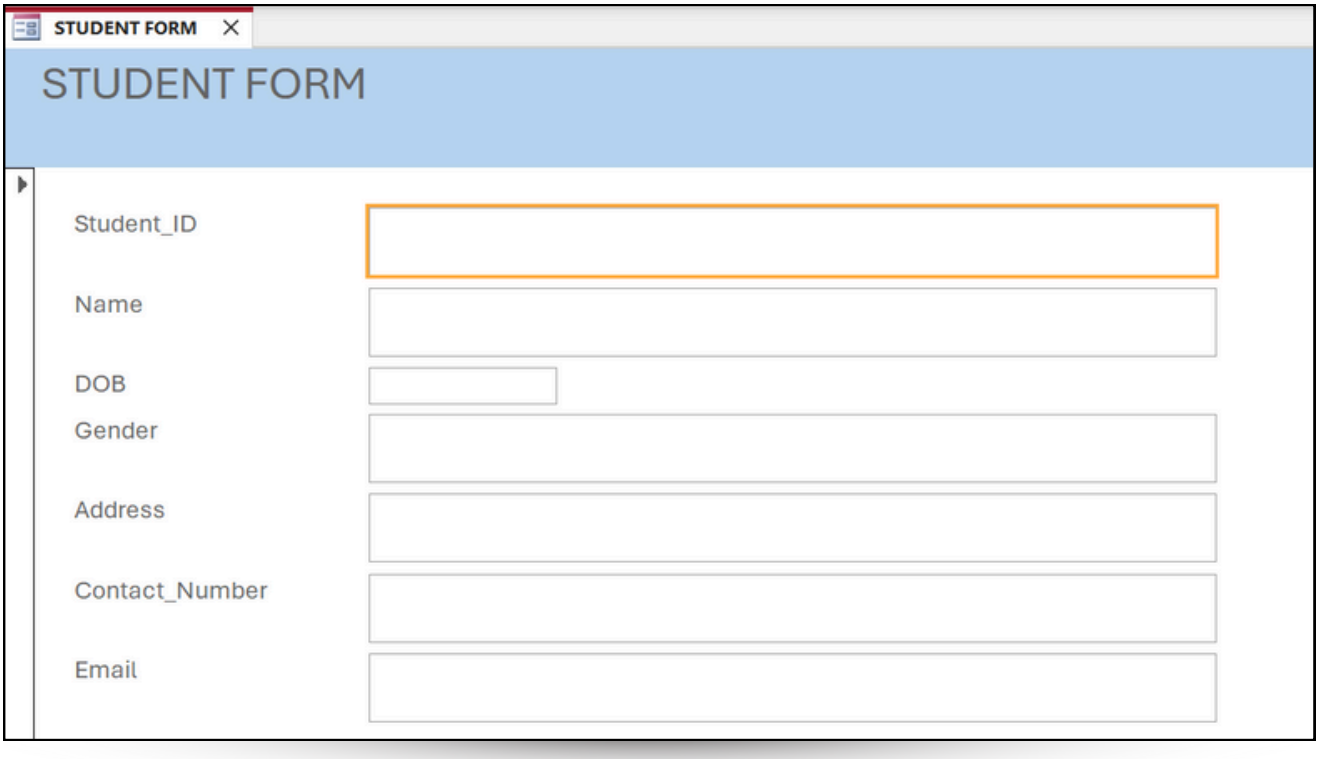
5.3 Modifying Your Form



- Once a form is created in Microsoft Access, you may want to customize it to improve its functionality and appearance. Modifying forms not only enhances the user experience but also ensures your database system looks professional and is easy to navigate.
- This chapter will guide you through the step-by-step process of modifying a form, including adjusting layouts, adding buttons and images, and applying consistent formatting.

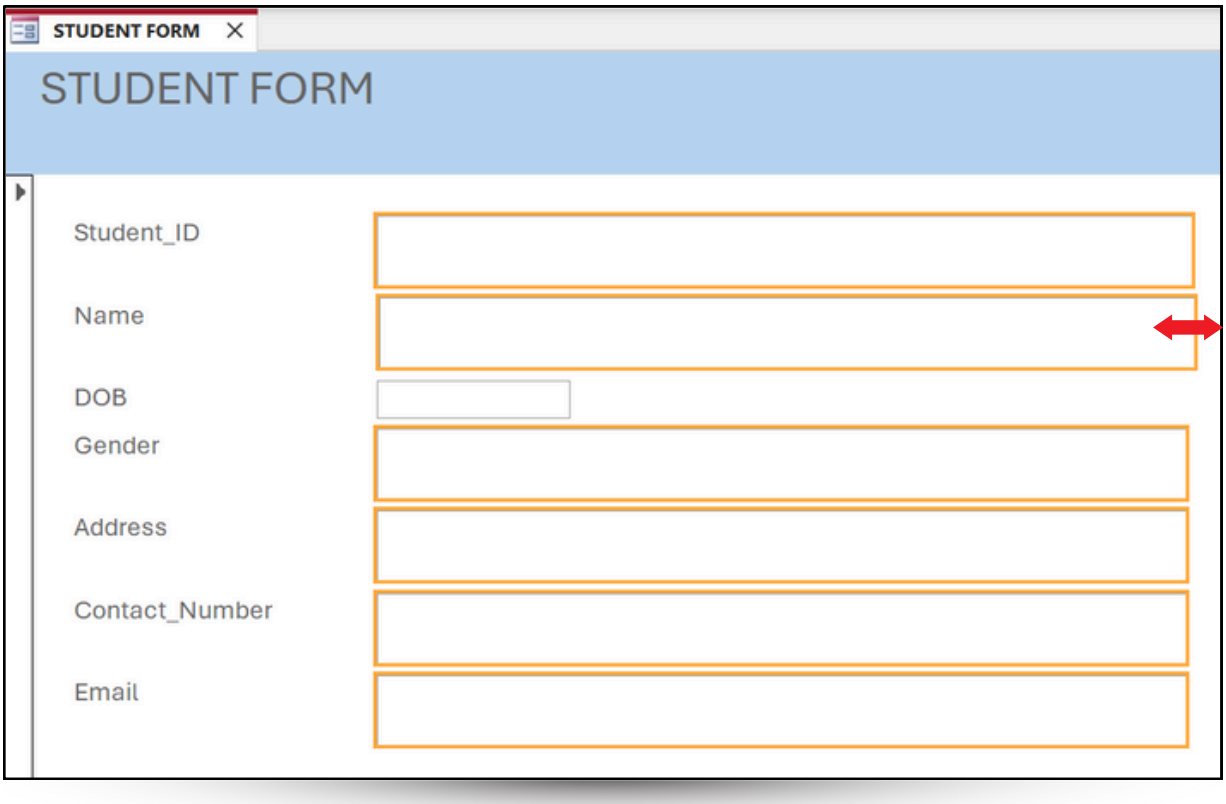
STEP 1 Open the Form in Design or Layout View

1. Go to the **Navigation Pane** and **right-click** on the form you wish to modify.
2. You can use **Design View** if you want full control over your form, or try **Layout View** for quick and easy formatting
3. In this practical, we will begin by opening the **Student Form** in Layout View.

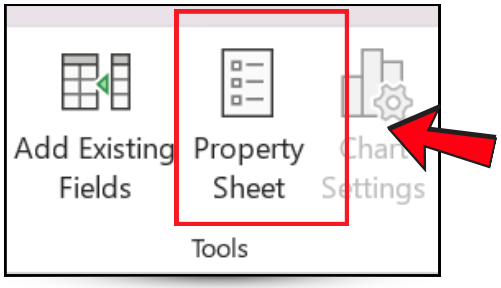


STEP 2 Rearrange or Resize Fields

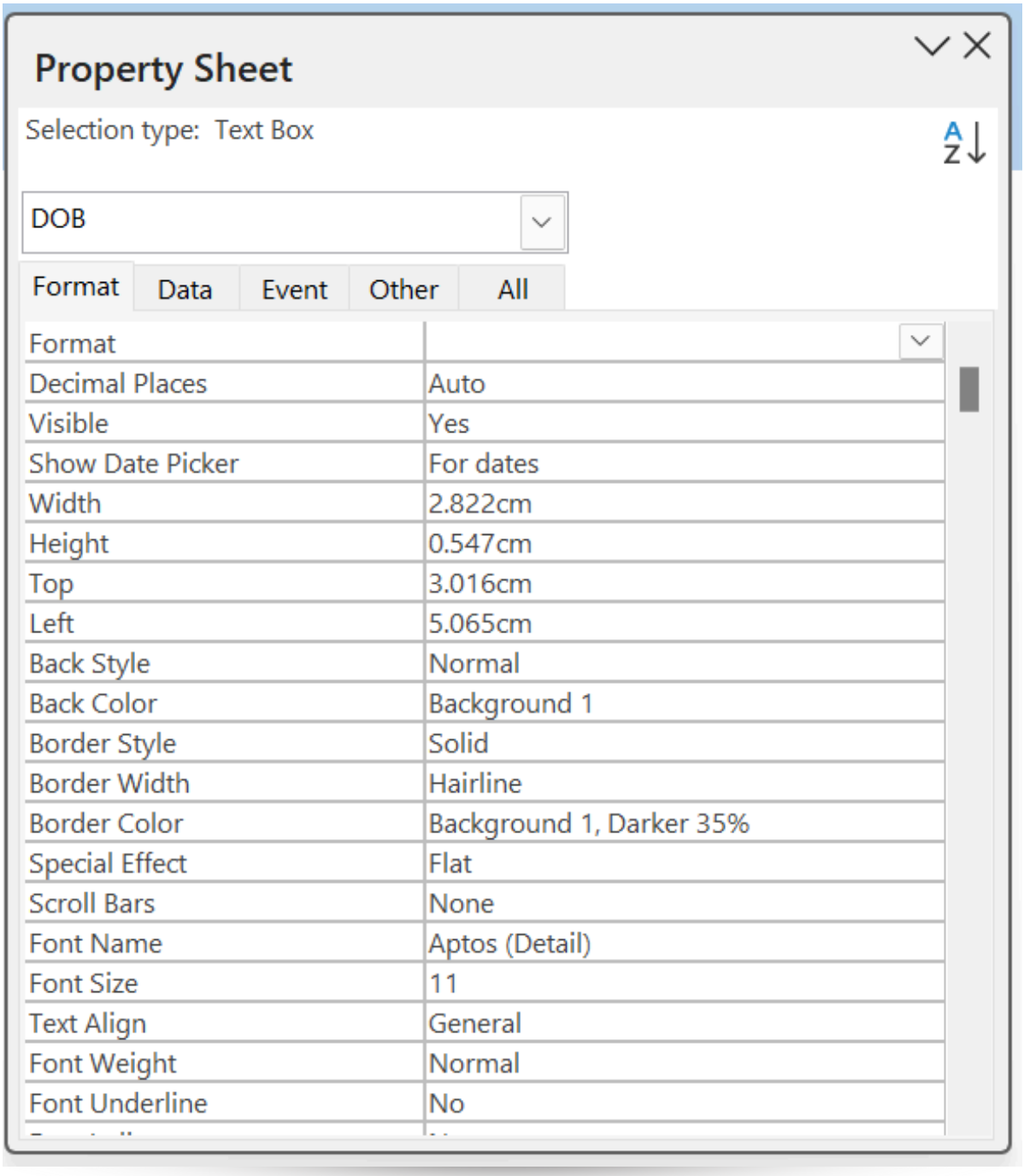
1. Click on any field (e.g., Name or Contact Number) to select it.
2. Drag the field to a new position or use the resize handles to adjust its size.
3. Use **Ctrl + Click** to select multiple fields for group movement.



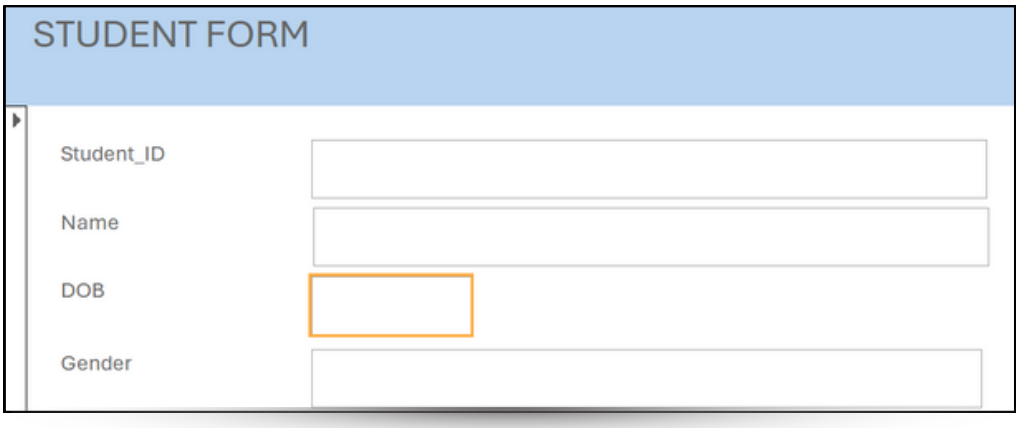
- Using the Property Sheet to Resize Fields
- The Property Sheet in Microsoft Access allows you to fine-tune form controls, including the size of text boxes and other fields
- If the Property Sheet is not already visible:
- Go to the Design tab and click on Property Sheet in the Tools group.



- Click on the text box or control you wish to resize (e.g., the **DOB** field).
- The Property Sheet will update to show the properties of the selected control.

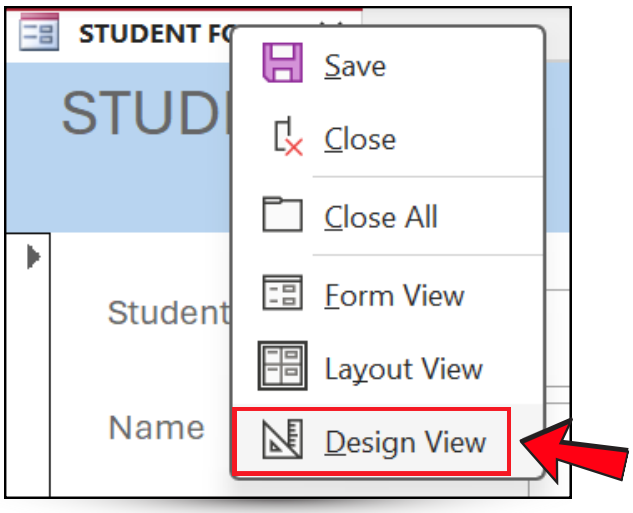


- In the Property Sheet, go to the Format tab to adjust the size of the DOB text box
- Locate the Width and Height properties.
- Enter specific values (e.g., 5cm or 2"), or use the arrow buttons to increase/decrease the size incrementally.
- Example :-

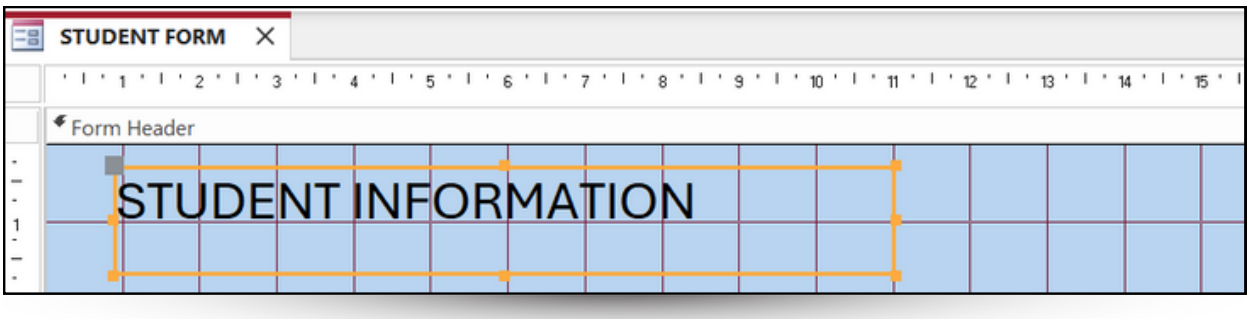


STEP 3 Edit Title or Heading

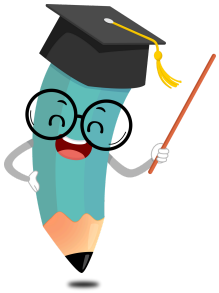
- Right-click on the **form tab** and select **Design View**.



- A default title (e.g., "Student Form") will appear at the form header.
- Click on it to edit the text (e.g., change it to "Student Information").



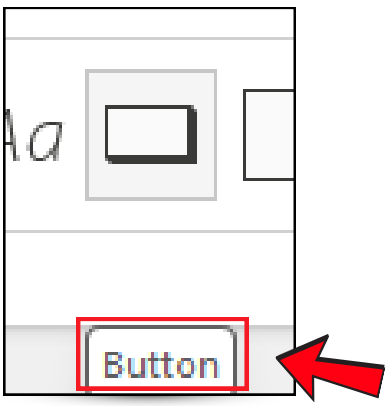
STEP 4 Add Buttons for Navigation or Actions



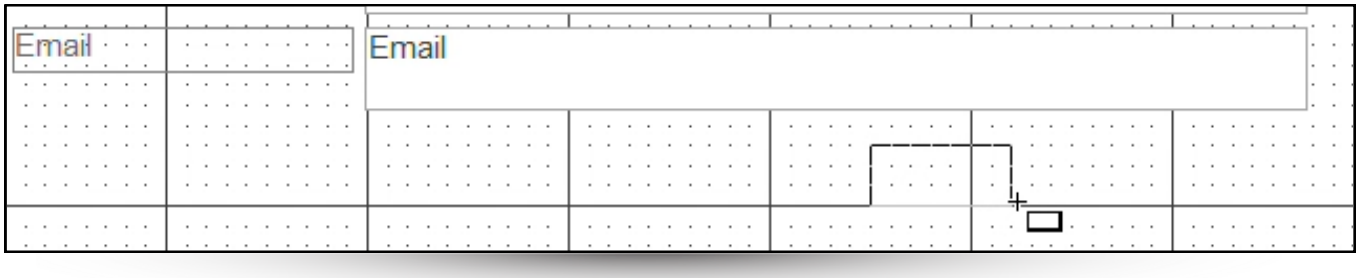
- Access forms come with default navigation buttons, but adding your own makes the form easier to use—especially for beginners. Custom buttons guide users clearly, simplify the interface, and give your form a cleaner, more polished, app-like feel.
- Now, we will add command buttons to the Student form to make it easier to navigate and perform common tasks

Add a “Next Record” Button

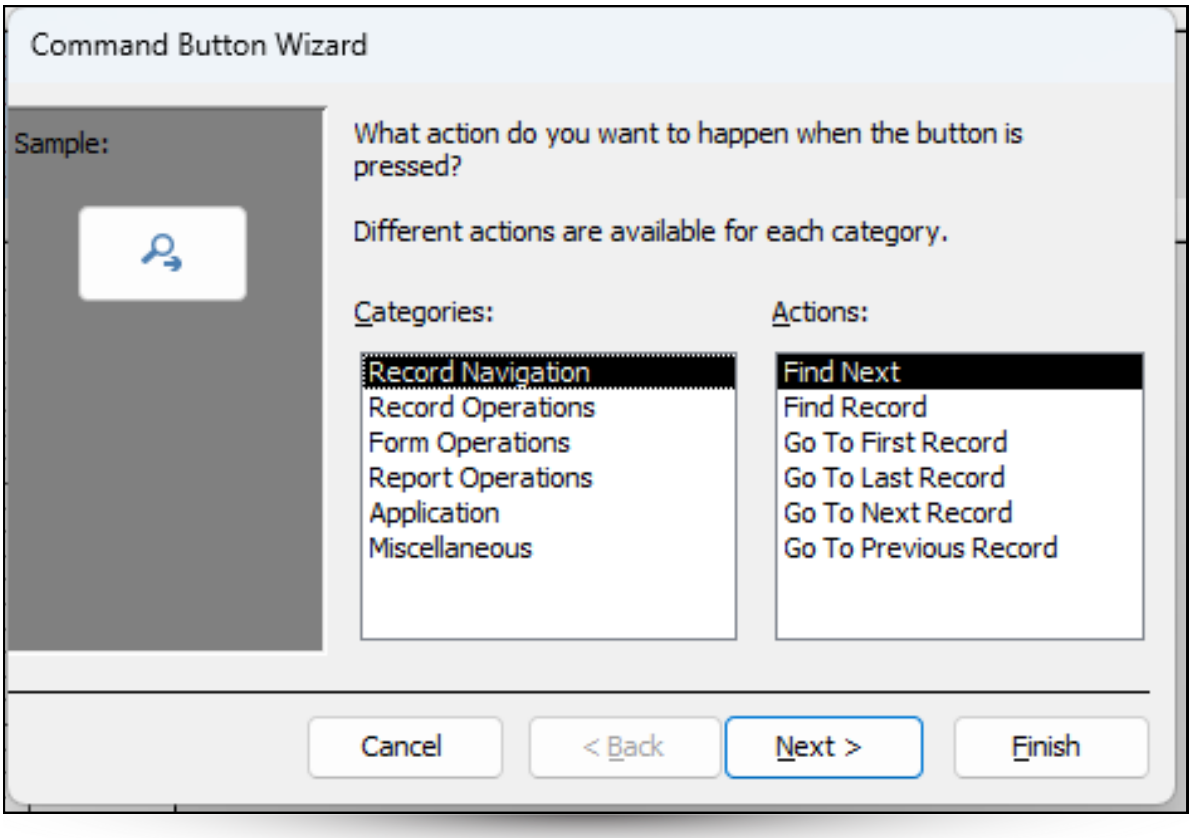
- Click the **Design** tab on the Ribbon.
- In the **Controls** group, click the **Button** tool.



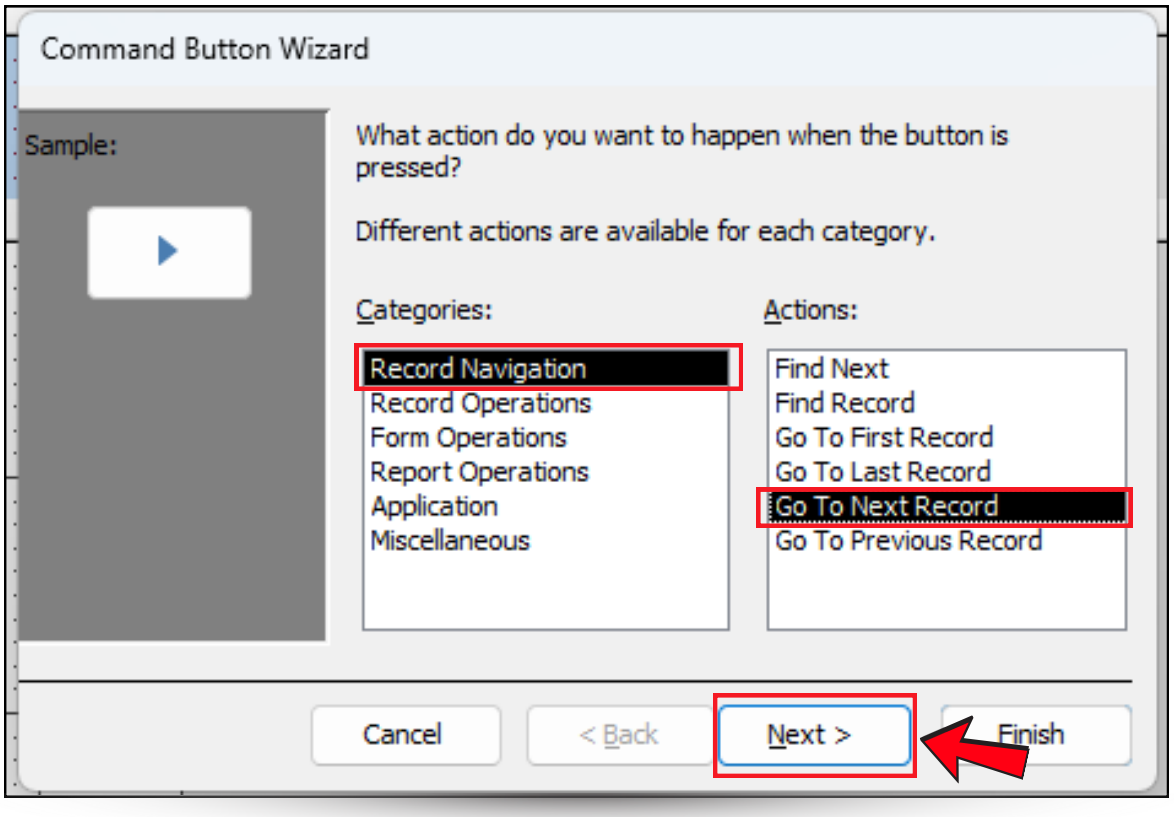
- Click on the form where you want the button to appear.



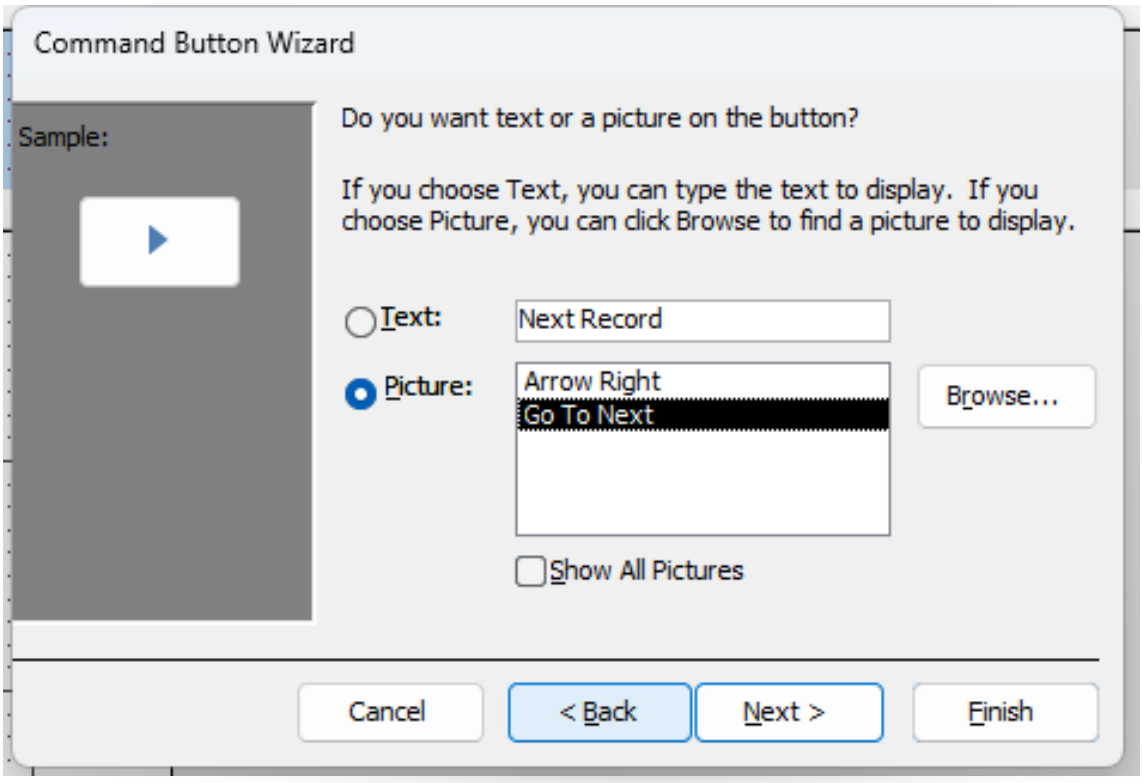
- The **Command Button Wizard** will open.



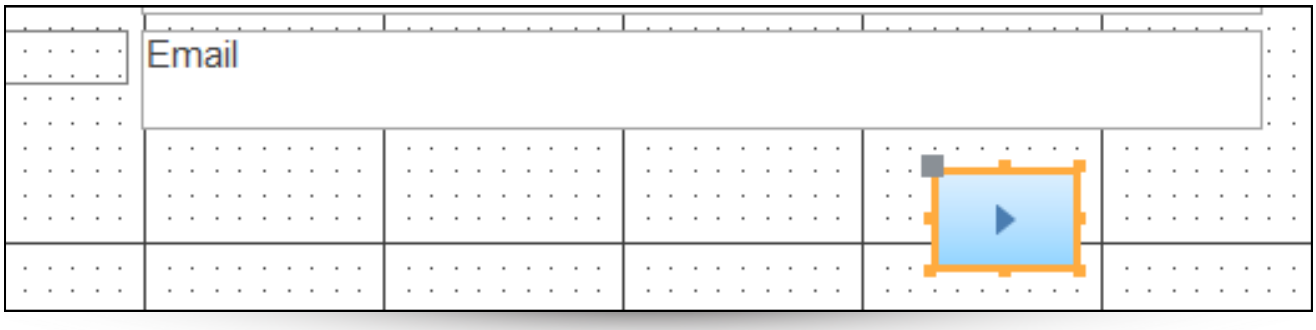
- Select:
  - **Category**: Record Navigation
  - **Action**: Go to next record
- Click **Next**.



- You can choose to display either text or a picture on the button. In this practical, we'll use the default picture, but you can also browse and select your own image if you have one.



- Click **Finish**.



QUICK TIPS

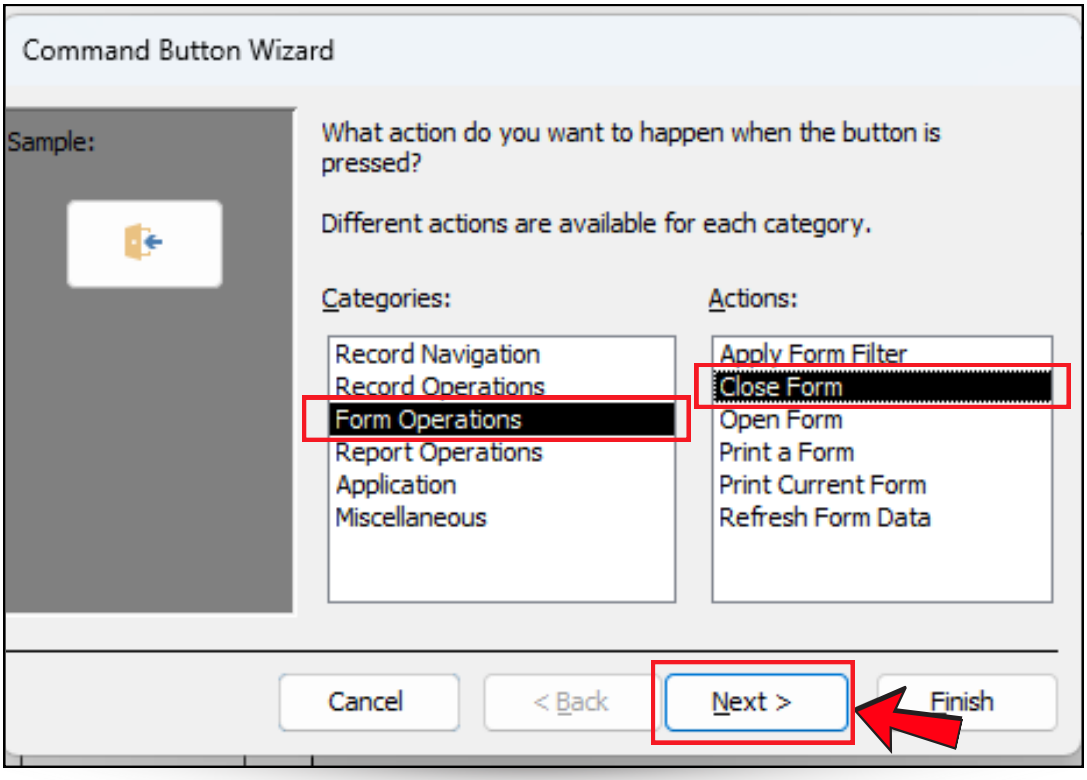
You can further customize the button's font, size, and color using the Format tab after placing it on the form.

Add a "Previous Record" Button

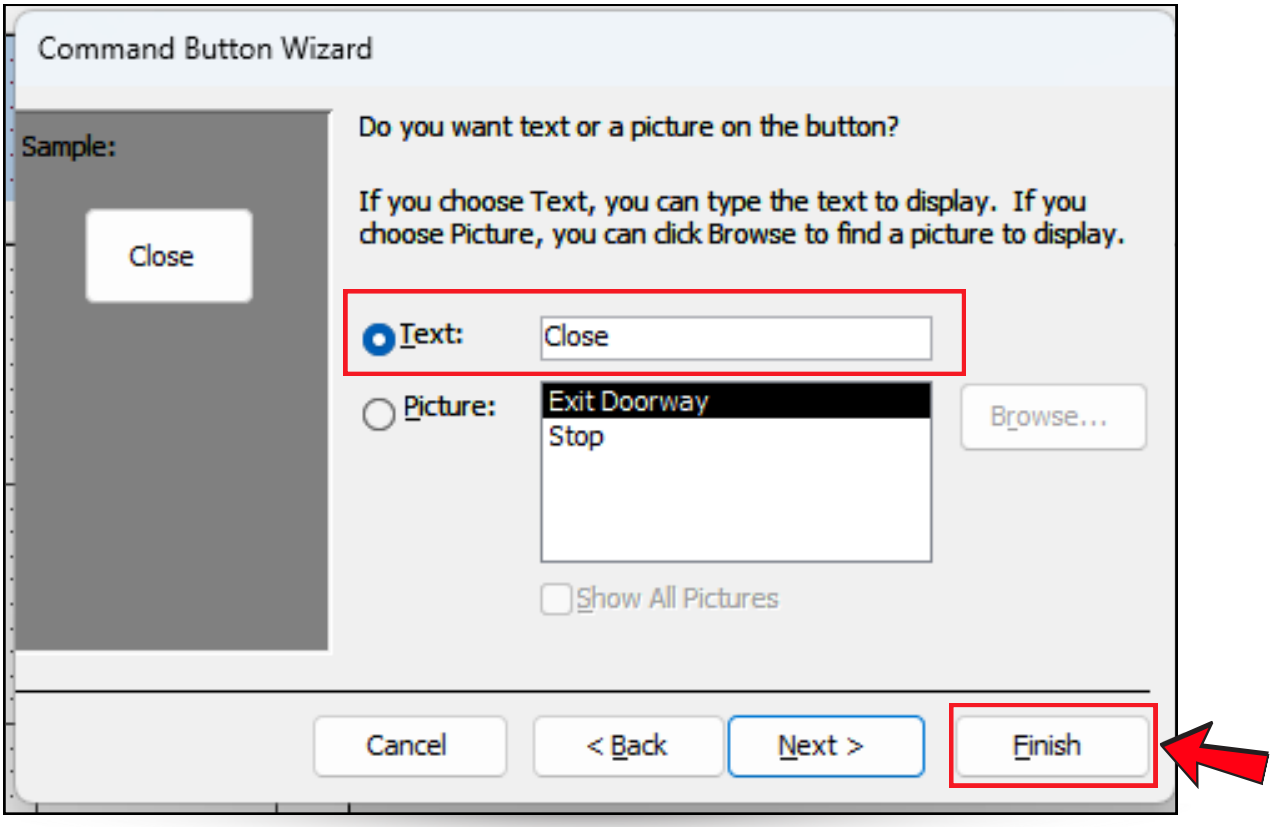
- Repeat steps above but, but choose:
  - **Action**: Go to previous record
  - **Picture** : Go to previous

Add a "Close Form" Button

- With the form still in Design View, click the **Button** tool again.
- Place a new button below your navigation buttons.
- In the wizard:
  - **Category**: Form Operations
  - **Action**: Close Form



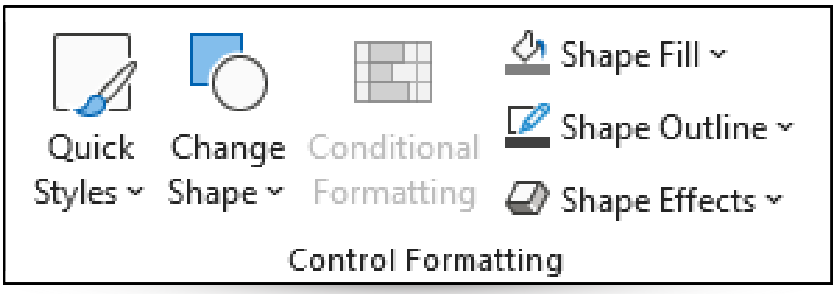
- Set the button to display the text **"Close**



- Click **Finish**.

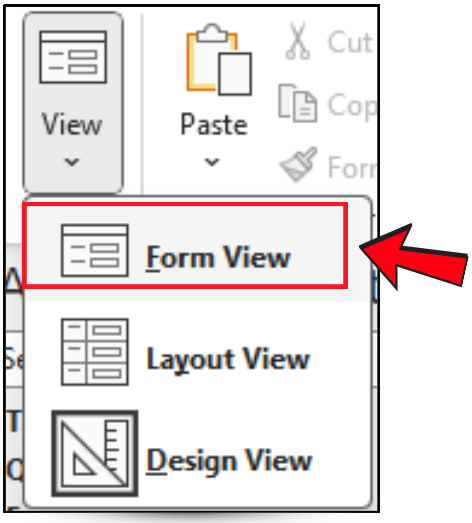
Arrange and Format the Buttons

- Use the mouse to move buttons into a neat row or column.
- Go to the **Format** tab to:
  - Align buttons using the **Align** group
  - Change font, color, or size for better readability

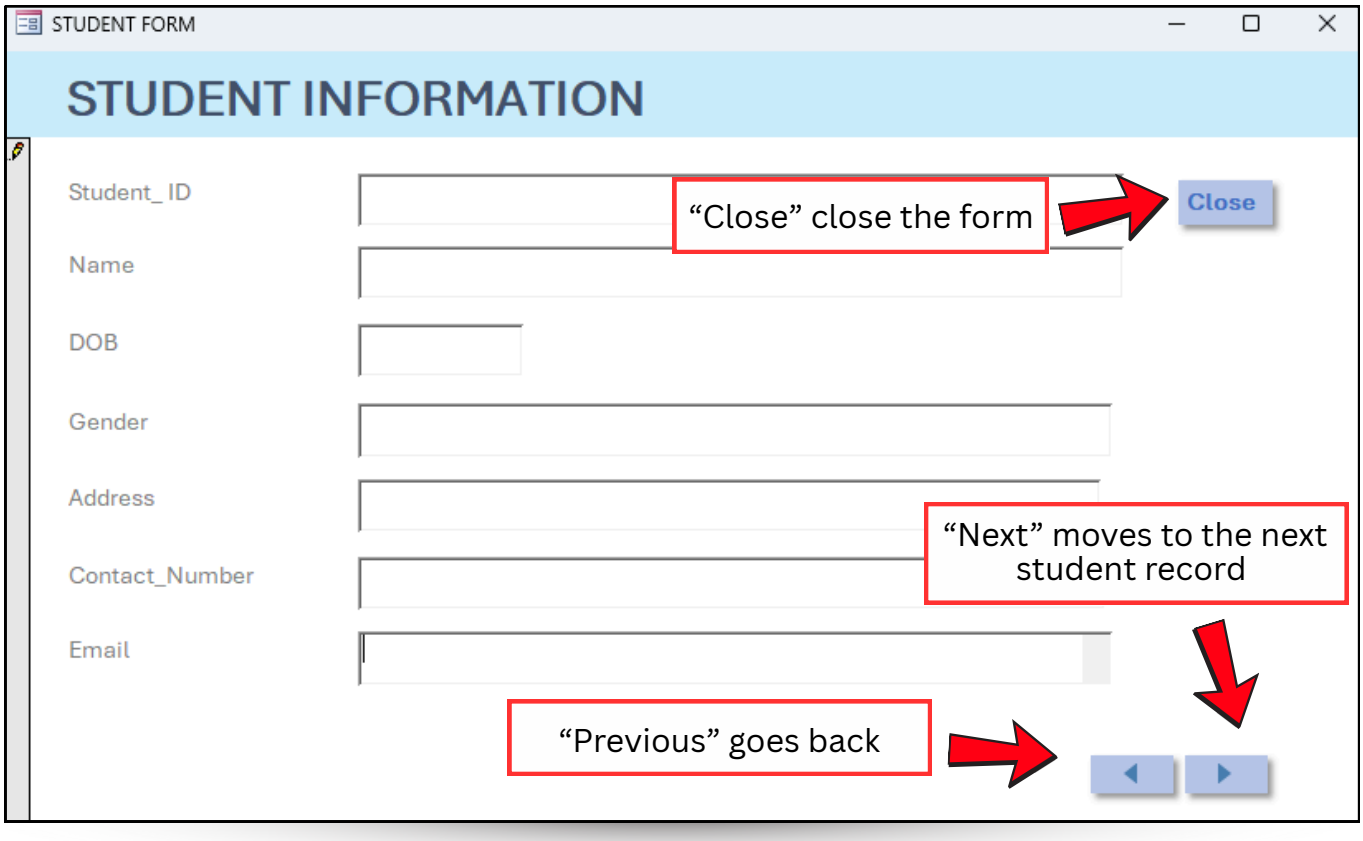


STEP 5 Test Your Buttons

Switch to **Form View** (click **View** > **Form View**).

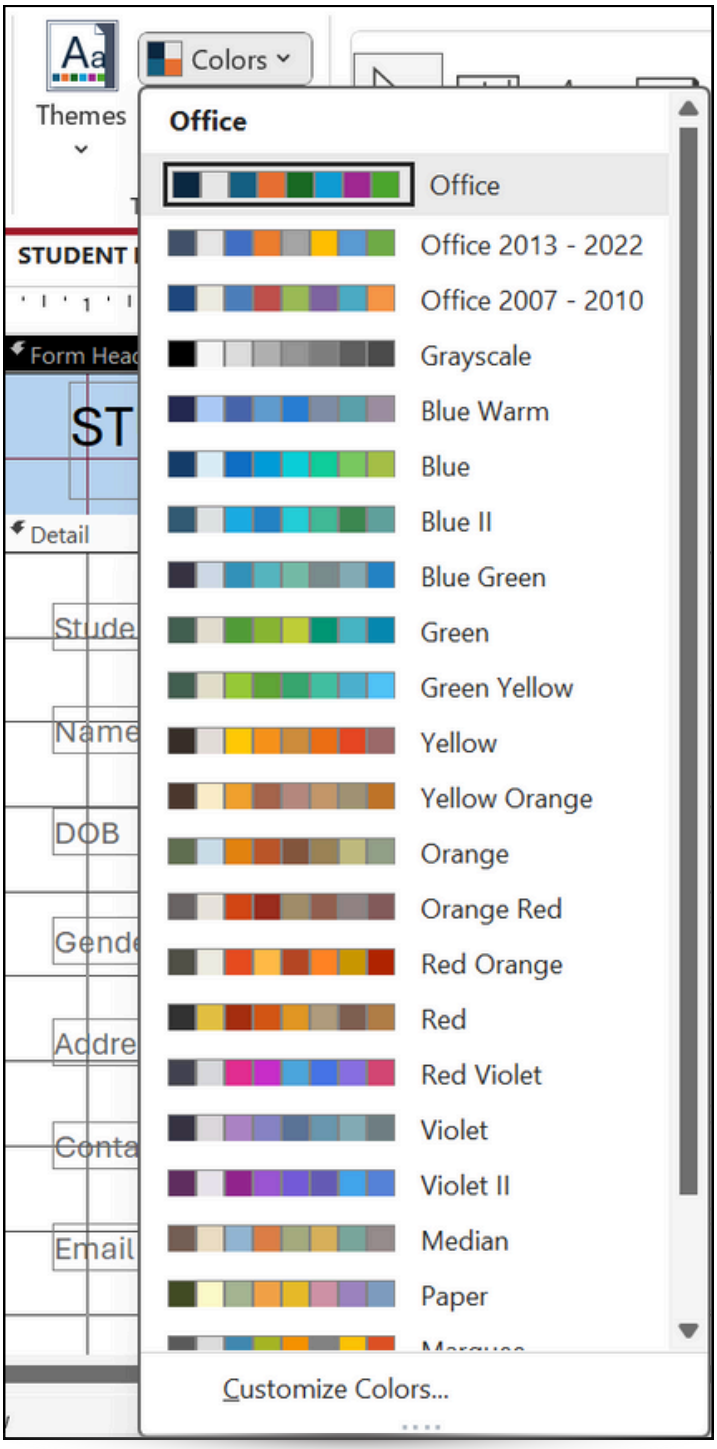


Click your buttons to check:

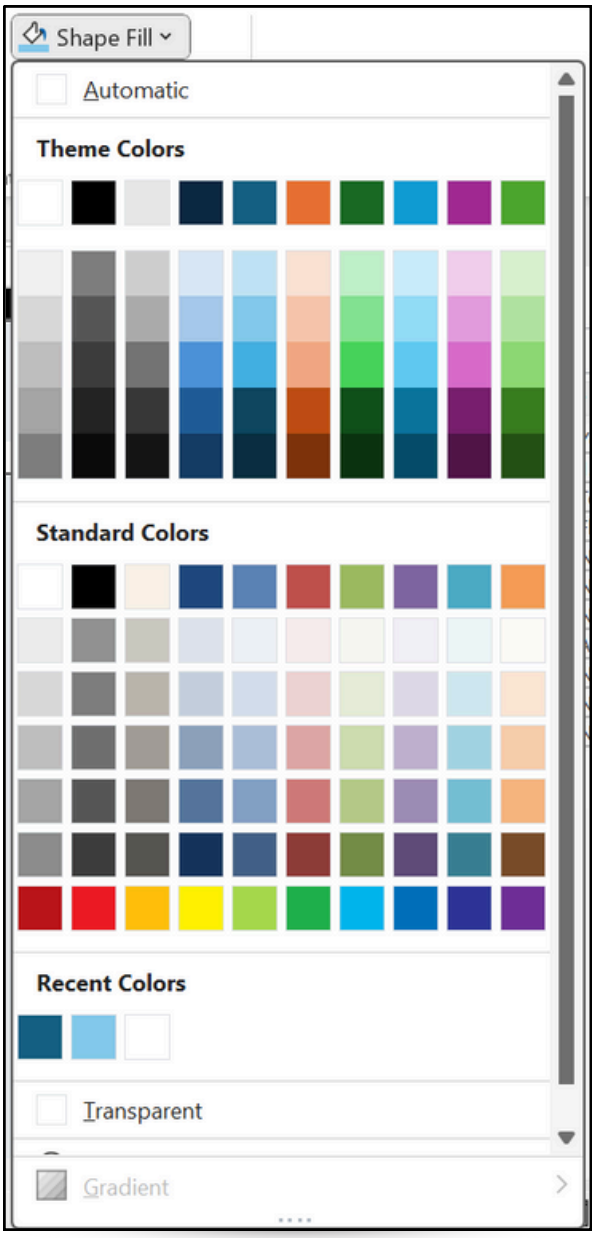


STEP 6 Change Form Colors and Fonts

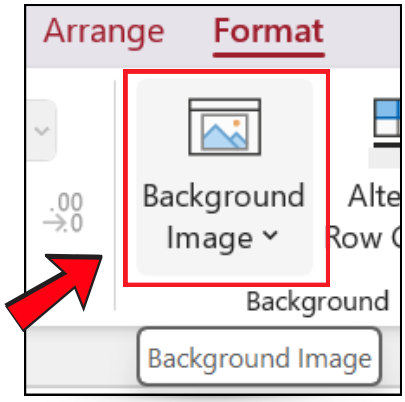
- Now, we will continue editing the form in **Design View**.
- Go to the **Form Design** tab and use options like **Theme Colors** to apply a consistent color palette.



Alternatively, you can use the Shape Fill command in the Format tab to apply colors to each section of your form



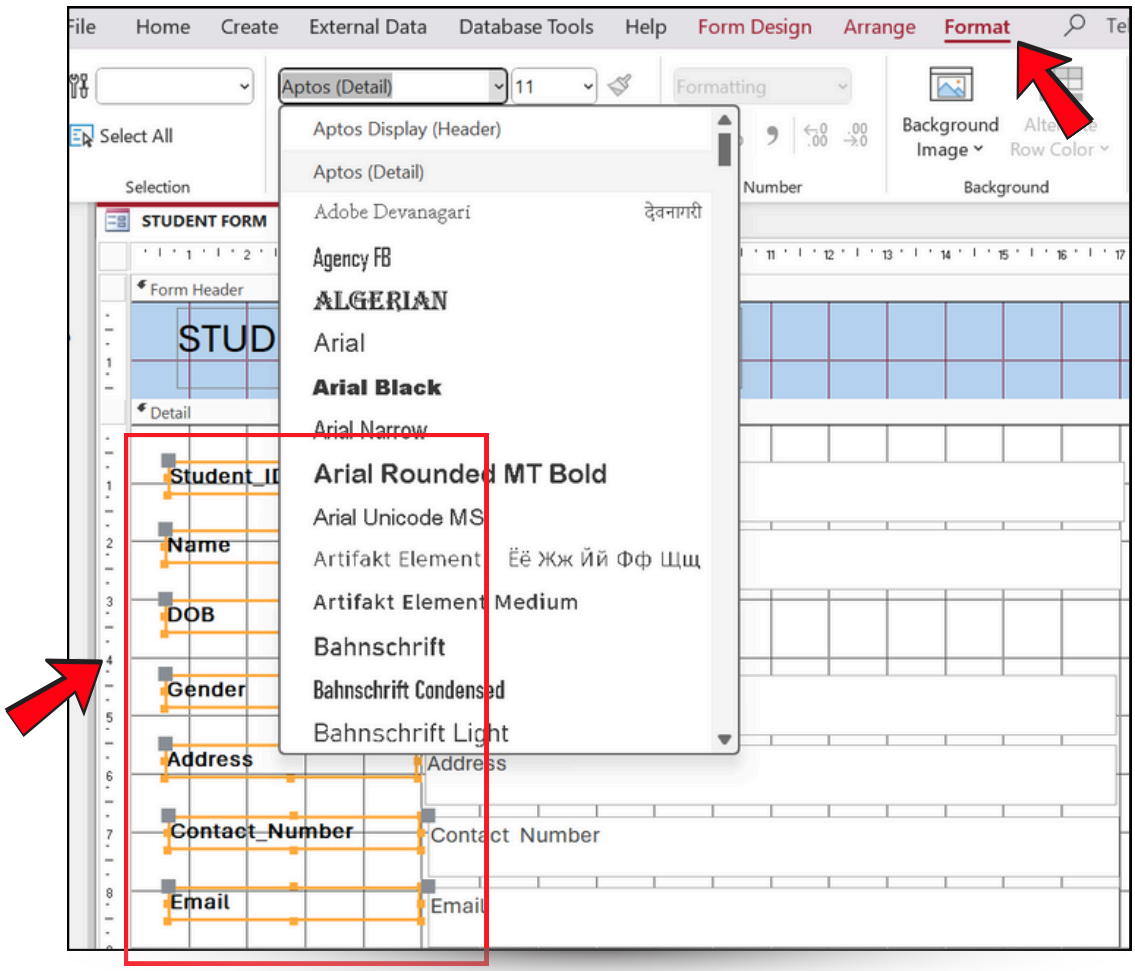
- You can also add a background image to your form using the Background Image command in the Format tab.



STEP 7 Apply formatting

Format the Field Labels

- **Select all** the field labels in the form. Then, use the Format tab to adjust the font style, size and colours.



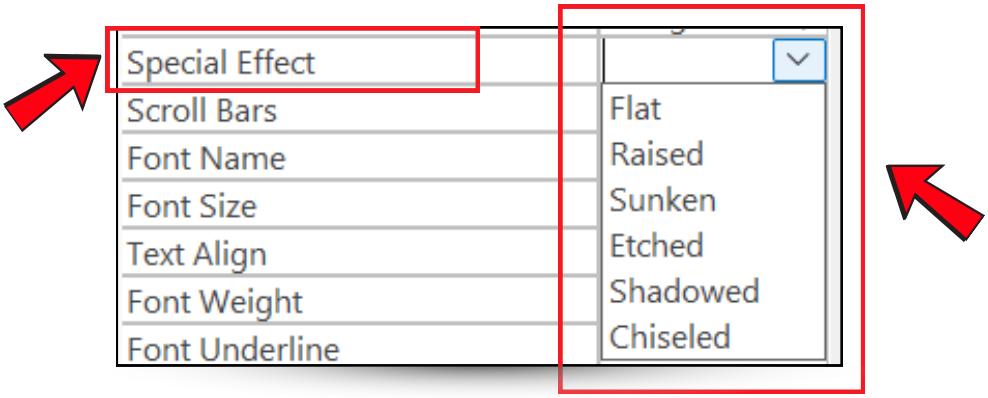
Edit the Label Text

- Double-click each label to edit its text as follows:
  - Change Student_ID → Student ID
  - Change DOB → Date of Birth
  - Change Contact_Number → Contact Number

Adjust Text Alignment

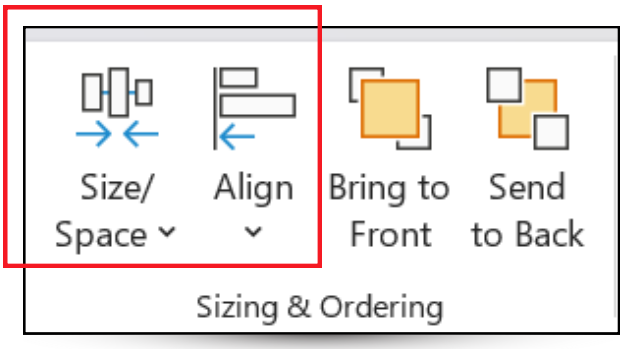
- Select all the text boxes in the form, and on the **Format tab**, set their text alignment to Left.
- Switch to Form View to see the effect — all the data in the text boxes will now be aligned to the left.

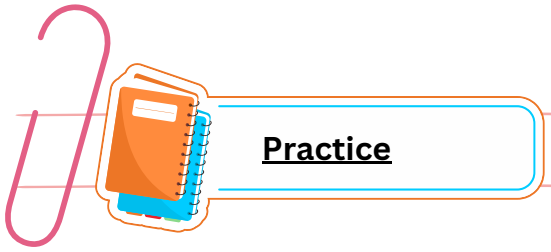
To **add effects** to your text boxes, select all the text boxes in the form. On the Format tab of the Property Sheet, choose the Special Effect command, and select any effect you like.



STEP 8 Use Layout Tools for Alignment

- Select multiple text boxes or labels.
- Go to the **Arrange** tab.
- Use **Align or Size/Space** options to make your layout more balanced and visually neat.





Practice

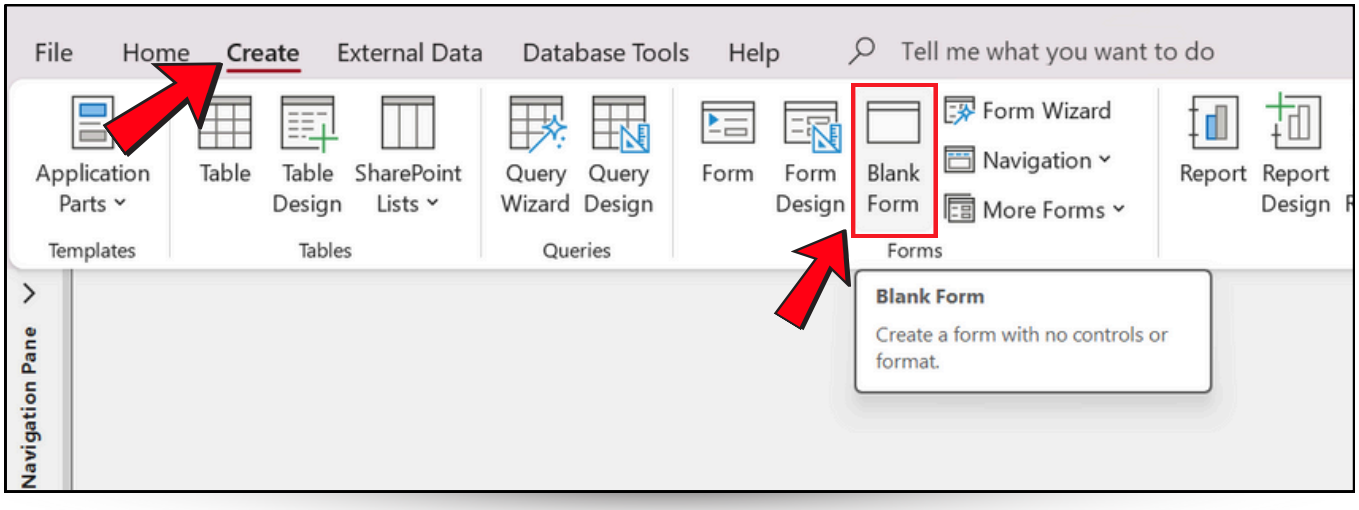
Modify all your forms to make them more attractive.

5.4 Create a Main Menu Form

A **Main Menu Form** serves as the central navigation hub for your Microsoft Access database. It provides users with a simple, user-friendly interface to access different parts of the system—such as student records, reports, queries, and data entry forms—without having to browse through the navigation pane.

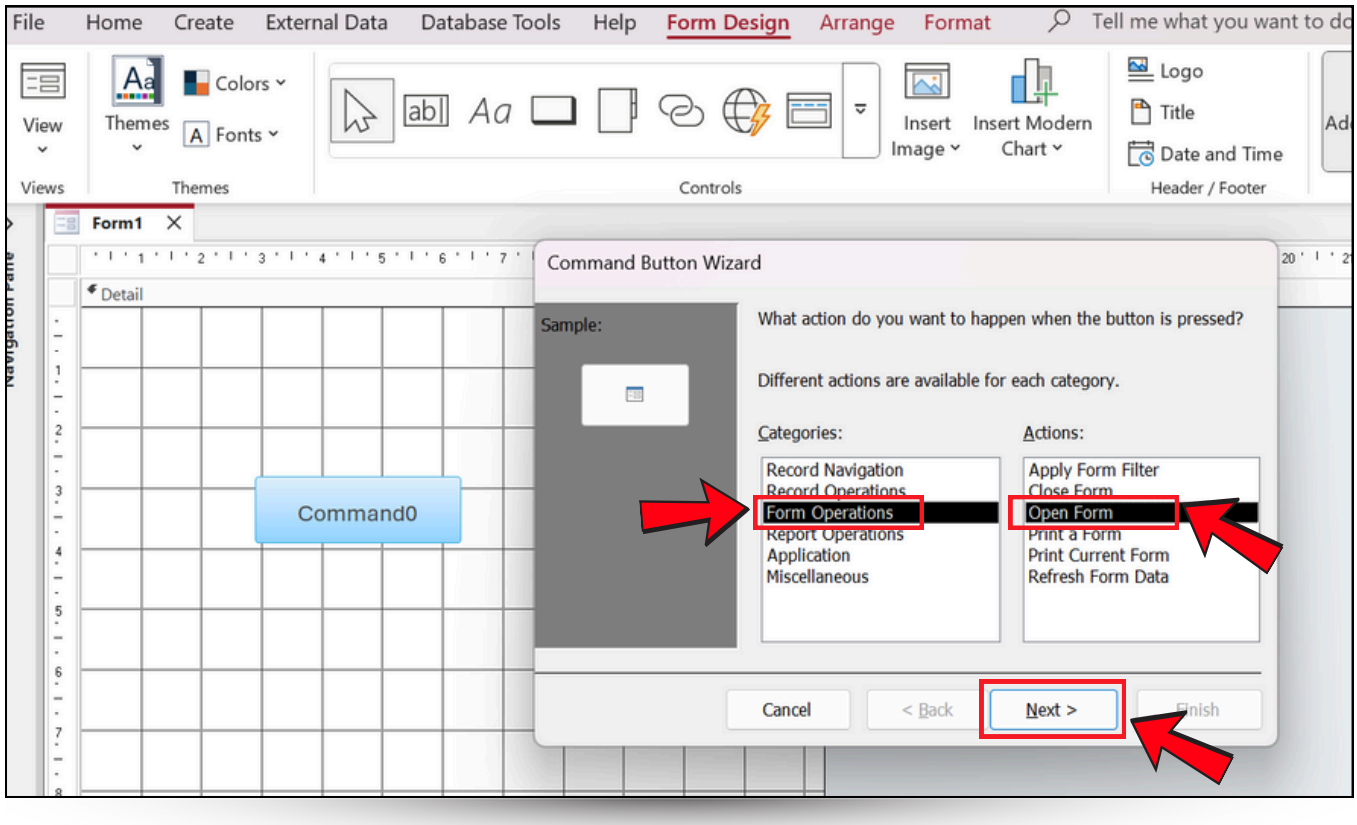
Next, we'll create a Main Menu Form to provide easy access to all other forms in the database.

1. Go to **Create > Blank Form.**

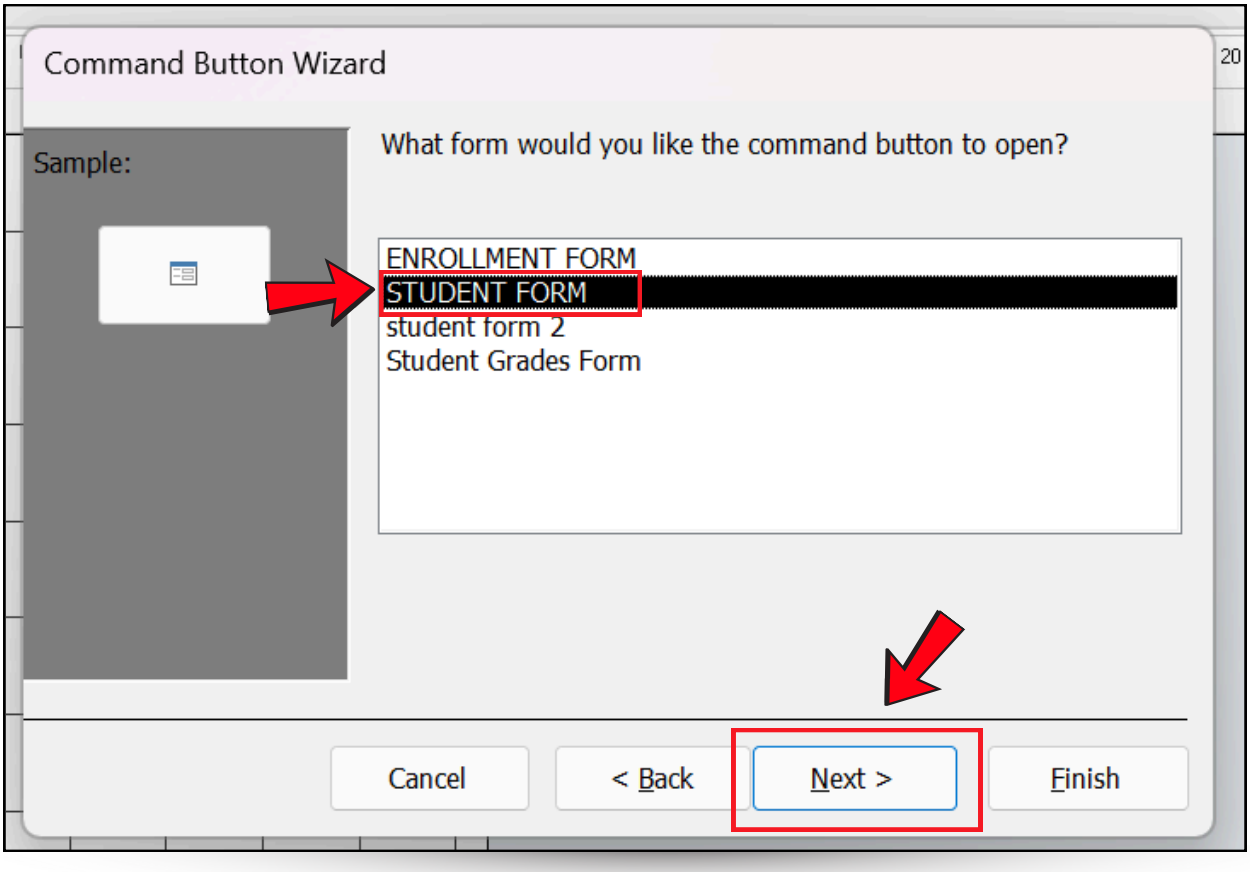


2. **Add Buttons** from the **Controls tab** for **Students, Enrollment, and Grades Forms.**

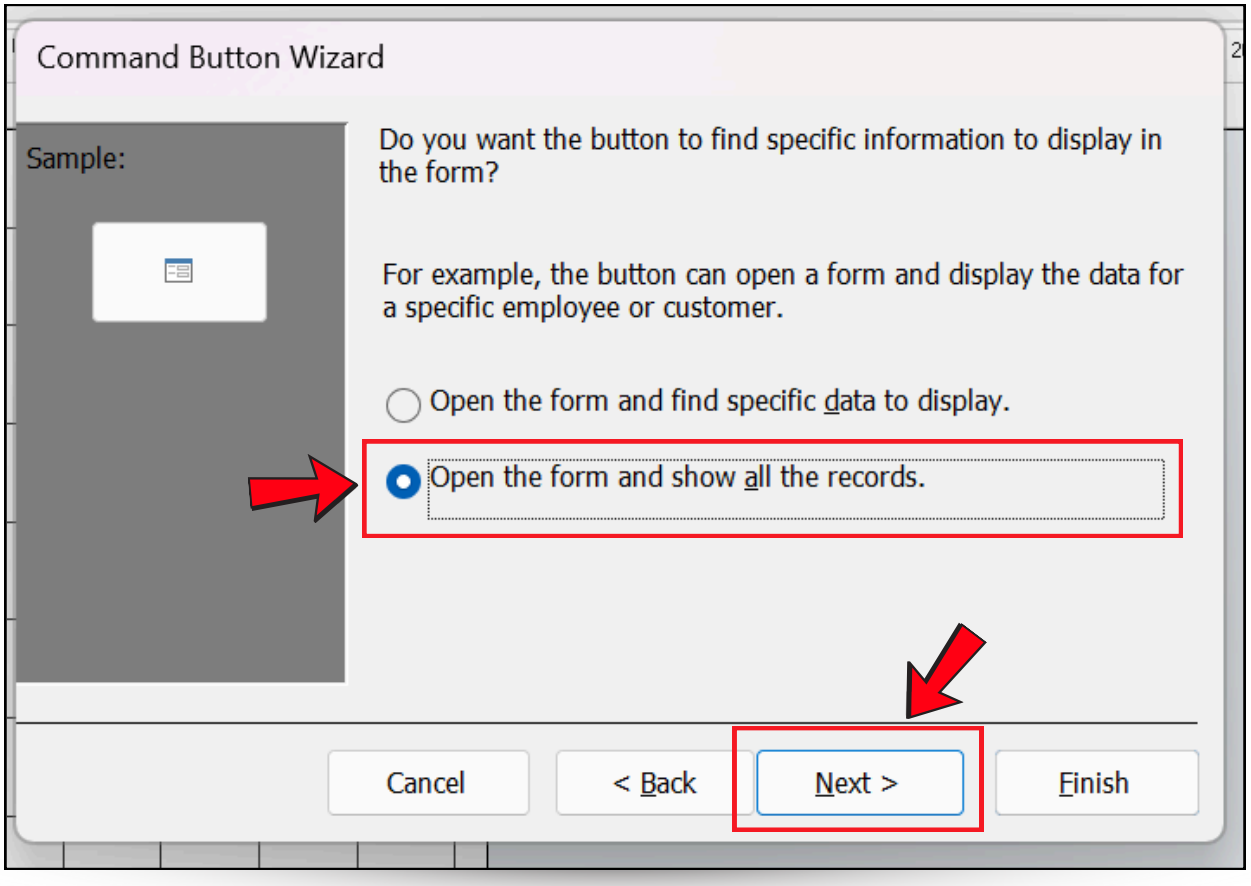
First, we will **set the button to open the students form**. **Choose Open Form** action from **Form Operations category**.



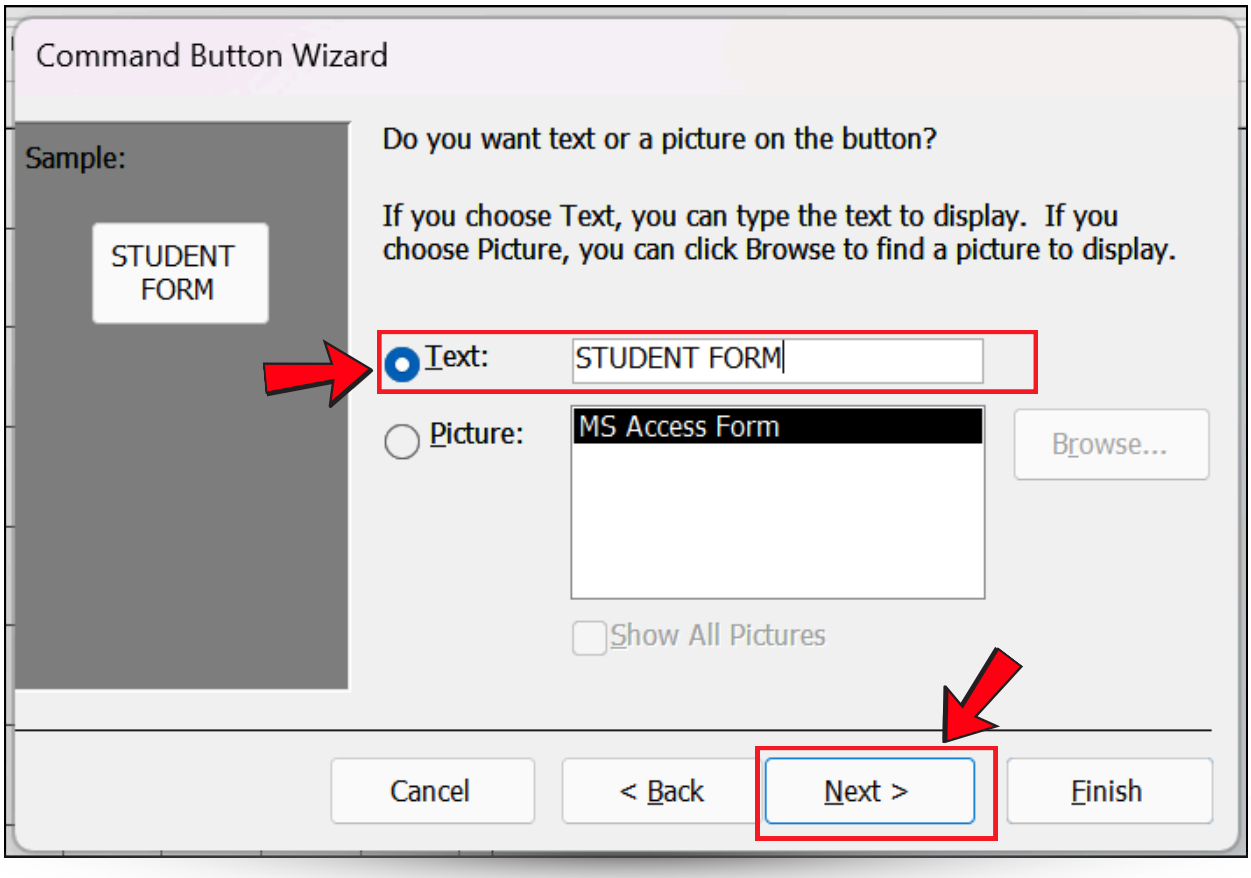
3. **Set** each button's **On Click** event to **Open Form** and select the respective form.



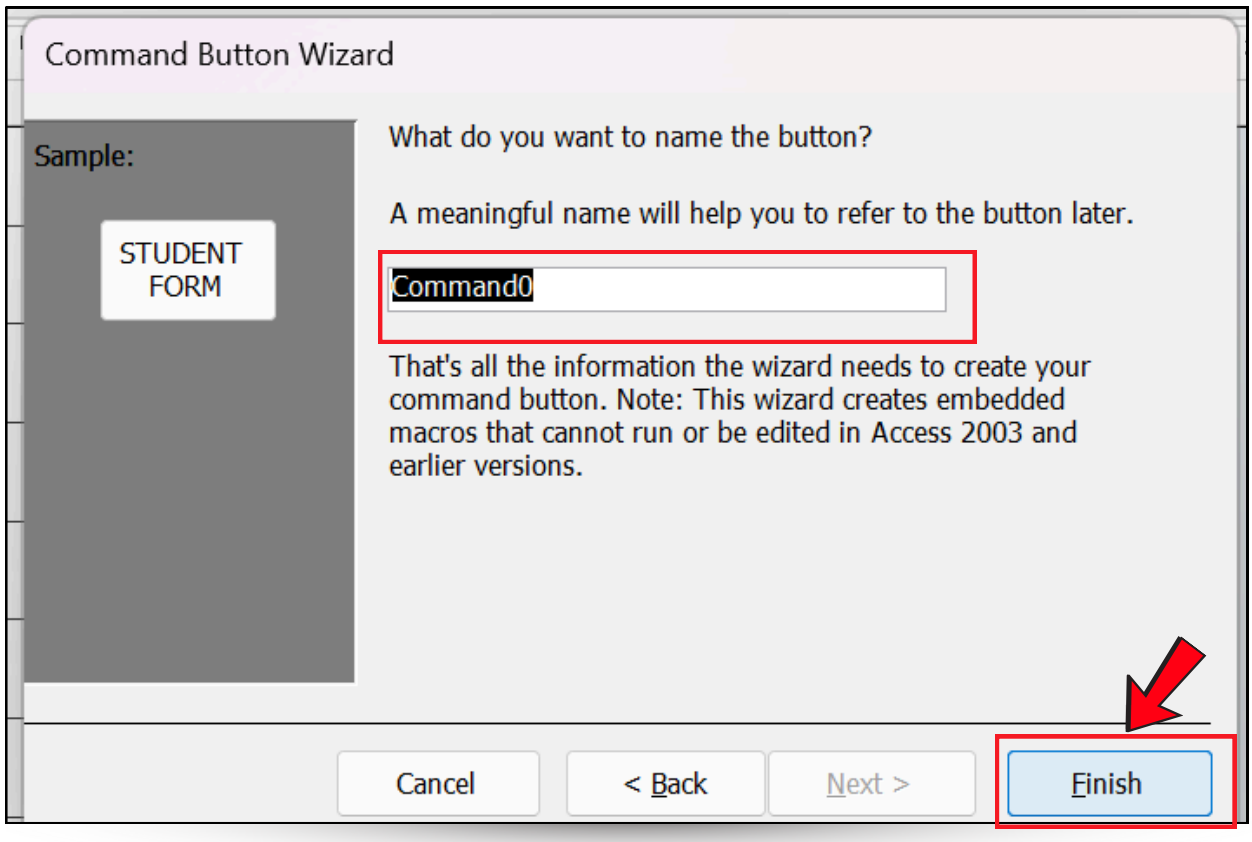
4. Choose **"Open the form and show all the records".**



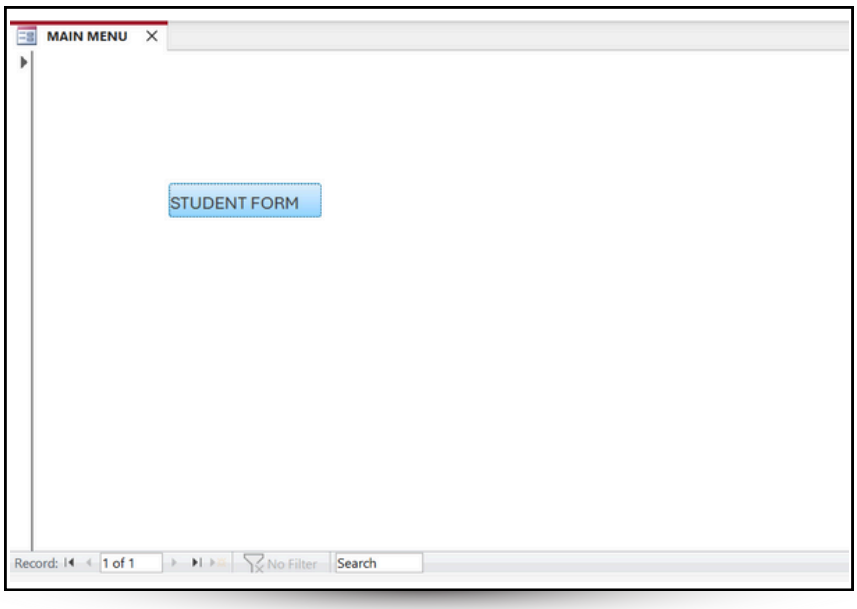
5. Then, you can choose either text or picture on the button. **In this practical, we will choose text on the button.**



6. Then, you can **save** the **name for the button** and click **Finish**.



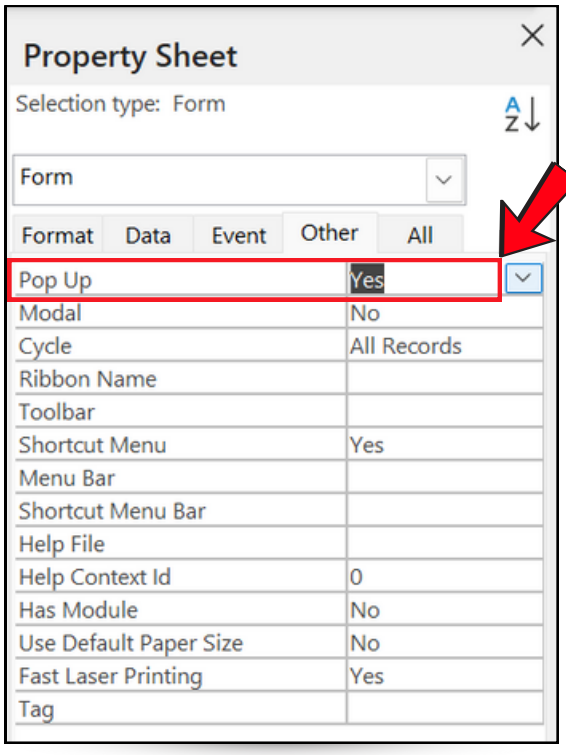
7. To **test** the button, right-click the form's tab and select **Form View** to open the form, then click the button to see if it works.



8. **Repeat** the steps to **add buttons for Enrollment, and Grades Forms**.
9. Save the form as **Main Menu**.

- Now your database has forms for **adding students, enrolling them in courses, and recording grades**!

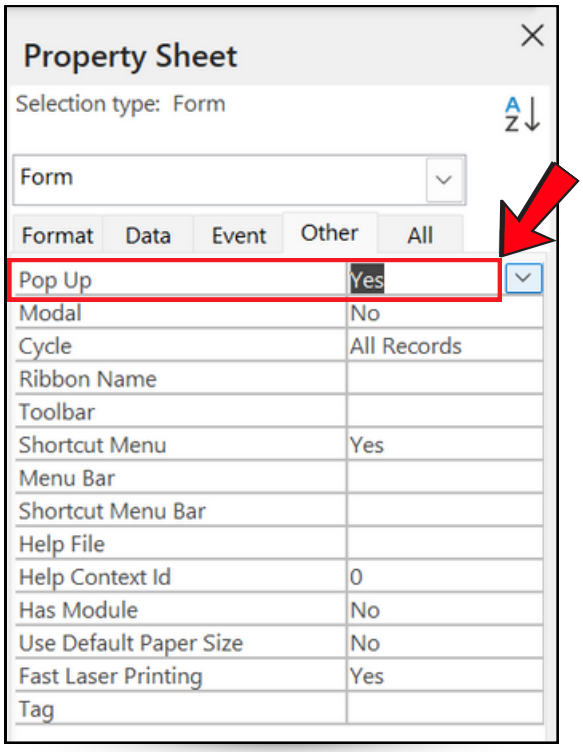
- To **set pop up for your Main Menu form**, go to the **property sheet** and **change pop up to 'yes'.**



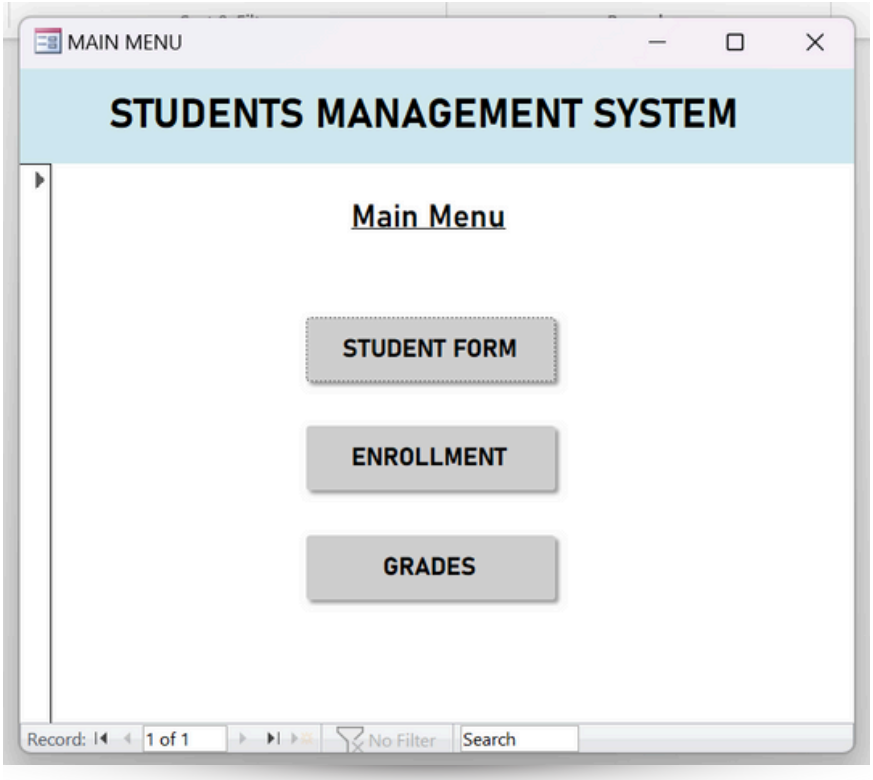
5.0 DESIGNING FORMS FOR DATA ENTRY

Now your database has forms for **adding students, enrolling them in courses, and recording grades**!

To **set pop up for your Main Menu form**, go to the **property sheet** and **change pop up to 'yes'.**



So, your Main Menu will be pop up every time you open the form



Practice

Modify your Main Menu form to make it more attractive.

EXAMPLE

Example of the **Main Menu form** after modification

Practice 1 : Data Entry

Use the form created to enter all the sample data given for each table (Students, Courses, Enrollment, and Grades)

STUDENTS

Student ID	Name	DOB	Gender	Address	Contact Number	Email
S001	Alia binti Ali	1 Jan 2006	Female	40, Lorong Setia 1, Taman Setia, 21050 Kuantan	012-1234567	aliaali@gmail.com
S002	Bernard Chandran	2 Feb 2006	Male	Lot 608, Kg Bintang, 26500 Maran	014-1122334	bernard@gmail.com
S003	Hud bin Hamzah	4 April 2006	Male	2, Lorong Cempaka 2/2, Taman Cempaka Indah, 26070 Kuantan	017-4455667	hud@gmail.com
S004	Mawar binti Yusof	5 May 2006	Female	No. 1, Kg Sejahtera, 26600 Pekan	011-7788990	mawar@gmail.com

5.0 DESIGNING FORMS FOR DATA ENTRY

COURSES

CourseID	Course Name	Course Code	Instructor
C01	Database Fundamentals	SFC10393	Pn. Khairani binti Ibrahim
C02	English	MPU1101	Sir Alex Fernadez
C03	Basic Mathematics	SFC10343	En. Lutfi bin Hafiz
C04	Application Computer	STM10462	Pn. Rahil binti Rafiq

ENROLLMENT

StudentID	CourseID	Enrollment Date
S001	C01	2 Jan 2025
S002	C01	2 Jan 2025
S003	C03	4 Jan 2025
S004	C03	4 Jan 2025

GRADES

StudentID	CourseID	Grade
S001	C01	85
S002	C01	70
S003	C03	90
S004	C03	75

CHAPTER 6

6.0 WORKING WITH QUERIES

6.1 What are Queries?

Queries are used in Access to search, filter, and gather specific data from one or more tables. Running a query is similar to asking a question to your database, where you set certain conditions to retrieve only the information you need.

6.2 Creating Basic Queries

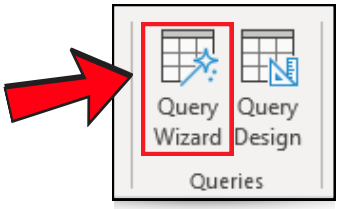
1. **Select Queries**: Retrieving specific records

Creating a Select Query

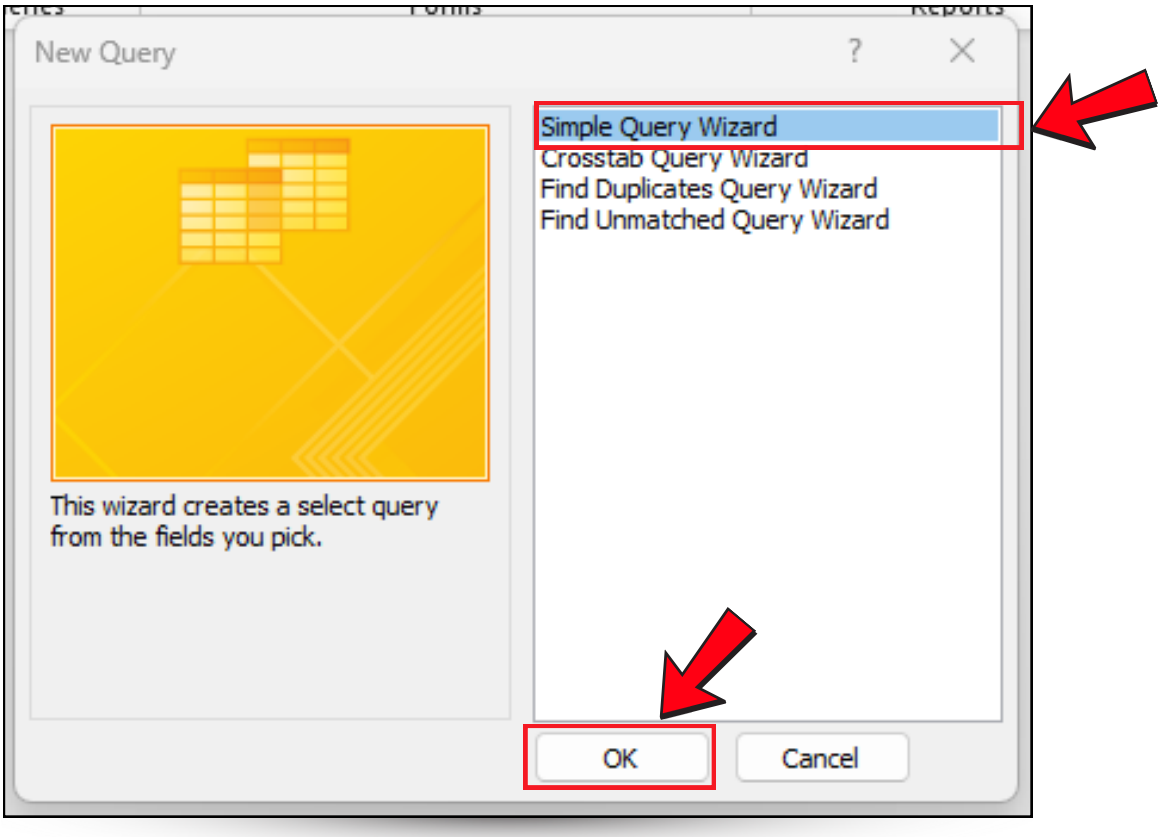
EXAMPLE 1 Create a query to list all students

Method 1: Using Query Wizard

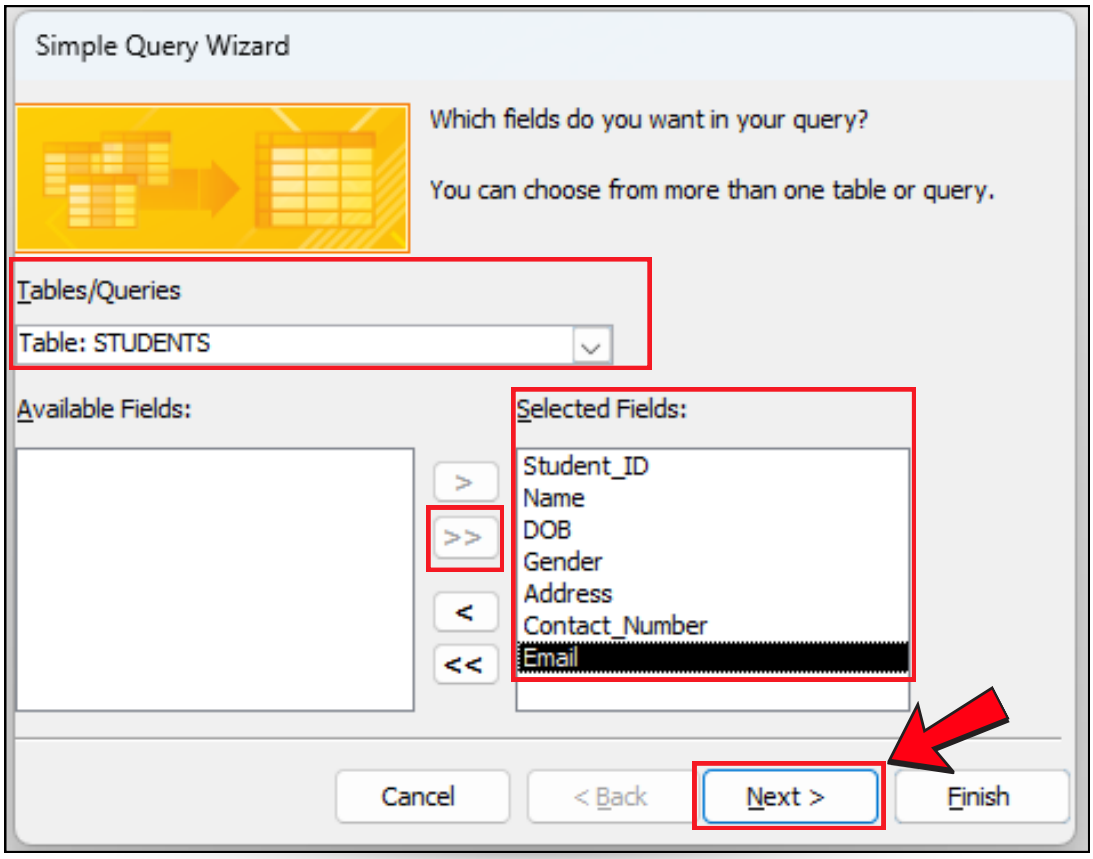
1. Go to the **Create tab** → Click **Query wizard.**



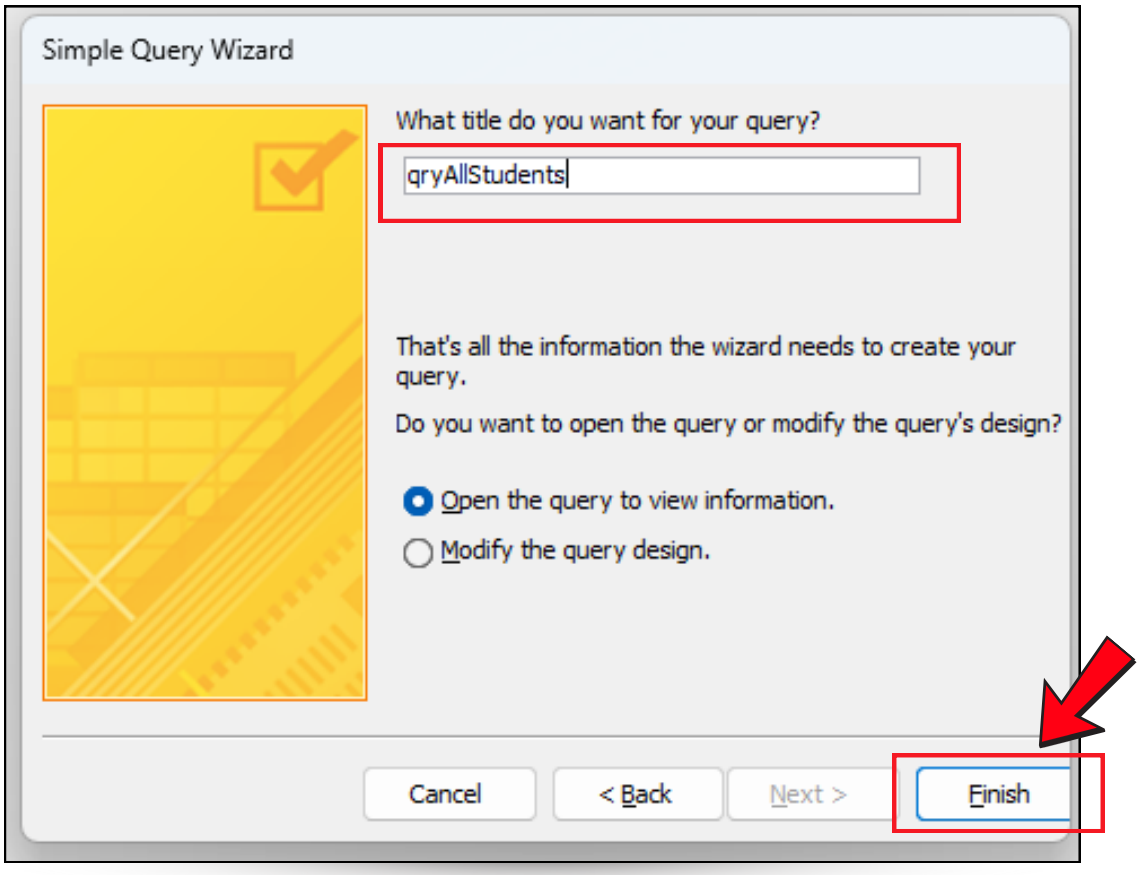
2. In the **New Query** dialog box, select **Simple Query Wizard** and **Click OK**



3. Select Table: **STUDENTS** from Tables/Queries dropdown. Then, click **right double arrow (>>)** to insert all available fields to the selected fields box and Click **Next.**



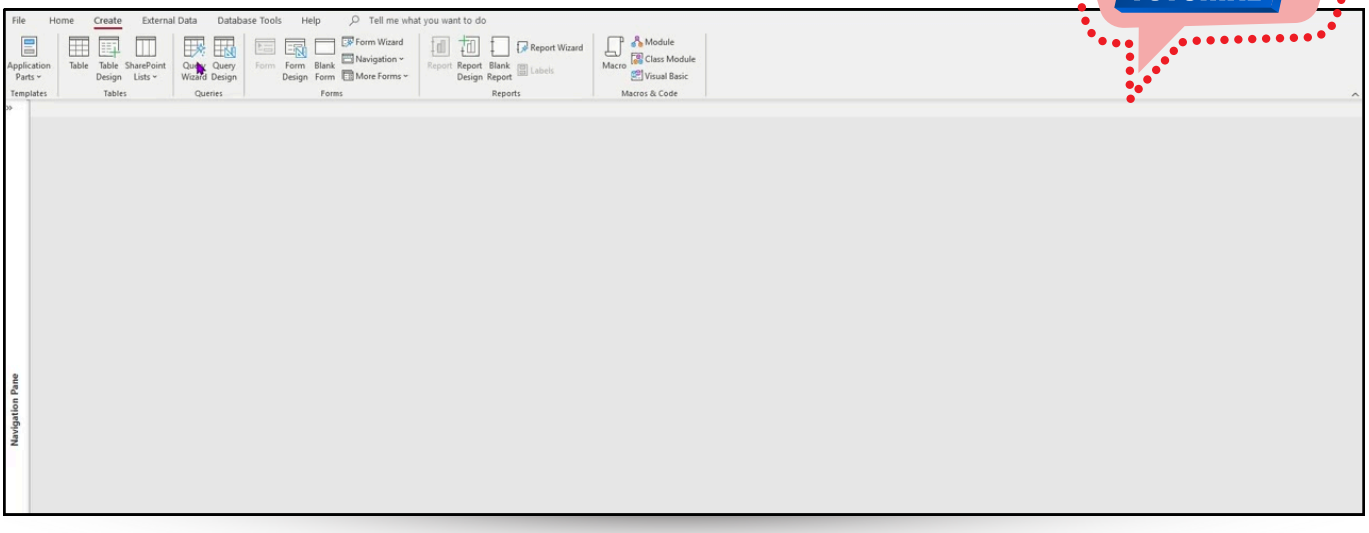
4. **Save** the query → Name it: **qryAllStudents** and Click **Finish**



Your query will look like this

qryAllStudents

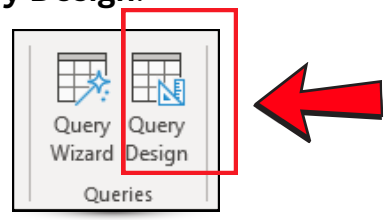
Student_ID	Name	DOB	Gender	Address	Contact_Number	Email
S001	Alia binti Ali	1/1/2006	Female	40, Lorong Setia 1, Taman Setia, 21050 Kuantan	012-1234567	aliaali@gmail.com
S002	Bernard Chan	2/2/2006	Male	Lot 608, Kg Bintang, 26500 Maran	014-1122334	bernard@gmail.com
S003	Hud bin Hamz	4/4/2006	Male	2, Lorong Cempaka 2/2, Taman Cempaka Indah, 26070	017-4455667	hud@gmail.com
S004	Mawar binti Yu	5/5/2006	Female	No. 1, Kg Sejahtera, 26600 Pekan	011-7788990	mawar@gmail.com



6.0 WORKING WITH QUERIES

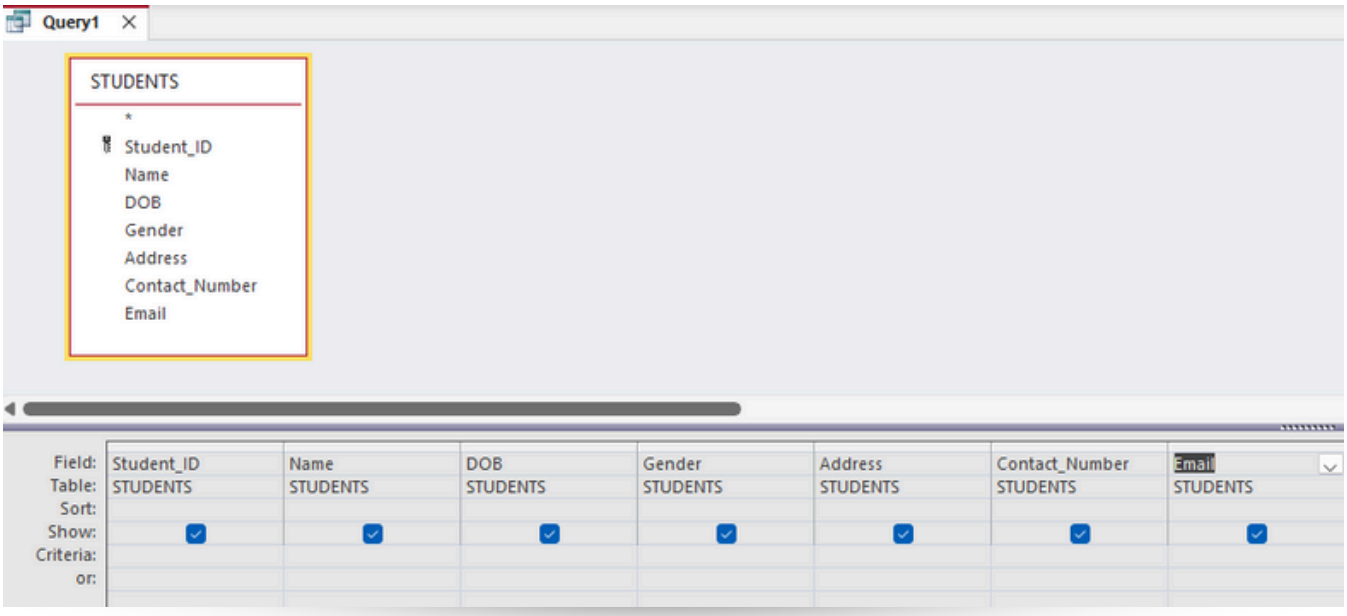
Method 2: Using Query Design

1. Go to the **Create tab** → Click **Query Design**.

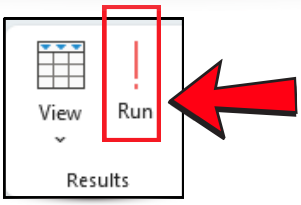


2. In the **Show Table** dialog box, select **Students** table → Click **Add** → Click **Close.**

- **Double-click** the following fields to add them to the grid:
  - StudentID
  - Name
  - DOB
  - Gender
  - Address
  - Contact_Number
  - Email



3. Click **Run** (red exclamation mark).



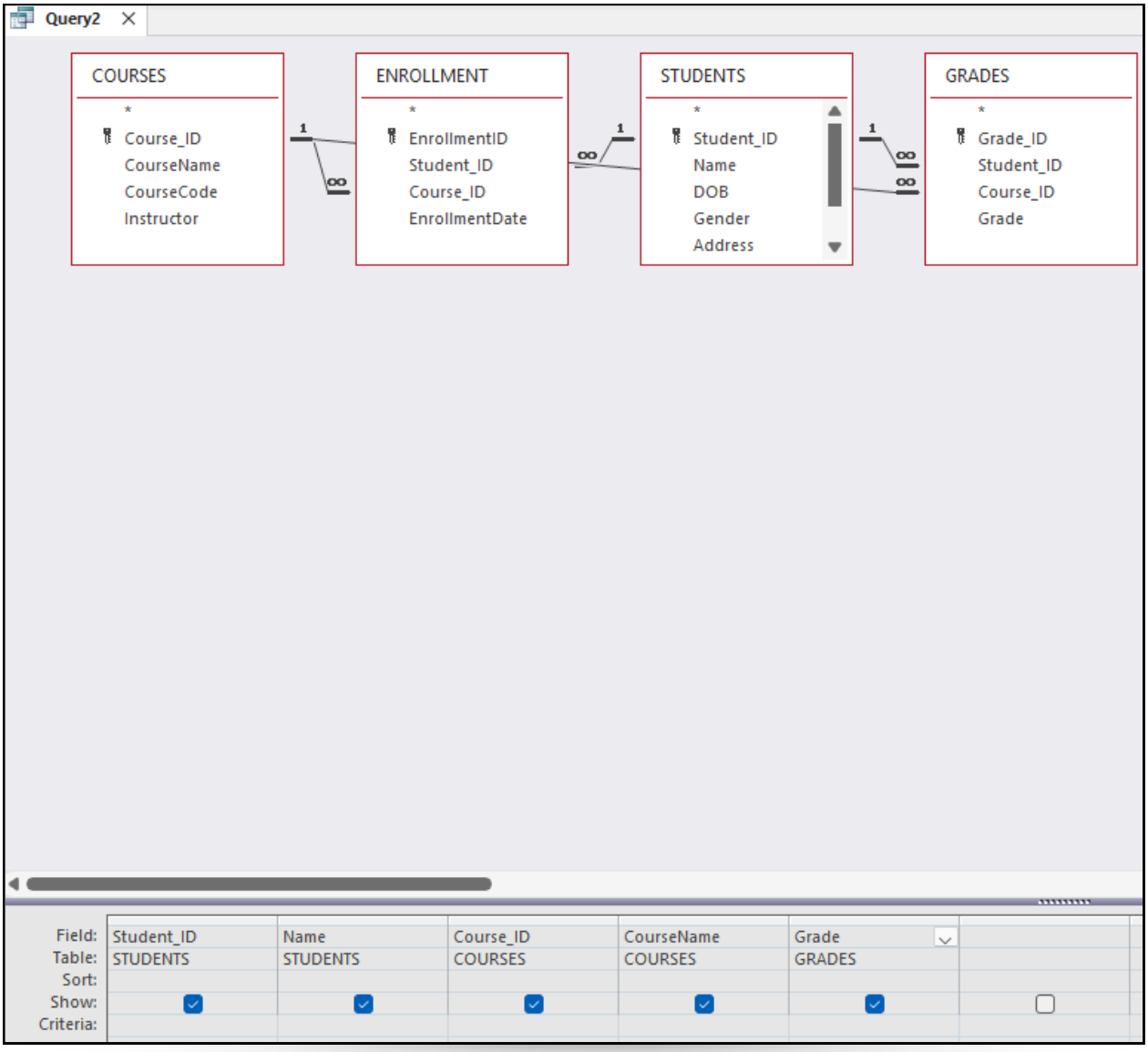
4. To save your query, click the **Save** button on the Quick Access Toolbar or right click on the query's tab > select **Save**. When prompted, enter a name for your query and then click **OK.** In this practical, save the query as **qryAllStudents**.

6.0 WORKING WITH QUERIES

Click the link to learn about the Query Design view

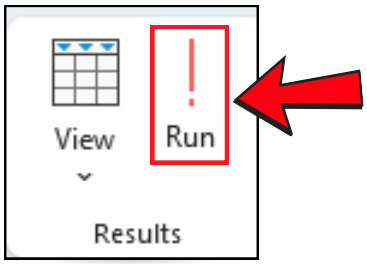
EXAMPLE 2 Create a query to list students and their grades

1. Go to the **Create tab** → Click **Query Design.**
2. In the **Show Table dialog box**, add **all tables**



3. **Double click** the field names to add them to the grid:
   - **StudentID** and name from **STUDENTS table**
   - **CourseID** and **CourseName** from **COURSES table**
   - **Grade** from **GRADES table**

4. Click **Run** (red exclamation mark).



5. **Save** the query → Name it: **qryStudentsGrades**

qryStudentsGrades

Student_ID	Name	Course_ID	CourseName	Grade
S001	Alia binti Ali	C01	Database Fundamentals	85
S002	Bernard Chandran	C01	Database Fundamentals	70
S003	Hud bin Hamzah	C03	Basic Mathematics	90
S004	Mawar binti Yusof	C03	Basic Mathematics	75

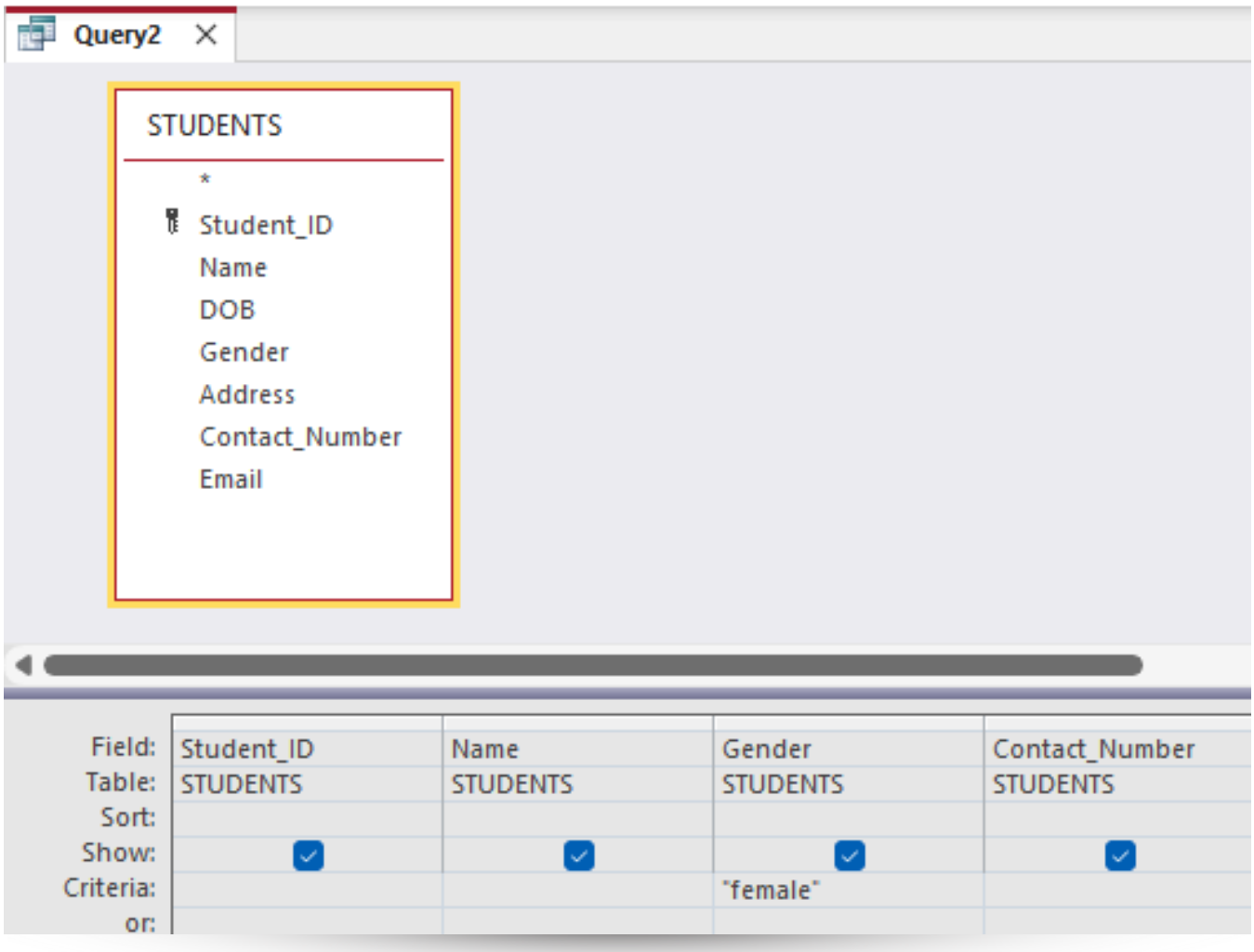
6.0 WORKING WITH QUERIES

Filter Queries: a mechanism to restrict the data returned by a query, allowing you to focus on specific records or subsets of data that meet certain criteria.

Creating a Filter Query

EXAMPLE Create a query to list all female students

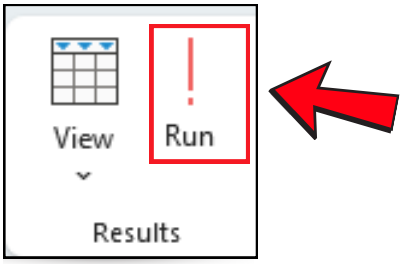
1. Go to the **Create tab** → Click **Query Design.**
2. In the **Show Table dialog box**, select **Students table** → Click **Add** → Click **Close.**



3. Double click the field names to add them to the grid:
   - **StudentID**
   - **Name**
   - **Gender**
   - **Contact_Number**

4. Type **'female'** on criteria for **Gender** to filter female students.Typing the criteria row will set your query to include only results that meet all the criteria.

5. Click **Run** (red exclamation mark).



6. **Save** the query → Name it: **qryFemaleStudents**

qryFemaleStudents

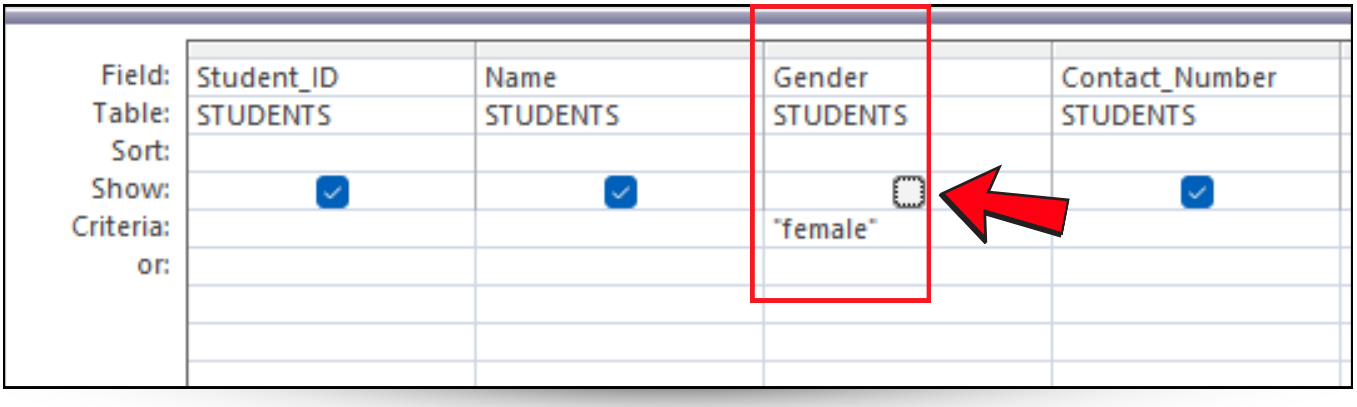
Student_ID	Name	Gender	Contact_Number
S001	Alia binti Ali	Female	012-1234567
S004	Mawar binti Yusof	Female	011-7788990
*			

6.0 WORKING WITH QUERIES

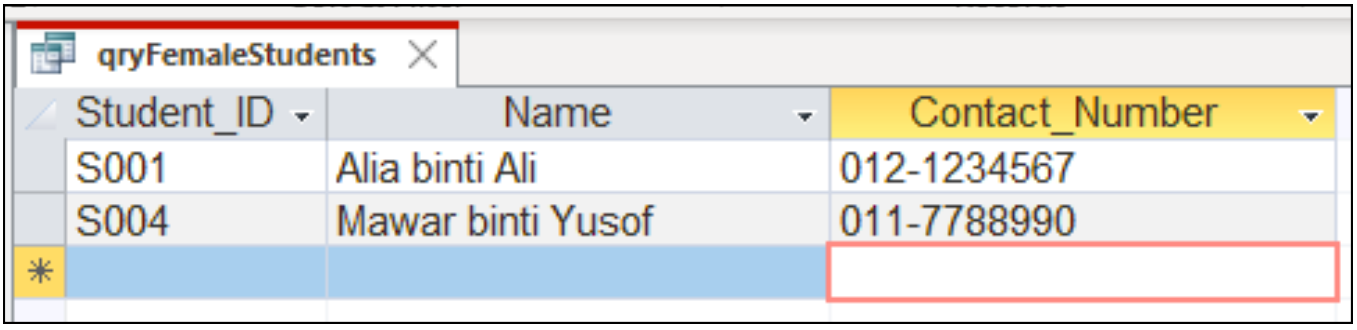
- There may be situations where a field contains important criteria for your query, but you don't necessarily need to display that field in the final query results.
- For example, we want to create a query to list all female students **without showing** the **Gender field.**

To hide a field within a query:

- In query design view, Click the **checkbox** in the **Show** row for **Gender field** to **uncheck it.**

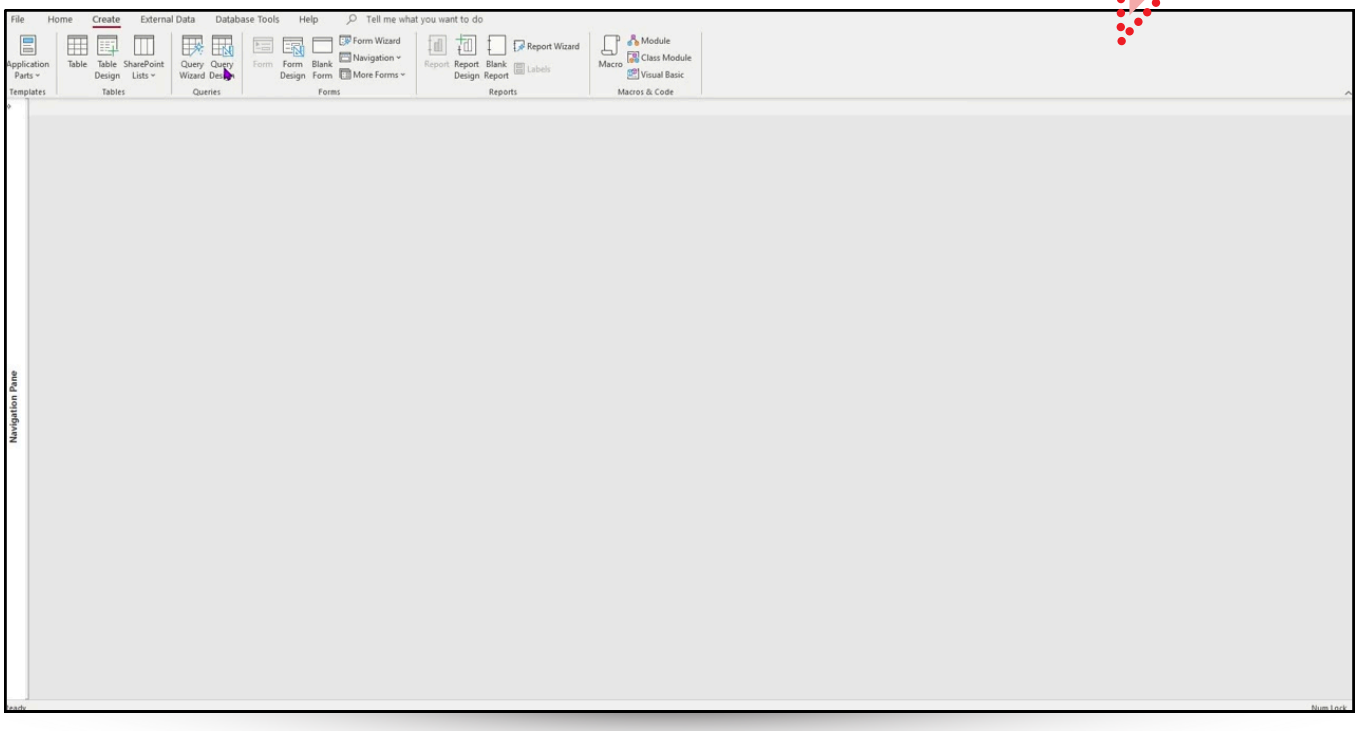


- Access has hidden the Gender field while still applying the other criteria we selected.



- To display a hidden field again, go back to Design View and check the box in the field's "Show" row.

6.0 WORKING WITH QUERIES



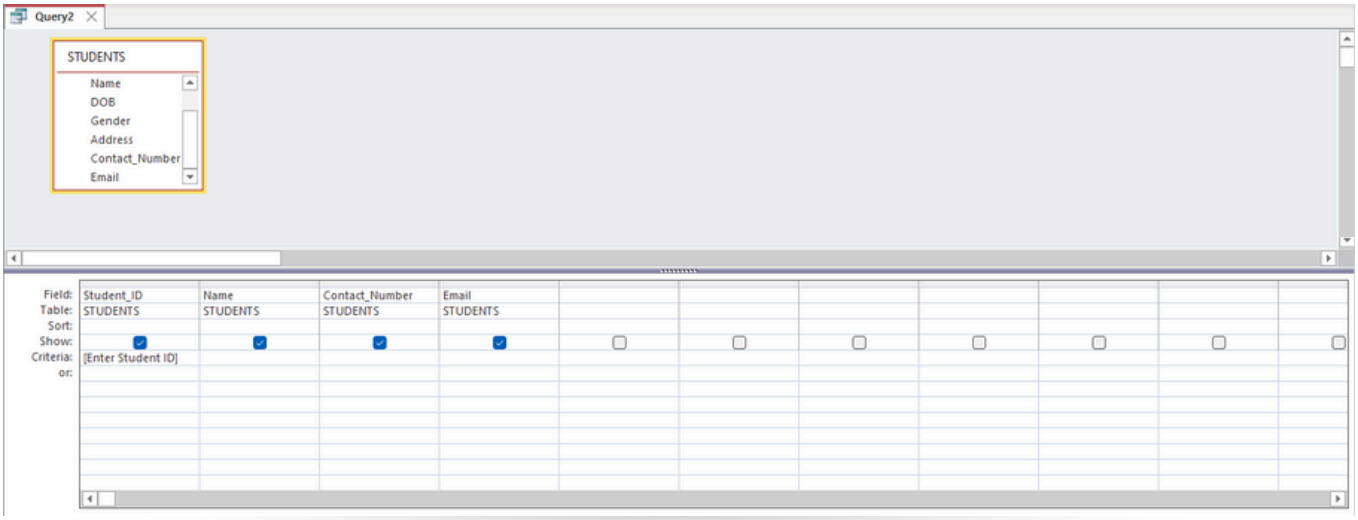
6.3 Advanced Queries

Parameter Queries: Allows you to create a query that prompts the user for specific criteria when it's run, rather than having those criteria hardcoded within the query itself. This enables you to reuse the same query structure for different inputs without needing to modify the query's design.

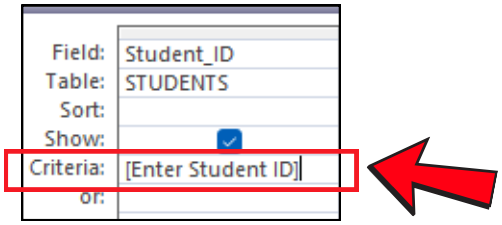
Creating a Parameter Query

EXAMPLE Create a query to search Student by StudentID

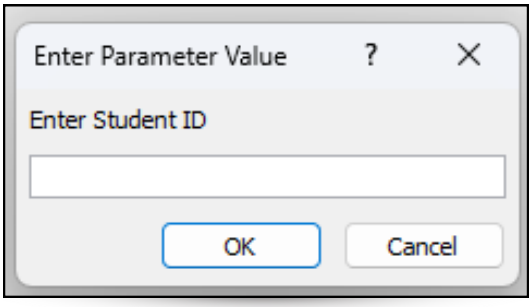
1. Go to the **Create** tab → Click **Query Design**.
2. Add Students table.
3. Double click the field names to add them to the grid:
   - **StudentID**
   - **Name**
   - **Contact_Number**
   - **Email**
4. In the **Criteria** row of the field that you want to apply a parameter to, enter the text that you want to display in the parameter box, enclosed in square brackets.



For example, In the Criteria row under StudentID , type: [Enter Student ID]

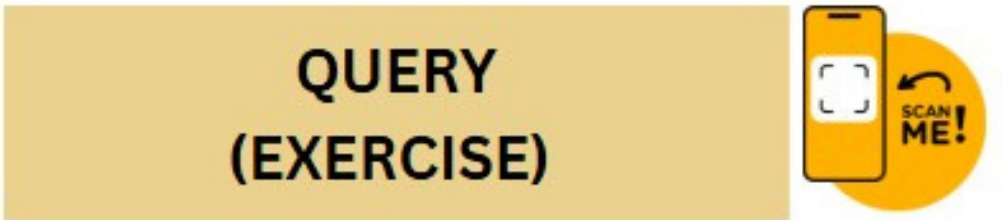


5. Run the query → Enter a Student ID when prompted.



6. **Save** as: **qrySearchStudentByID**

Scan the marker to do exercise



6.0 WORKING WITH QUERIES

Practice 2

1. Create a select query to list all male students .
   (show Name, StudentID , Gender and Contact Number)

2. Create a parameter query to search the students grade by Course Code.
   (show Name, StudentID, Course Name and Grade)

Answer

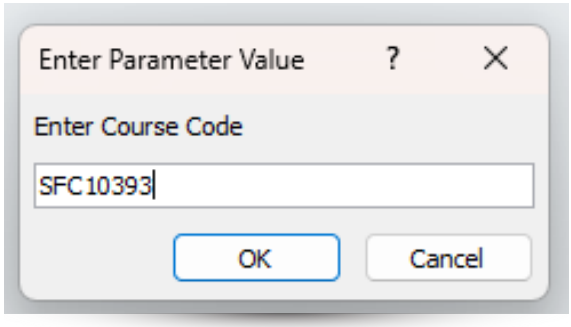
Your query should look like this:

1. Query to list all male students:

qryMaleStudents

Name	Student_ID	Gender	Contact_Number
Bernard Chandran	S002	Male	014-1122334
Hud bin Hamzah	S003	Male	017-4455667

2.Parameter query to search the students grade by Course ID.



qrySearchByCourseCode

Name	Student_ID	CourseName	Grade
Alia binti Ali	S001	Database Fundamentals	85
Bernard Chandran	S002	Database Fundamentals	70

CHAPTER 7

7.0 GENERATING REPORTS

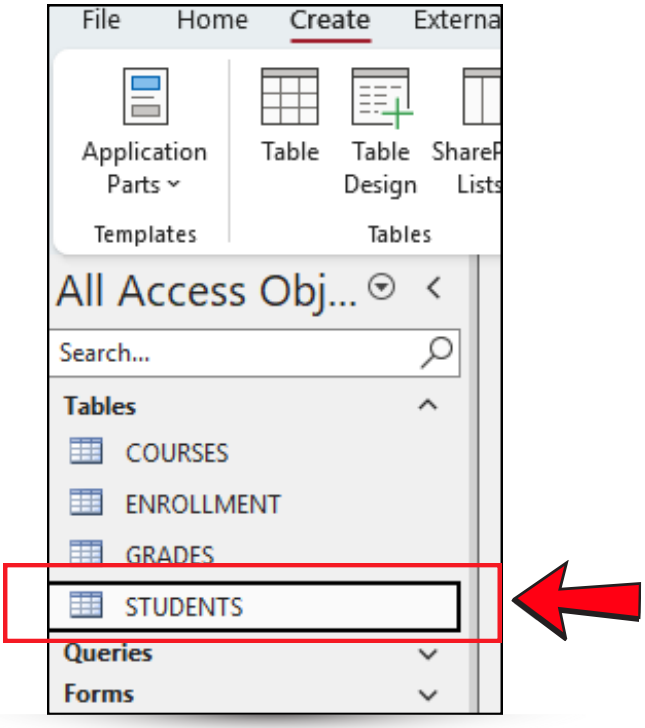
7.1 What are Reports?

A **report** in Microsoft Access is a tool that helps you present data in a clean, readable, and printable layout — perfect for printing results or sharing summaries.Access allows you to generate reports using data from both tables and queries.

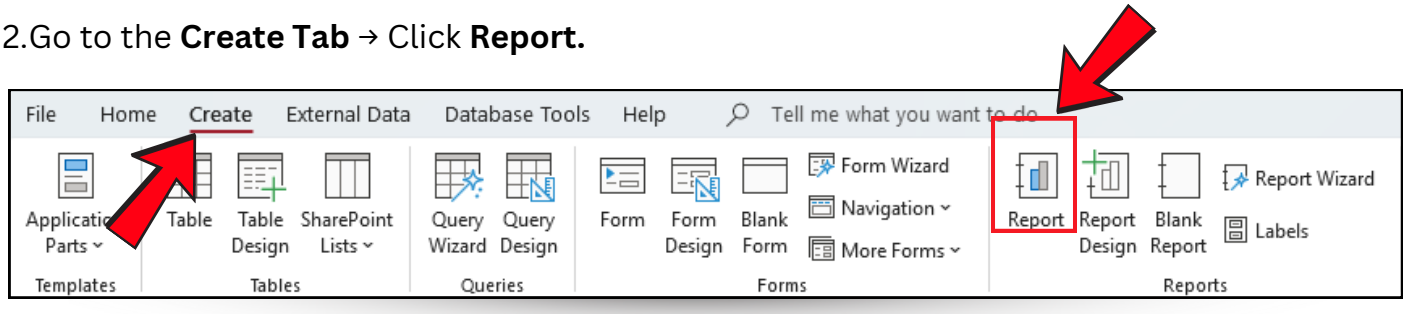
7.2 Creating Reports Using the Report Command

EXAMPLE Creating a Student List Report

1. Select the **Students Table**

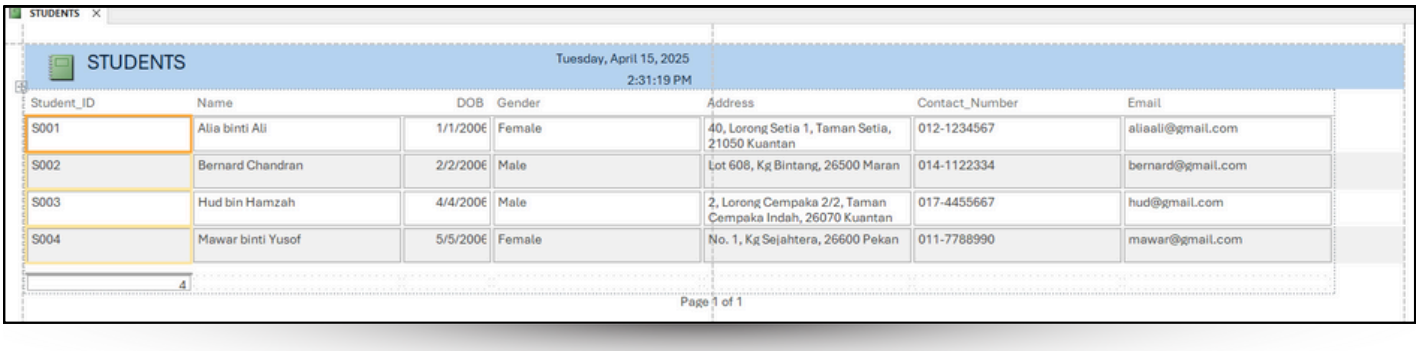


2.Go to the **Create Tab** → Click **Report.**



7.0 GENERATING REPORTS

Your report is created and opened in **Layout View**. Some of your data may appear beyond the page break. To resolve this, resize your fields by selecting a field and dragging its edge to adjust the size. Repeat this process for other fields until everything fits within the page.



STUDENTS

STUDENTS

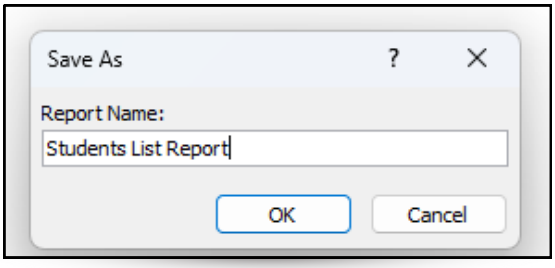
Tuesday, April 15, 2025
2:31:19 PM

Student_ID	Name	DOB	Gender	Address	Contact_Number	Email
S001	Alia binti Ali	1/1/200€	Female	40, Lorong Setia 1, Taman Setia, 21050 Kuantan	012-1234567	aliaali@gmail.com
S002	Bernard Chandran	2/2/200€	Male	Lot 608, Kg Bintang, 26500 Maran	014-1122334	bernard@gmail.com
S003	Hud bin Hamzah	4/4/200€	Male	2, Lorong Cempaka 2/2, Taman Cempaka Indah, 26070 Kuantan	017-4455667	hud@gmail.com
S004	Mawar binti Yusof	5/5/200€	Female	No. 1, Kg Sejahtera, 26600 Pekan	011-7788990	mawar@gmail.com

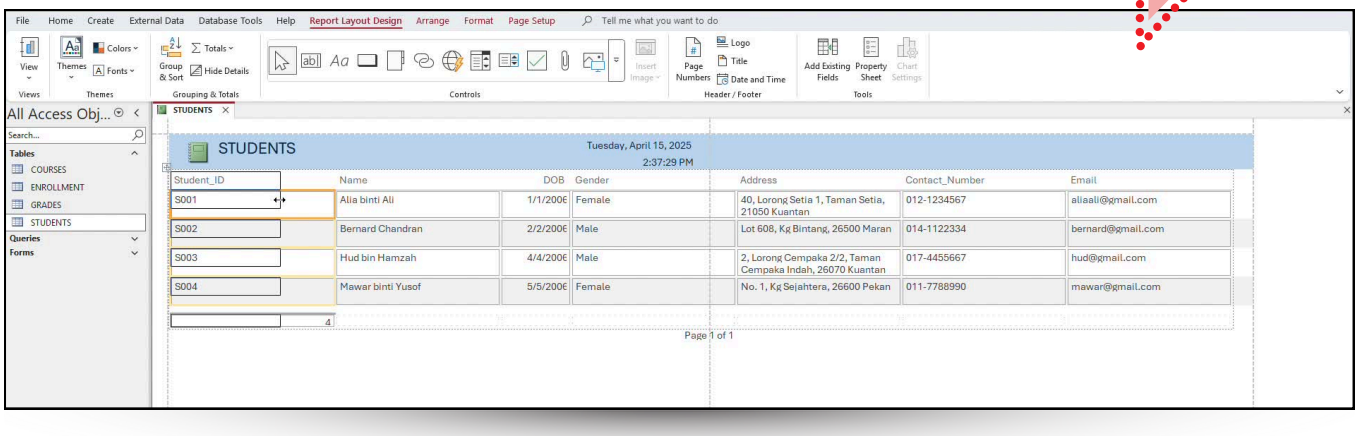
4

Page 1 of 1

To save your report, click the **Save button** on the Quick Access Toolbar or right click on the report's tab > select Save. When prompted, enter a name for your report and then click OK.



7.0 GENERATING REPORTS

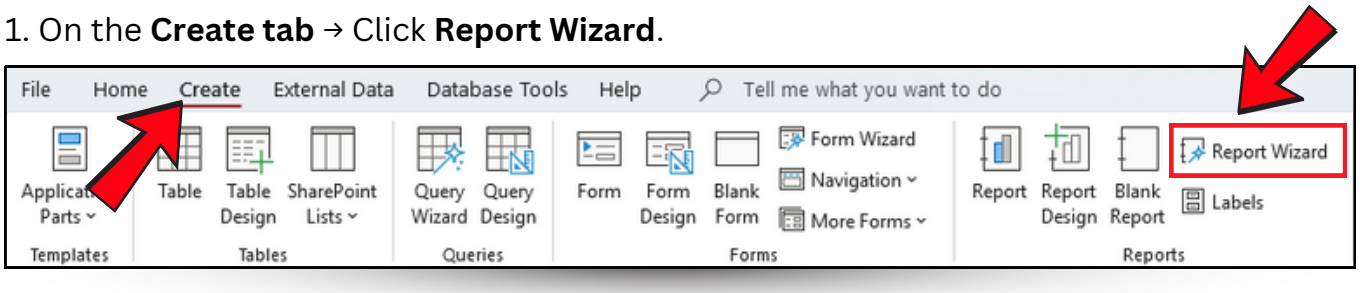


Student_ID	Name	DOB	Gender	Address	Contact_Number	Email
S001	Alia binti Ali	1/1/200E	Female	40, Lorong Setia 1, Taman Setia, 21050 Kuantan	012-1234567	aliaali@gmail.com
S002	Bernard Chandran	2/2/200E	Male	Lot 608, Kg Bintang, 26500 Maran	014-1122334	bernard@gmail.com
S003	Hud bin Hamzah	4/4/200E	Male	2, Lorong Cempaka 2/2, Taman Cempaka Indah, 26070 Kuantan	017-4455667	hud@gmail.com
S004	Mawar binti Yusof	5/5/200E	Female	No. 1, Kg Sejahtera, 26600 Pekan	011-7788990	mawar@gmail.com

7.3 Creating Reports Using the Report Wizard

EXAMPLE Creating a Student Grade Report

1. On the **Create tab** → Click **Report Wizard**.

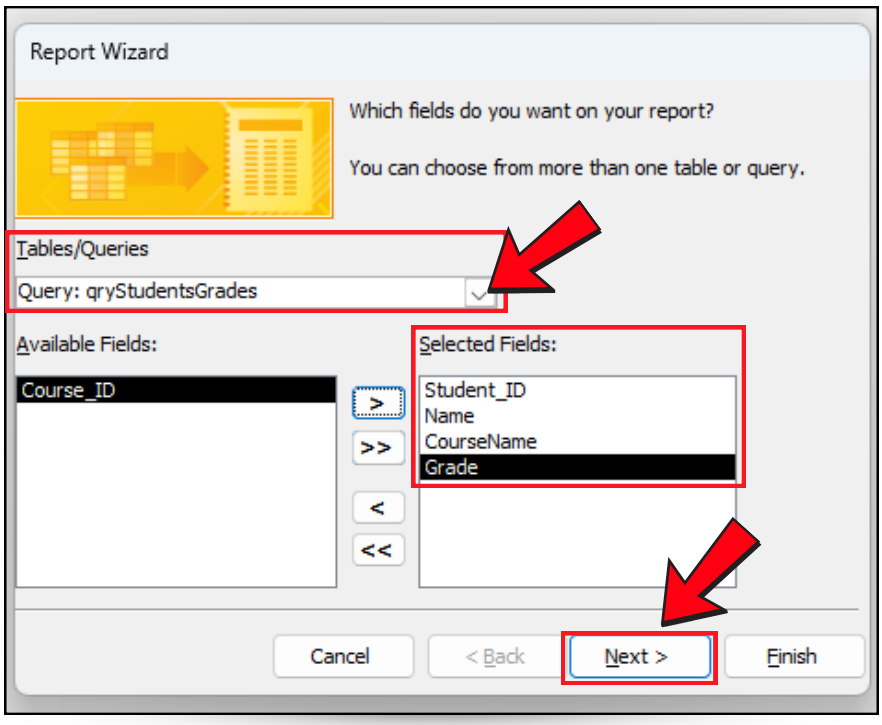


2. In the *Tables/Queries* drop-down, select:
   → *Query:* **qryStudentsGrades**

3. Select a field from the list on the left, and click the **right arrow** to add it to the report. Or you can simply double click the field from the list on the left and it will be added to the selected fields box. You can include fields from multiple tables or queries by repeating the same steps.

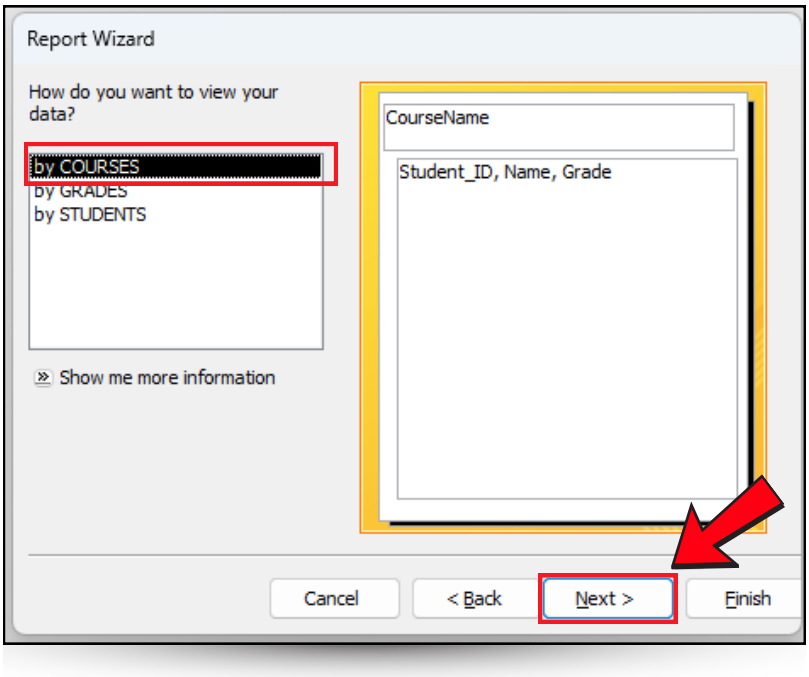
4. For this example, select the fields below:
   - Student ID
   - Name
   - Course Name
   - Grade

5. Then click ***Next***.

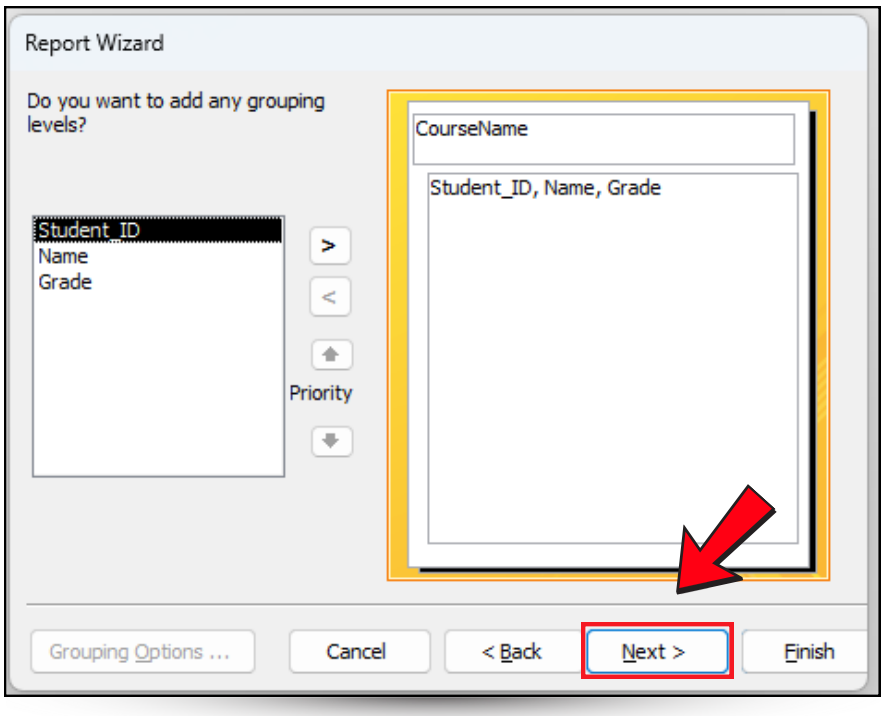


We will view our data by Course Name so students under the same course are listed together.

6. Click **Next**.

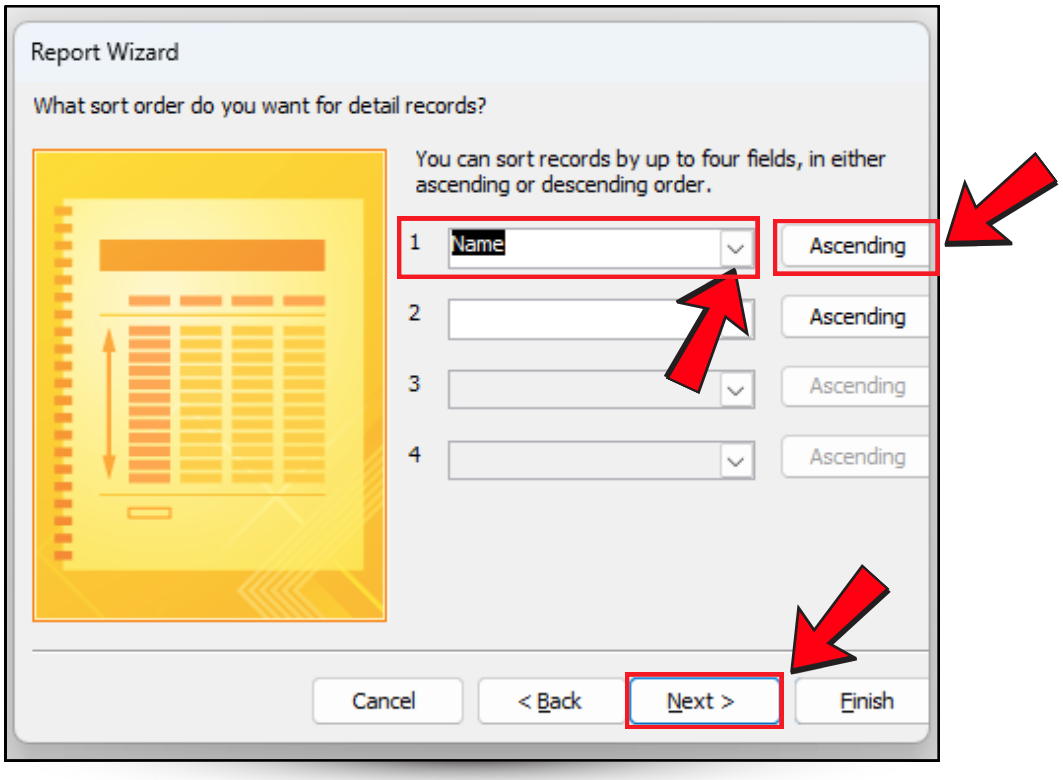


Since our data is already listed by course name, there's no need to add additional grouping levels. Just click **Next**.

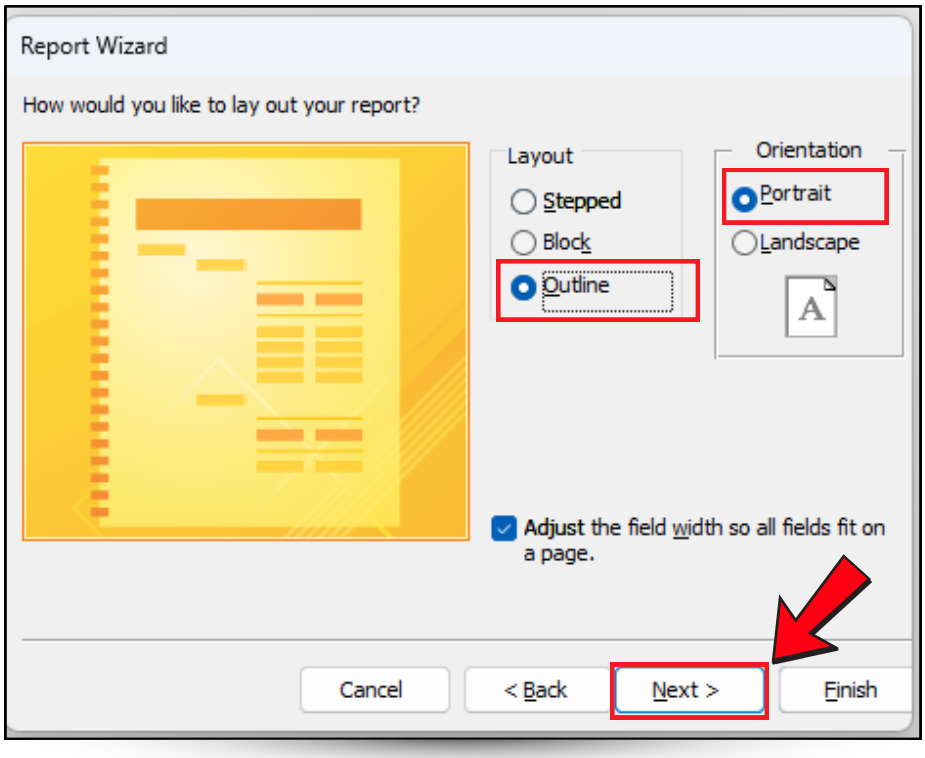


Next, we can determine the sort order of our records—up to four fields—in either ascending or descending order.

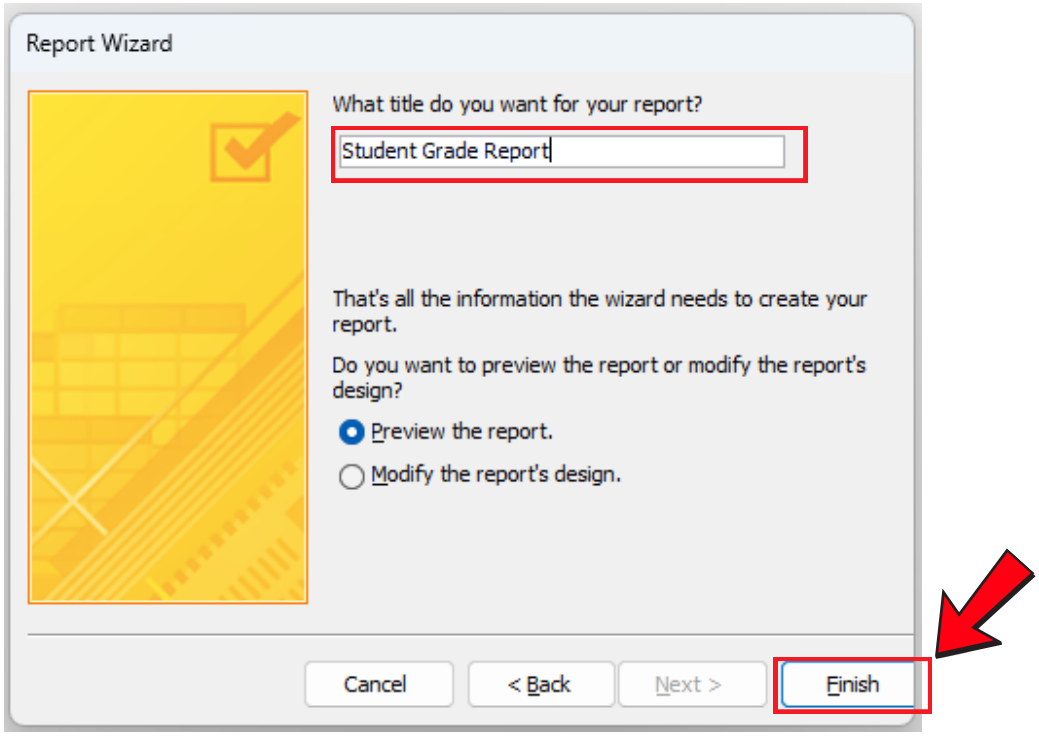
6. Click the top drop-down arrow and choose the first field you want to sort by. Then, to change the sort order, click the button on the right to select either ascending or descending.
7. For this practical, choose the field 'Name' and set it to ascending order.
8. Click **Next**.



9. Next, we can choose the layout and orientation of our report. A preview of the layout is shown on the left side. For this practical, choose the '**Outline**' layout and '**Portrait**' orientation.

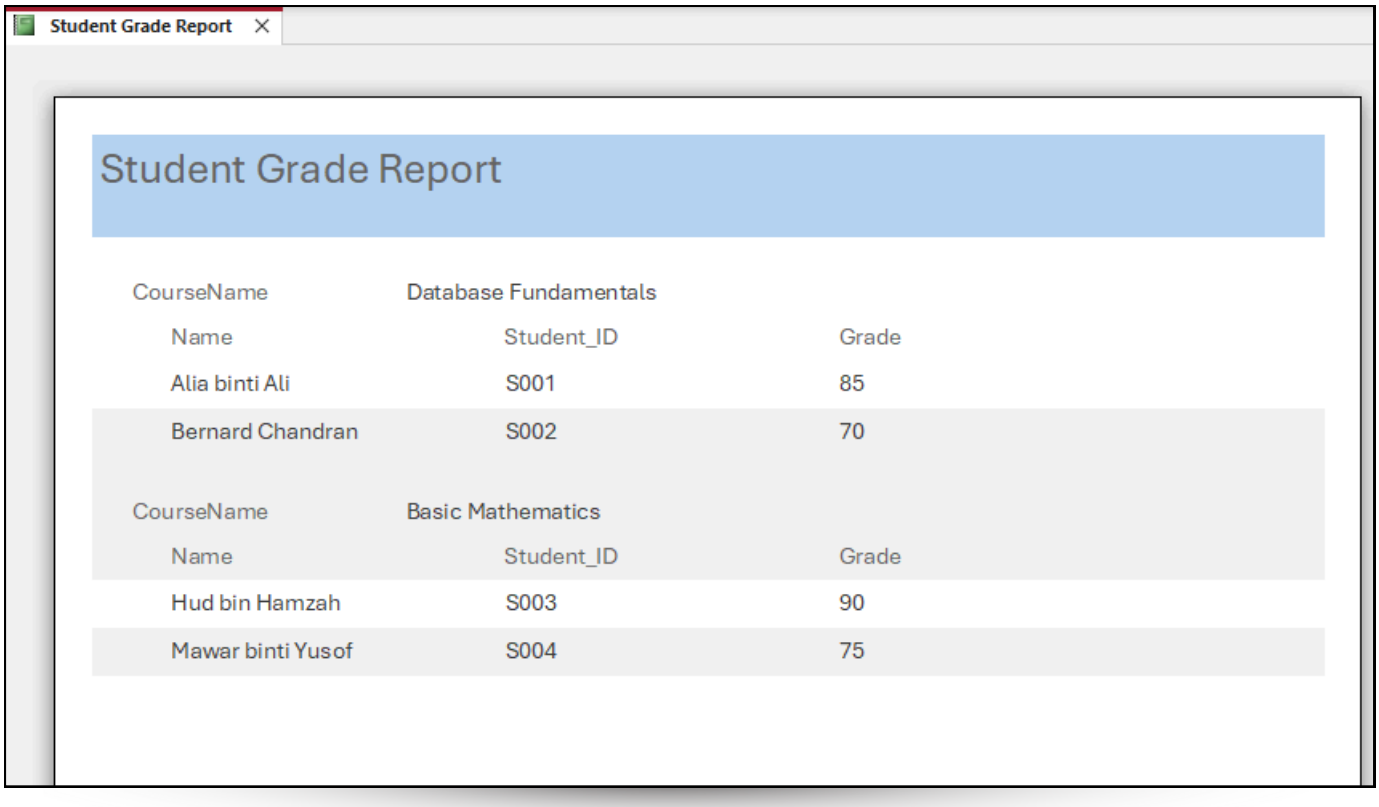


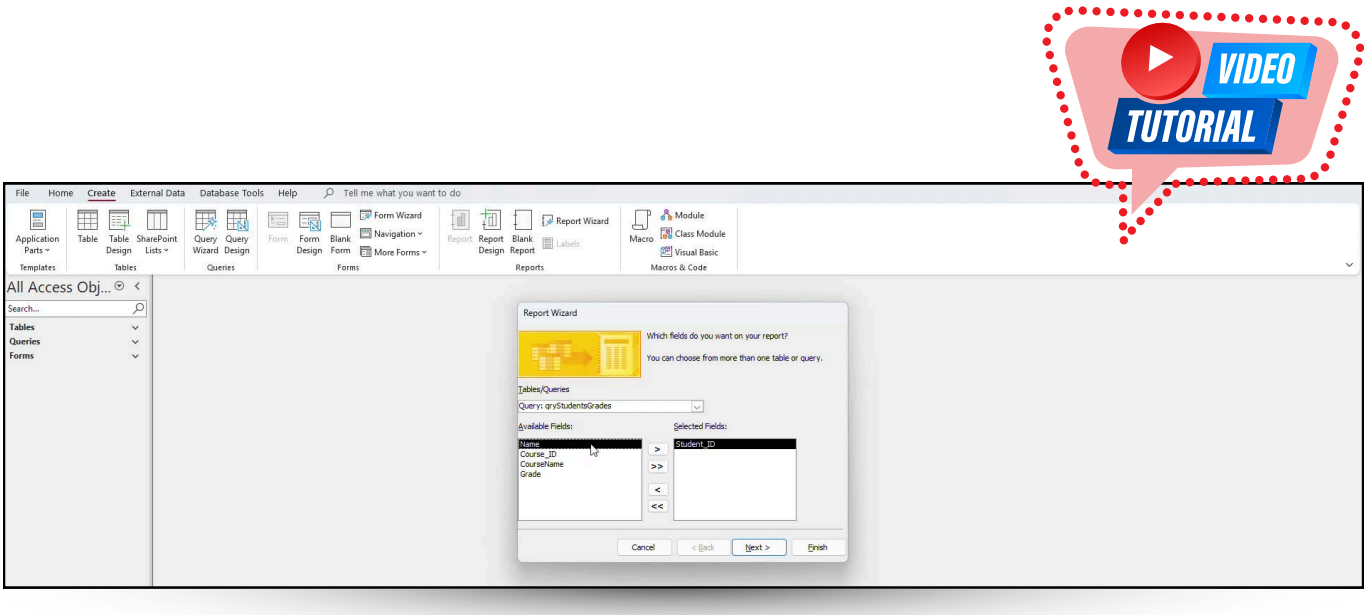
10. Save your report and click **finish**.



7.0 GENERATING REPORTS

Your report is created and opened in **Print Preview**.





7.0 GENERATING REPORTS

7.4 Customizing Reports

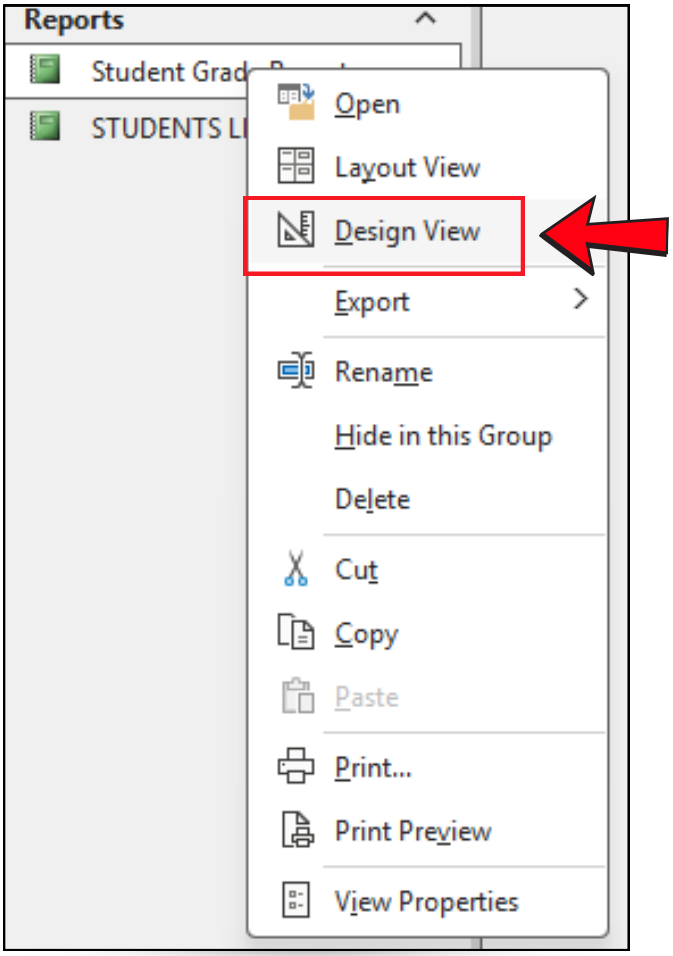
Once you have created a basic report in Microsoft Access, the next step is to customize it to meet your specific needs. Customization allows you to control how your data looks and how easily others can understand it. In this section, we will take a step-by-step approach to customizing reports. You will learn how to switch to Design View, adjust the layout, modify fonts and colors, insert images or logos, and fine-tune the organization of your information. By following each step carefully, you will be able to create professional-looking reports that are clear, organized, and visually appealing.

Let's try it out! LET'S DO THIS

In this practical, we will modify the **Student Grade Report.**

STEP 1 Open Report in Design View

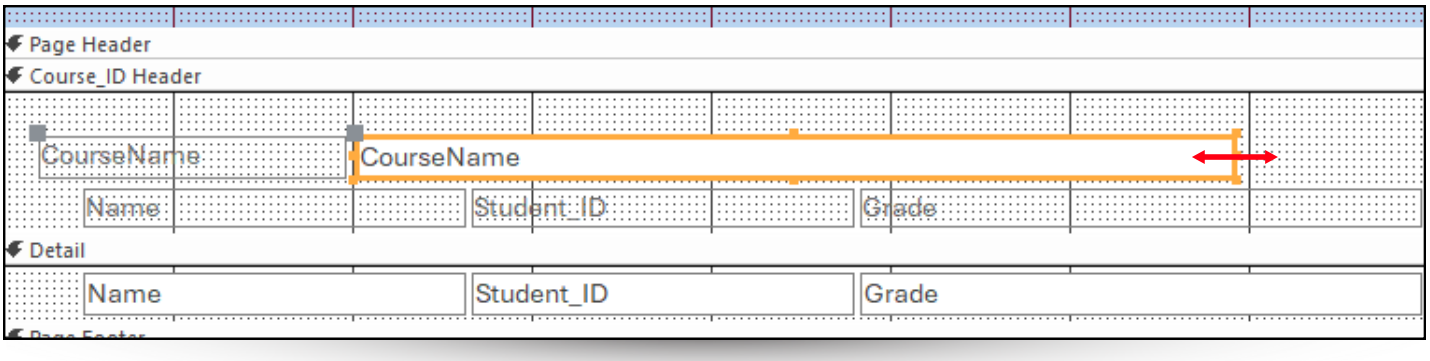
- In the **Navigation Pane**, right-click your report.
- Select **Design View** from the menu.



- You will now see the structure of the report, including sections like **Report Header, Page Header, Detail, and Footer.**

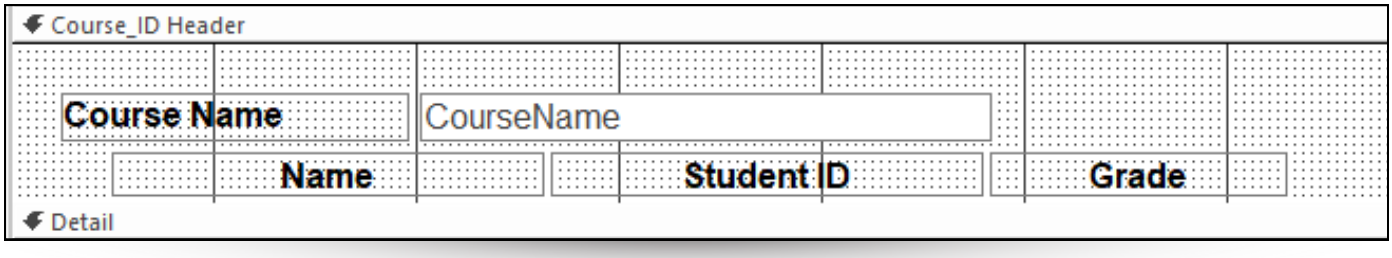
STEP 2 Customize the Report Layout

- Drag and resize text boxes, labels, and other controls to better fit your data.
- Drag the field borders left or right to resize.
- Use the **Arrange** tab to align the fields neatly.
- In this practical, resize the **CourseName** and **Grade** text boxes and Labels to make them fit better.



STEP 3 Apply Formatting

- **Format the Field Labels**
  - Select all the field labels in the report.
  - On the Format tab, set the font to Arial Bold and the font size to 12.
- **Edit the Label Text**
  - Double-click each label to edit its text as follows:
  - Change CourseName → Course Name
  - Change Student_ID → Student ID
- **Adjust Text Alignment**
  - Select the fields Name, Student ID, and Grade.
  - On the Format tab, set their text alignment to Center.

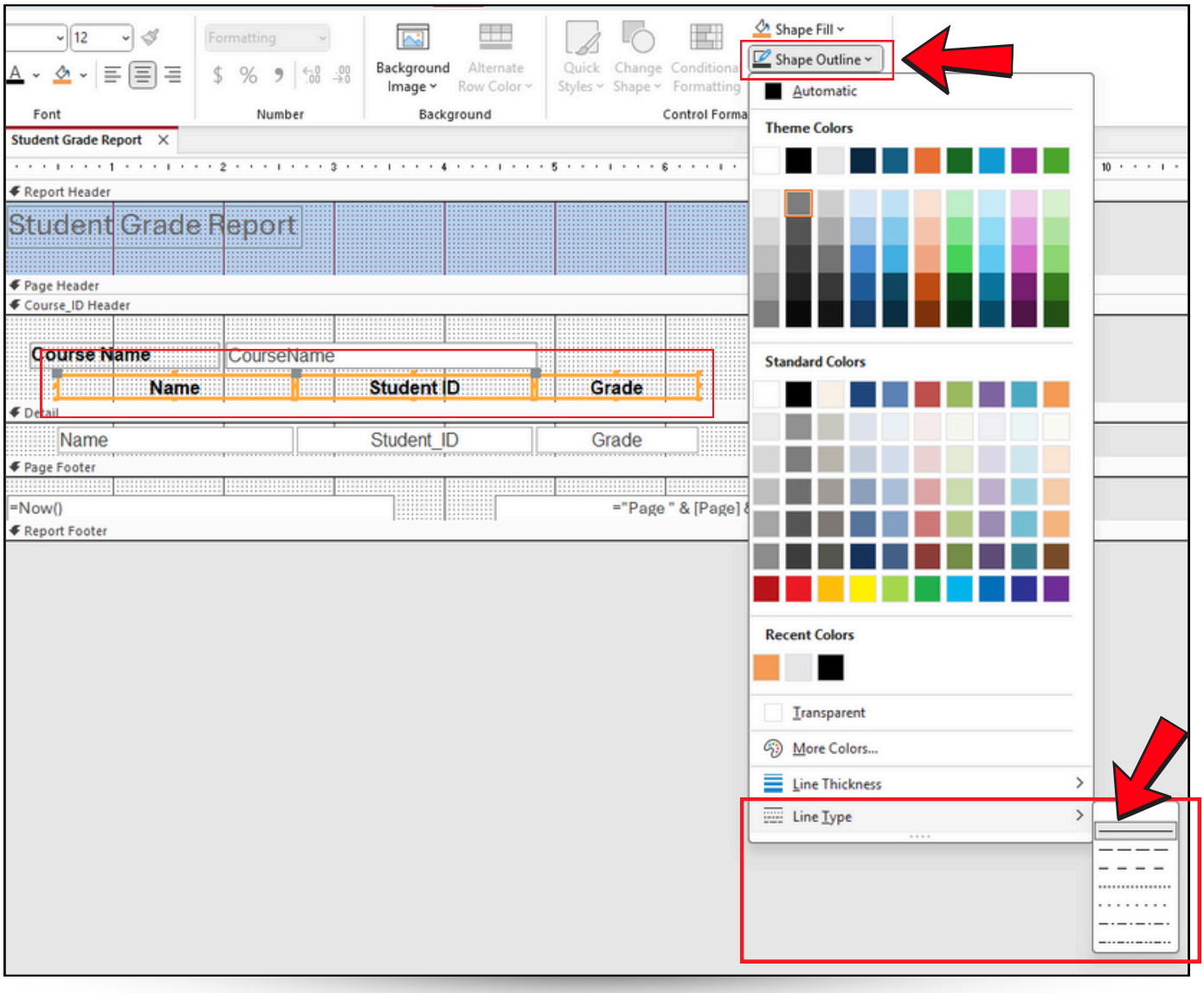


Add Borders to Labels

- Select the **Name, Student ID**, and **Grade** labels.
- Go to the **Format tab** on the ribbon.
- Click the **Shape Outline** command:
  - Choose the **line type** (such as solid or dashed) that you prefer.
  - Select the **line color** you want for the label borders.

Apply Fill Color to Labels

- With the same labels still selected, click the **Shape Fill** command.
- Choose a **fill color** to highlight the labels and make them stand out.



Adjust the Font and Alignment of Text Boxes

- Select the **Student_ID** and **Grade** text boxes (the actual boxes that display the data, not the labels).
- Go to the **Format tab:**
  - Change the font to **Arial** and the font size to **11**.
  - Set the text alignment to Center for better readability.

You can only adjust the **font** and **alignment** of these text boxes.

Do not change the content inside the text boxes — they are linked directly to fields in your table. Editing the content could break the connection to your data!

PRACTICE **Editing the Report Title Label**

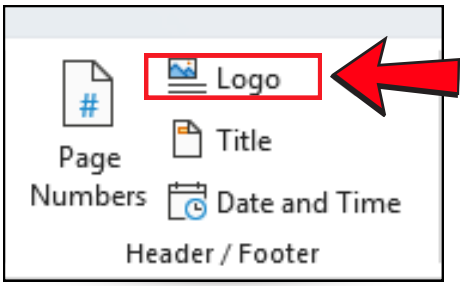
Customize the Report Title

- Locate the Report Title label in the Report Header section.
- Click to select the label.
- On the Format tab:
  - Change the font style (for example, to Arial Bold or another professional font).
  - Adjust the font size to make the title stand out (for example, size 20 or larger).
  - Set the text alignment to Center or Left, depending on your preferred layout.
- Move the title label to your desired position within the header to balance the design.

Make sure the title is easy to read and properly centered (if required) to give your report a polished, professional appearance.

STEP 4 Insert a Logo

- In Design View, click anywhere in the **Report Header** section (or another section where you want to place the logo).
- Go to the Design tab on the ribbon.
- Click Logo
- A dialog box will appear — select your logo image file from your computer.
- After inserting, resize the image by dragging the corners to fit neatly in the layout. Move the logo into position — typically in the top-left or top-right corner of the header.



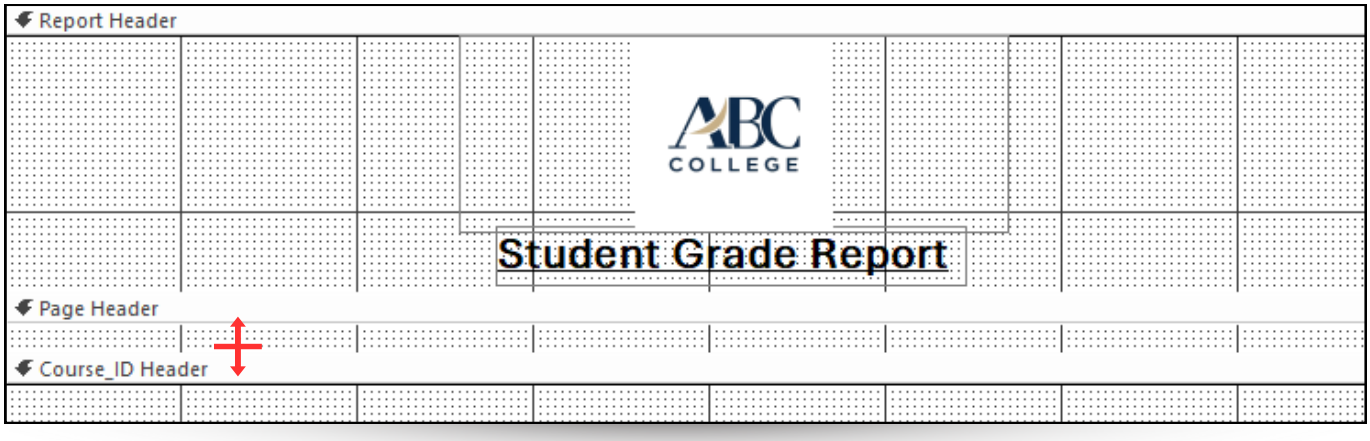
Optional Touch:
You can align the logo with the report title or use the **Arrange tab** to ensure consistent spacing and alignment across elements.

STEP 5 Add Page Header and Footer

Right-click in the report design and select **Page Header/Footer** if they are not already visible.

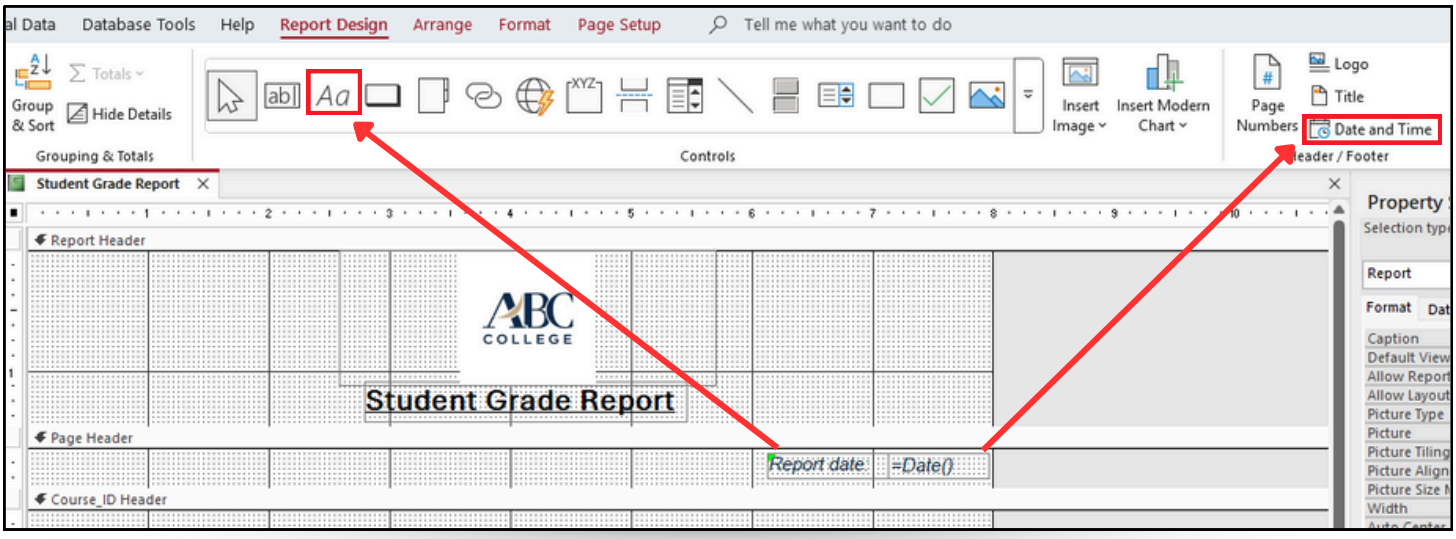
If you don't see any white space in the **Page Header** or **Page Footer**, don't worry — it just means the section is currently too small to display content.

To fix this, **click and drag the bottom edge** of the header or footer to resize it. Once there's enough space, you can easily insert text, page numbers, or other elements.



In the Page Header section, use Label to type custom information. e.g: “Report Date:”.

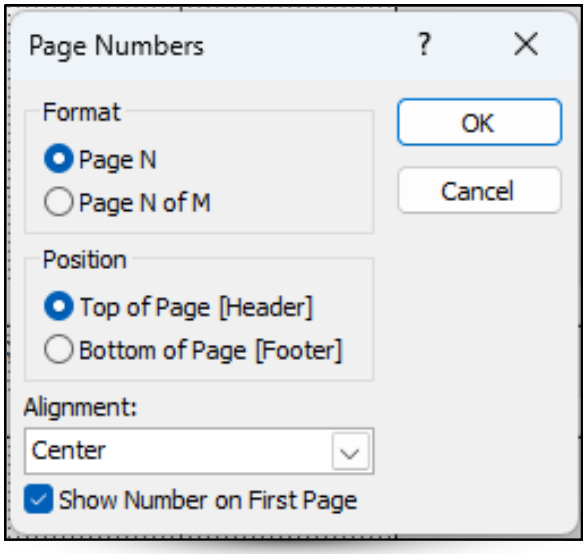
Then, use the "Date and Time" tool to insert the current date.



In the **Page Footer** section, use the **Page Numbers** tool from the **Design tab** to insert page numbering in the format and position of your choice.

For this practical, first delete the existing text box in the footer.

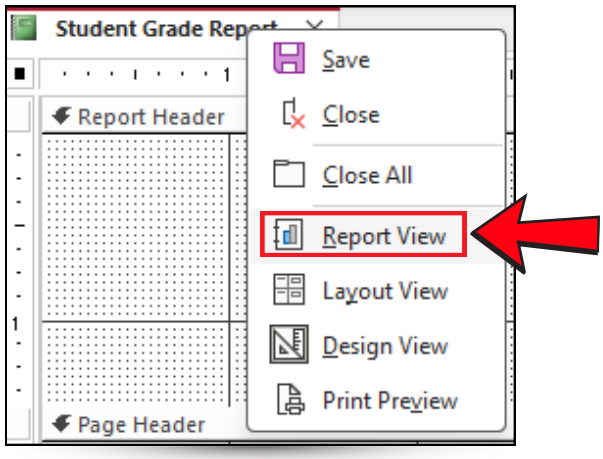
Then, use the Page Numbers tool to insert new page numbering. Choose your desired format, position, and alignment for the page number.



7.0 GENERATING REPORTS

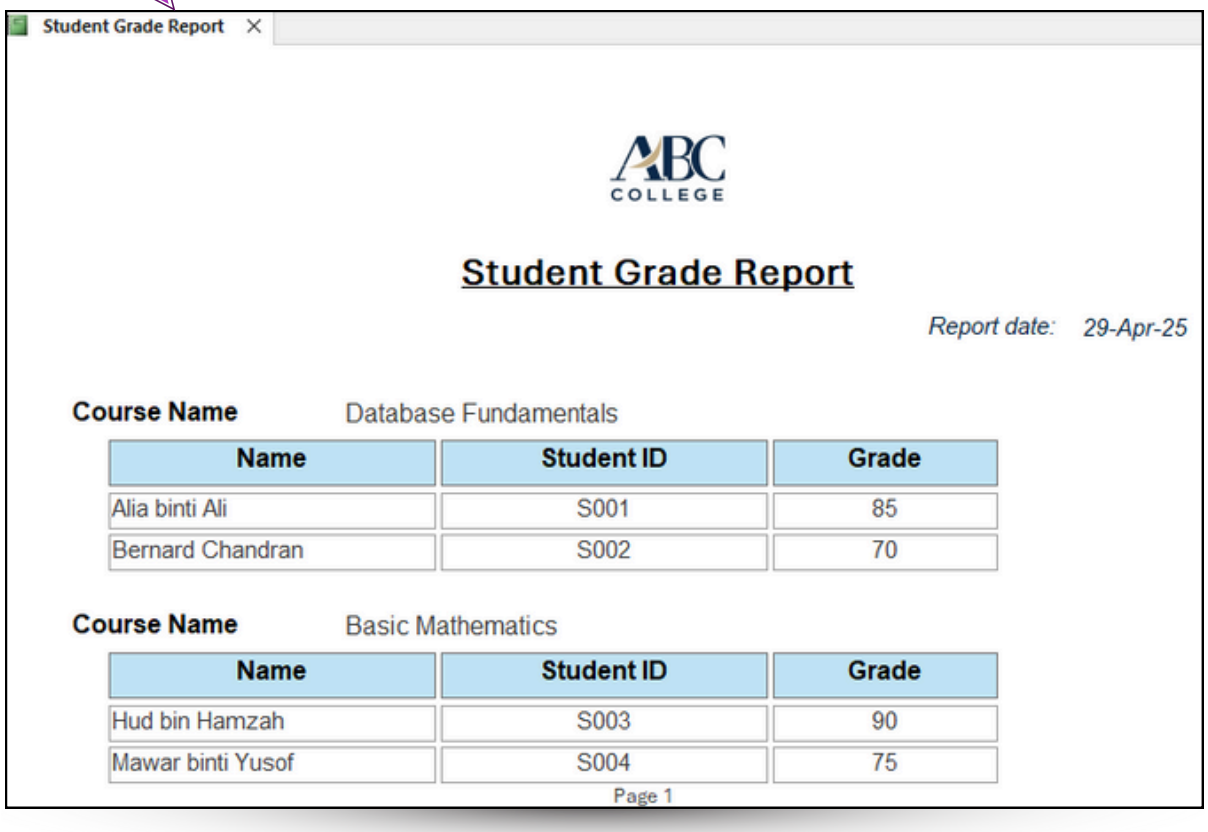
STEP 6 Preview and Save the report

- Right click on the report tab and select **Report View** to see how your report looks with the new labels, borders, and colors applied.
- Make any small adjustments if necessary and save your report.



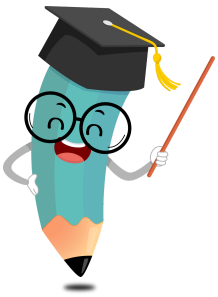
- Check that:
  - The labels are easy to read.
  - The text is properly centered in the Name, Student ID, and Grade fields.
  - The colors and lines make the layout clearer without being too distracting.

EXAMPLE



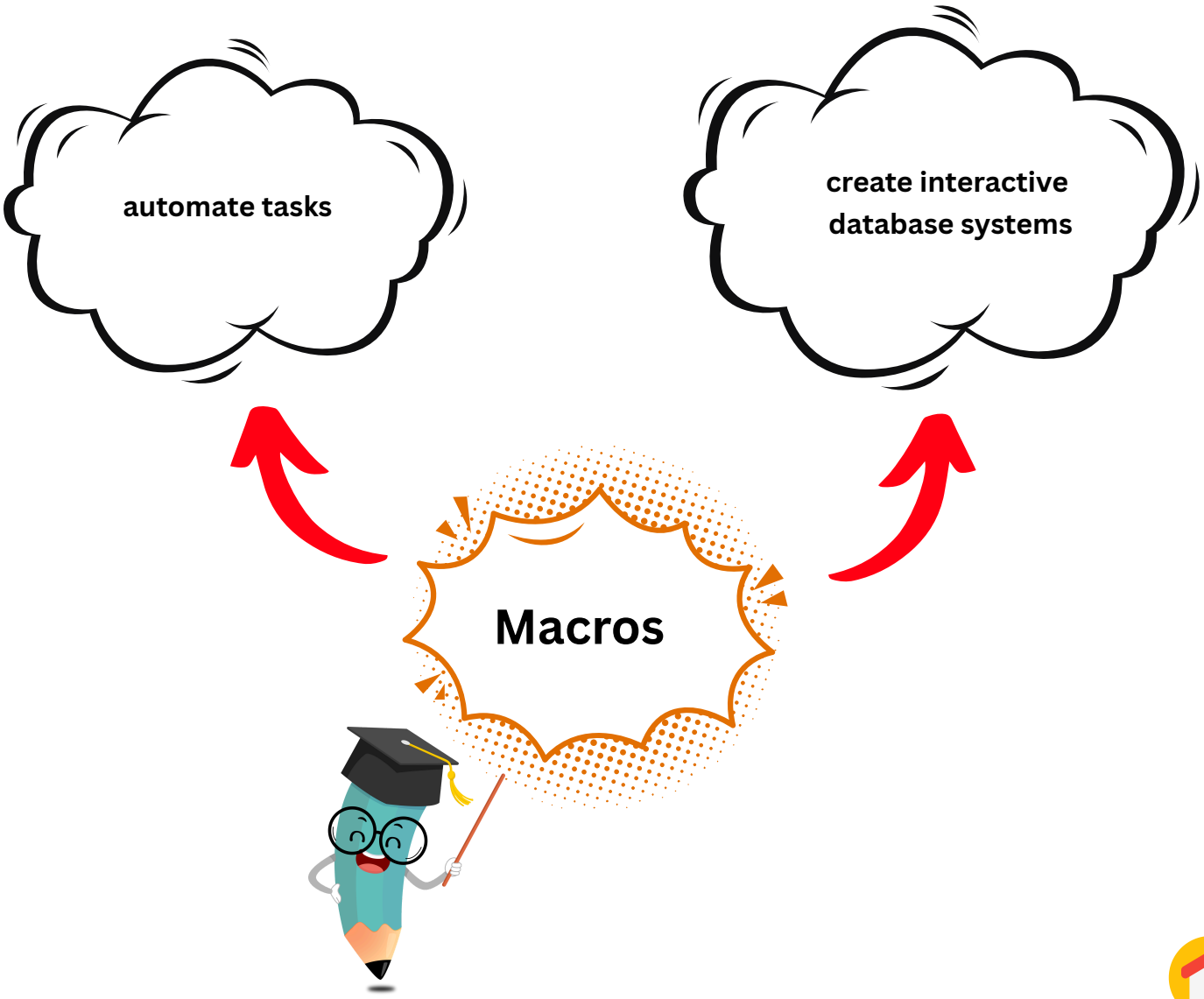
CHAPTER 8

8.0 AUTOMATING YOUR DATABASE WITH MACROS



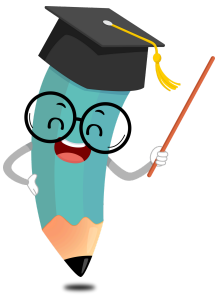
In Microsoft Access, **macros** are powerful tools that let you **automate tasks and create interactive database systems**—without needing to write full-scale programming code. They act like scripts or commands that tell Access what to do in response to events like clicking a button or opening a form.

In the following steps, you'll learn how to create a macro that enhances navigation in your system—**automatically closing the main menu and opening the student form when a button is clicked.** This simple but powerful feature is a great starting point for introducing automation into your database.



8.0 AUTOMATING YOUR DATABASE WITH MACROS

8.1 Creating Simple Macros



GOALS

When a user clicks a button (e.g., "Student Form") on the **Main Menu Form**, Access should:

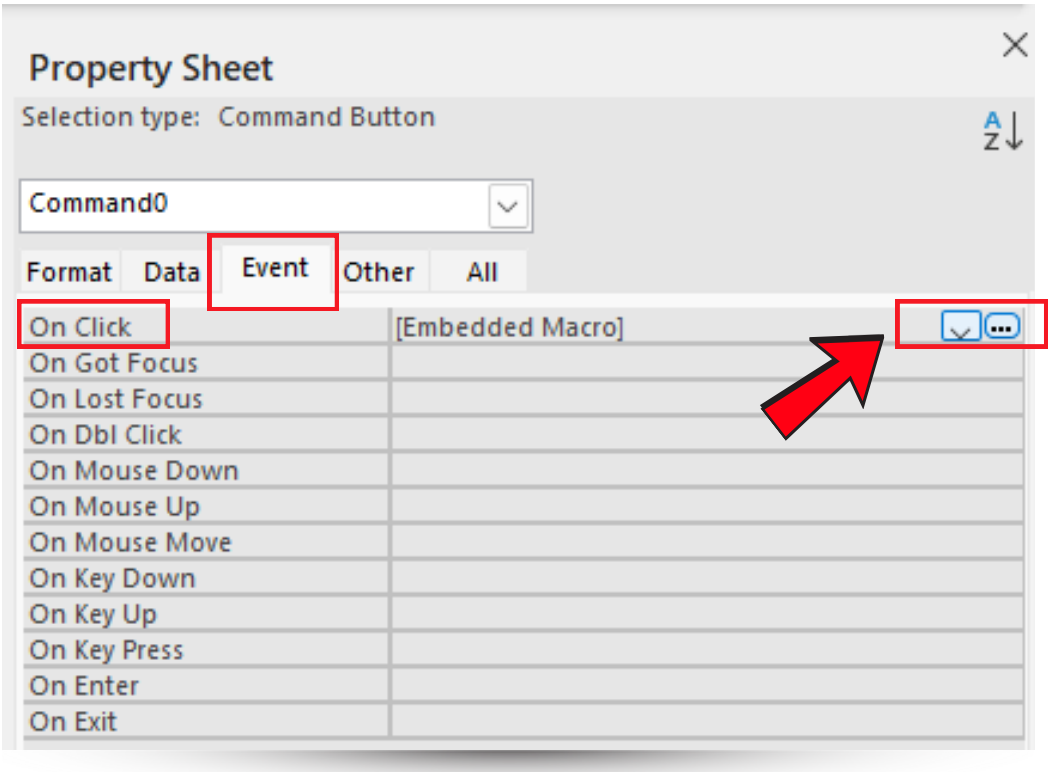
1. Close the **Main Menu Form** and
2. Open the **Student Form**

STEP 1 Preview and Save the report

- In the **Navigation Pane**, right-click on your **Main Menu Form**
- Select **Design View**.

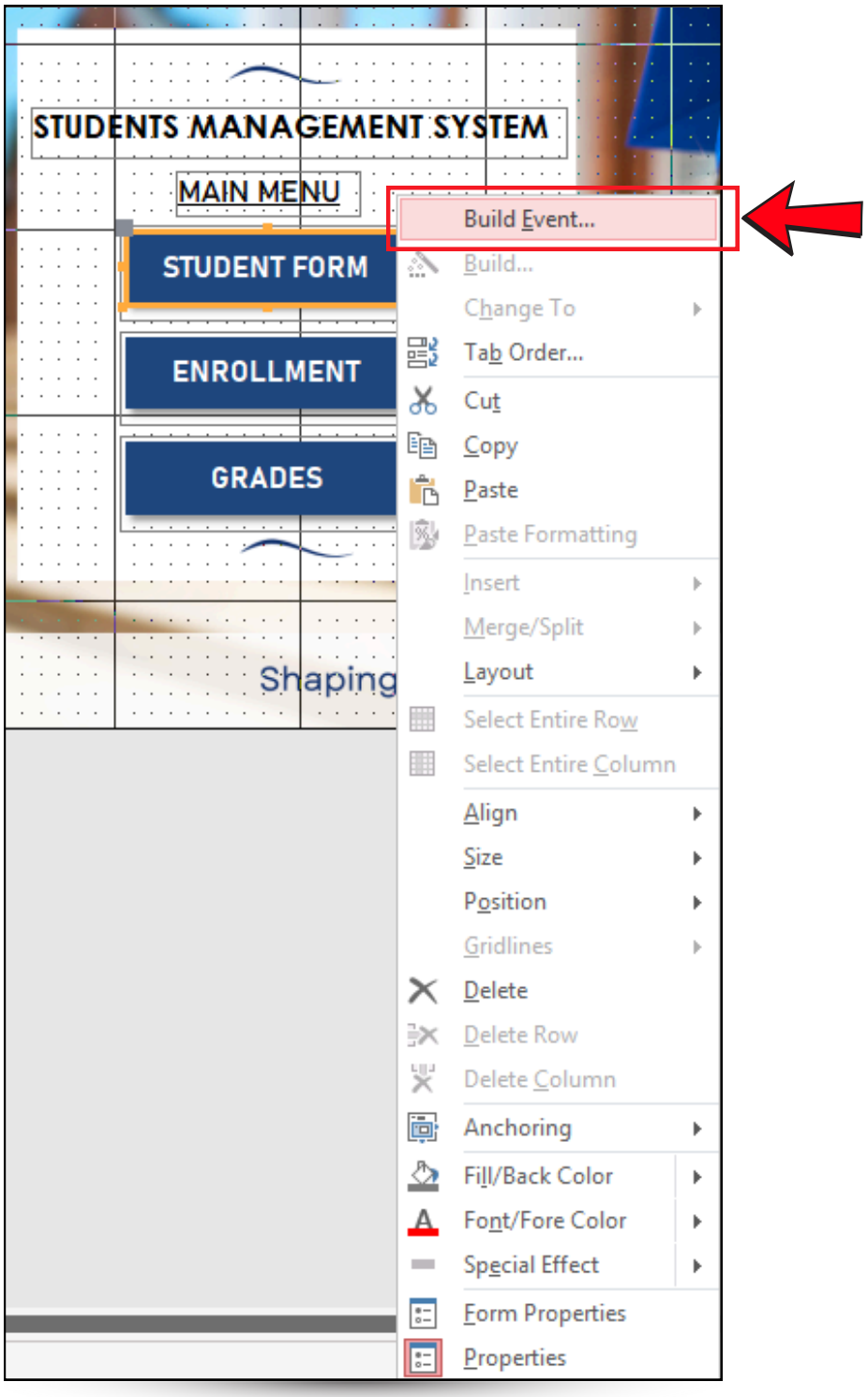
STEP 2 Add Macro to the Button

- Select the **Student Form** button.
- In the **Property Sheet**, go to the **Event** tab.
- Find the event labeled **On Click**.
- Click inside the On Click field, then click the **"..."** (ellipsis button).

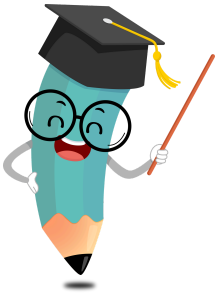


or

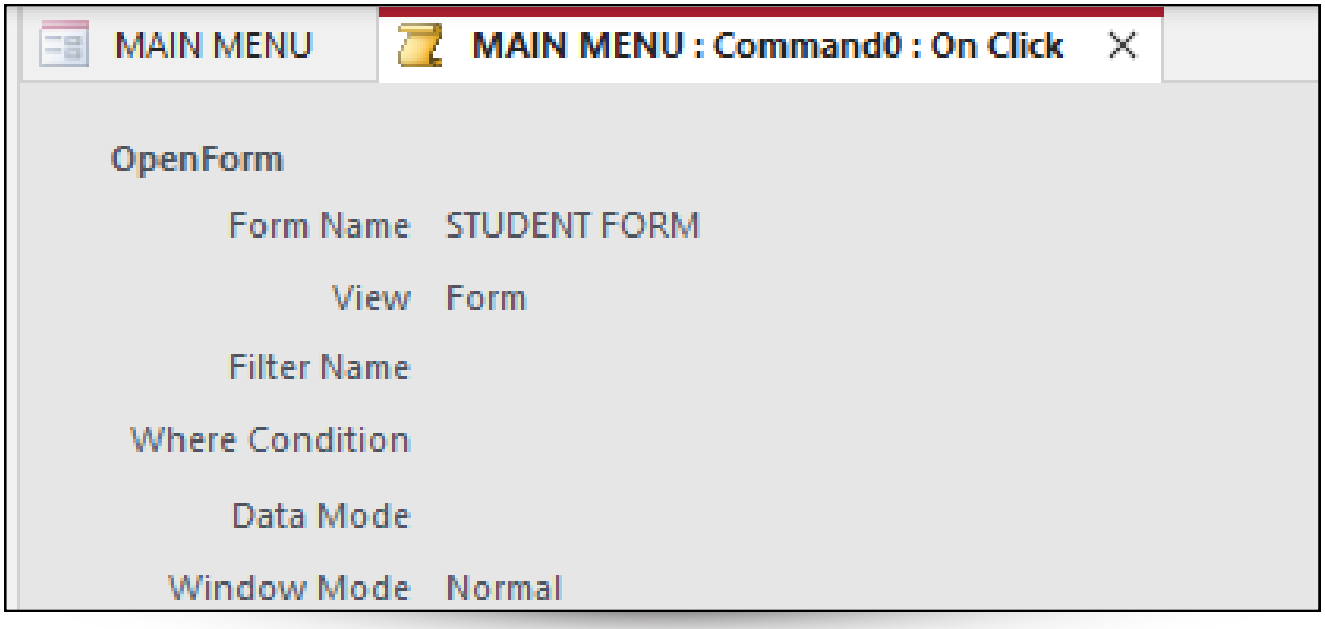
- Right click on the **Student Form** button.
- Choose **build event**



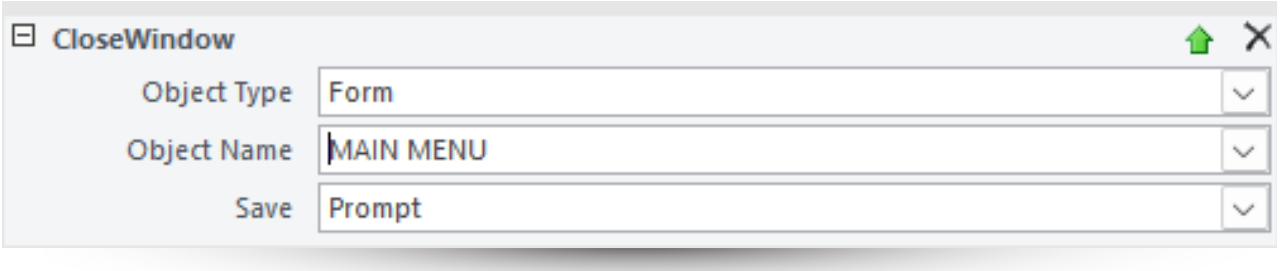
STEP 3 Define the Macro Actions



When creating the button, the Macro Builder automatically includes the action to open the Student Form. We only need to add an additional step to close the Main Menu Form.



- **To Close the Main Menu Form:**
  - Add New Action
  - Choose Action: **CloseWindow**
  - Arguments:
    - **Object Type**: Form
    - **Object Name**: Main Menu (or whatever your main menu form is named)



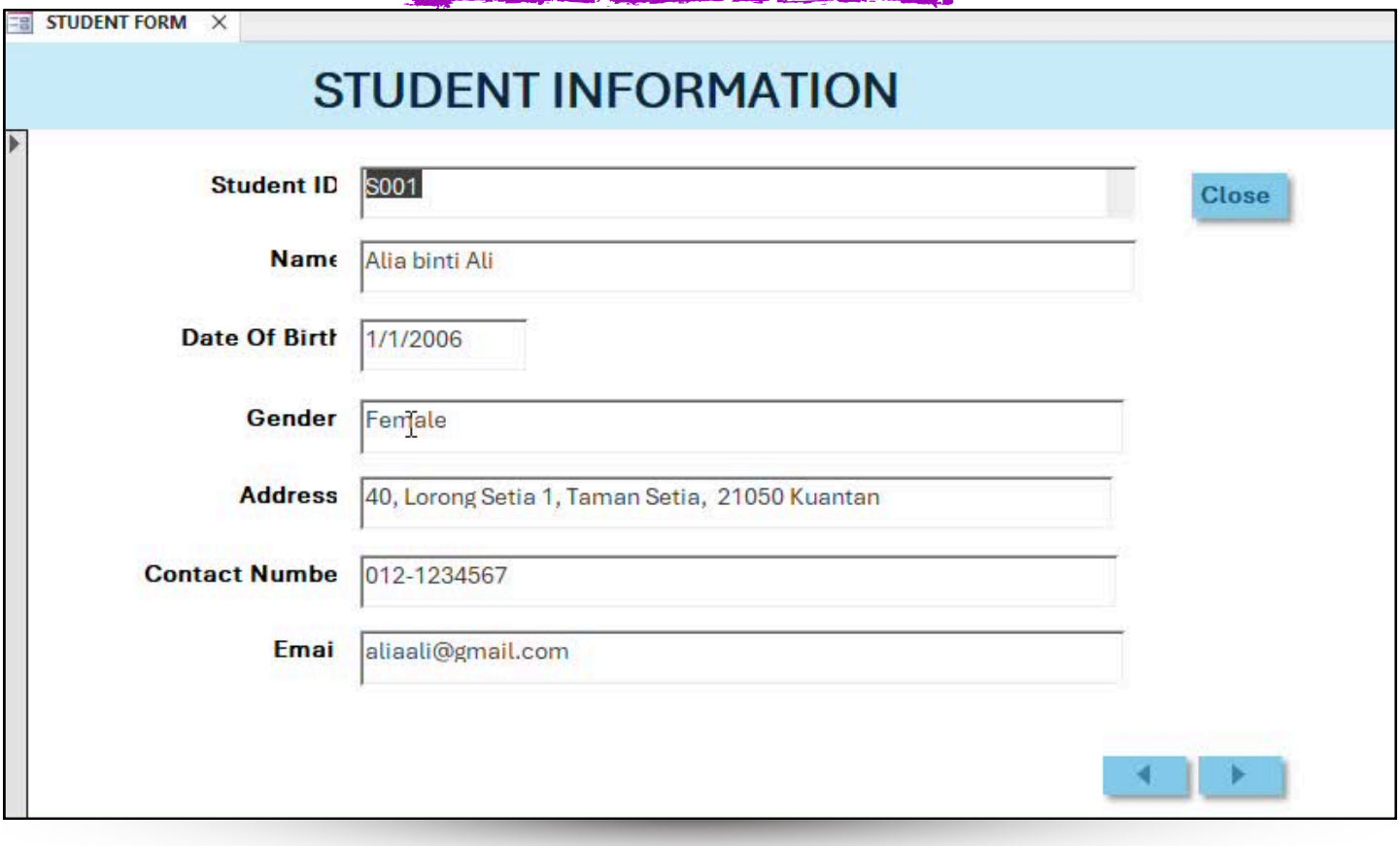
STEP 4 Save the Macro

- Click **Save** on the toolbar.
- Close the Macro Builder.

STEP 5 Test the Macro

- Switch the form to **Form View**.
- Click the button.
- It should:
  - **Close the Main Menu Form**
  - **Open the Student Form**

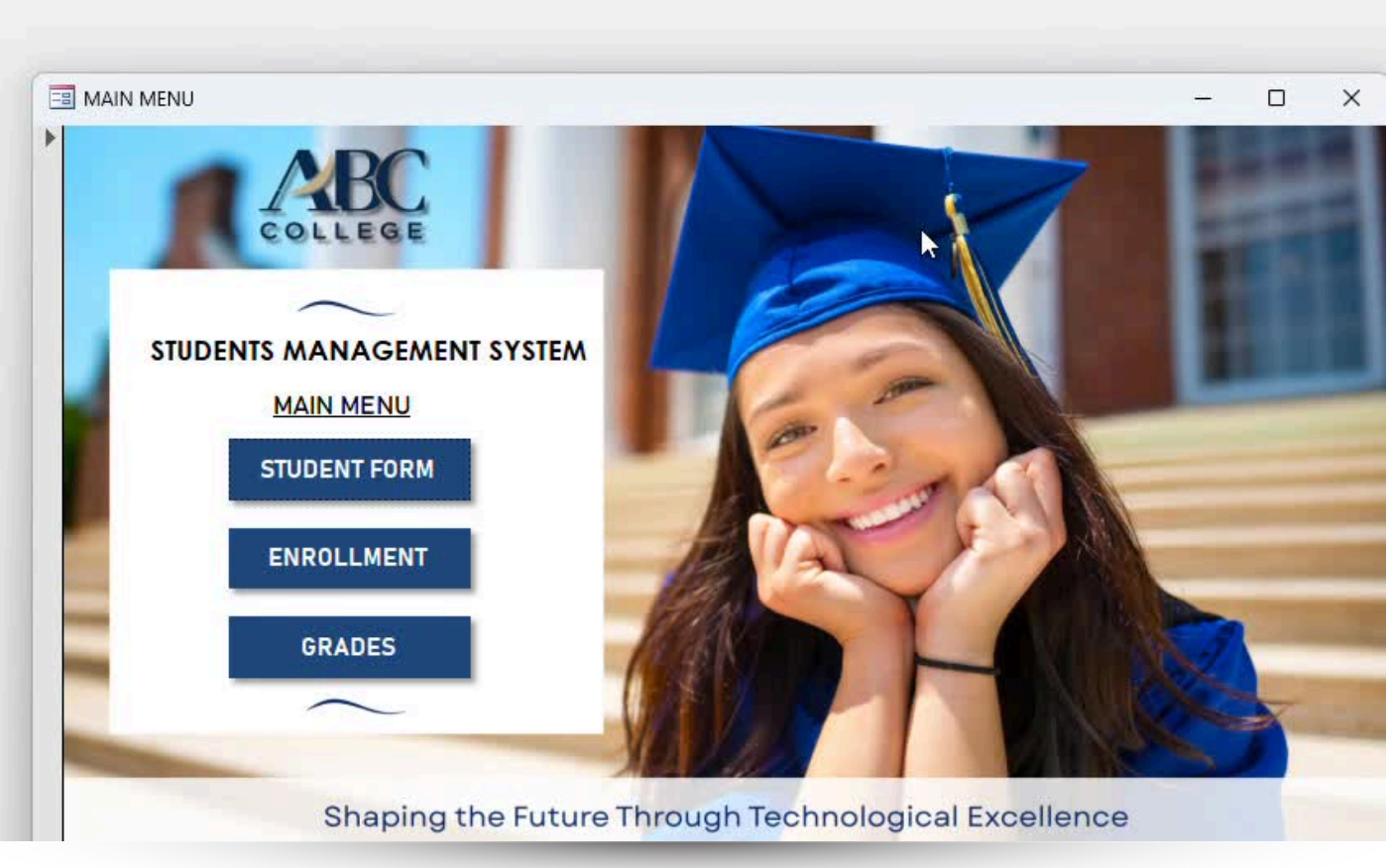
MACRO MAIN MENU



Practice

Add a button to the Student Form that opens the Main Menu Form and closes the Student Form when clicked.

• Answer



CHAPTER 9

9.0 CONCLUSION

By following this step-by-step guide, you have successfully created a functional database system using Microsoft Access. You now have the foundational skills to build and customize databases for various applications.

With continued practice, you can explore more advanced features to enhance your database systems.

9.0 REFERENCE

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- https://edu.gcfglobal.org/en/access2016/working-with-forms/1/
- https://edu.gcfglobal.org/en/access2016/designing-a-simple-query/1/
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- MyExcelOnline.com(2022,Jun 23).How to Make a Macro in Microsoft Access[video]. Youtube.https://www.youtube.com/watch?v=Zg14BS2cOAI

CREATING A SIMPLE DATABASE SYSTEM WITH MICROSOFT ACCESS : A PRACTICAL GUIDE

KOLEJ KOMUNITI PAYA BESAR