





### Through **Digital Discoveries**



### Contents

P	1. Han	dling databases	6
	Lesson 1	Structured information	7
	Lesson 2	Data entry forms	23
	Lesson 3	Queries	34
	Lesson 4	Reports	46
	Lesson 5	Import and export data	56
	2. Crea	iting a website	74
	Lesson 1	Introduction to HTML	75
	Lesson 2	Improving a website	88
	Lesson 3	Creating a form with HTML	101
	Lesson 4	Styling a website	111
	Lesson 5	Creating a responsive website	141
	3. E-co	ommerce and cybersecurity	166
	Lesson 1	E-commerce	167
	Lesson 2	Online transactions	174
	Lesson 3	Information security	187
	Lesson 4	Personal and computer security	195
	Lesson 5	Digital footprint and Internet security	204
\$	4. Deve	eloping mobile applications I	224
\$	4. Deve Lesson 1	eloping mobile applications I Introduction to applications	<b>224</b> 225
-\$ <del>-</del> }	4. Deve Lesson 1 Lesson 2	Introduction to applications Designing a mobile application	<b>224</b> 225 232
\$ <del>.</del>	4. Deve Lesson 1 Lesson 2 Lesson 3	Introduction to applications Designing a mobile application Developing with MIT App Inventor	<b>224</b> 225 232 242
<del>\$</del> 7	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4	Introduction to applications Designing a mobile application Developing with MIT App Inventor Adding functionality	224 225 232 242 261
\$	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5	Introduction to applications I Designing a mobile application Developing with MIT App Inventor Adding functionality Finalizing the application	224 225 232 242 261 273
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep	Introduction to applications Designing a mobile application Developing with MIT App Inventor Adding functionality Finalizing the application Odiving	224 225 232 242 261 273 298
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1	Introduction to applications I Designing a mobile application Developing with MIT App Inventor Adding functionality Finalizing the application Advanced networking	224 225 232 242 261 273 <b>298</b> 299
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1 Lesson 2	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application <b>diving</b> Advanced networking         Data and network security	224 225 232 242 261 273 <b>298</b> 299 309
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1 Lesson 2 Lesson 3	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application         Odiving         Advanced networking         Data and network security         Servers and storage	224 225 232 242 261 273 <b>298</b> 299 309 316
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1 Lesson 2 Lesson 3 Lesson 4	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application         Odiving         Advanced networking         Data and network security         Servers and storage         Cloud storage	224 225 232 242 261 273 <b>298</b> 299 309 316 323
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 <b>5. Deep</b> Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 4	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application <b>Odiving</b> Advanced networking         Data and network security         Servers and storage         I'm an IT administrator	224 225 232 242 261 273 299 309 309 316 323 336
M → → →	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 6. Doct	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application <b>o diving</b> Advanced networking         Data and network security         Servers and storage         Cloud storage         I'm an IT administrator         uments for a purpose	224 225 232 242 261 273 <b>298</b> 299 309 309 316 323 336 <b>350</b>
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 6. Doct Lesson 1	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application <b>o diving</b> Advanced networking         Data and network security         Servers and storage         I'm an IT administrator         Advanced documents	224 225 232 242 261 273 <b>298</b> 299 309 316 323 336 <b>350</b> 351
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 4 Lesson 5 6. Doct Lesson 1 Lesson 1 Lesson 2	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application <b>o diving</b> Advanced networking         Data and network security         Servers and storage         Cloud storage         I'm an IT administrator         Advanced documents         Customizing content	224 225 232 242 261 273 <b>298</b> 299 309 309 316 323 336 <b>350</b> 351 362
	<ul> <li>4. Deve</li> <li>Lesson 1</li> <li>Lesson 2</li> <li>Lesson 3</li> <li>Lesson 4</li> <li>Lesson 5</li> <li>5. Deep</li> <li>Lesson 1</li> <li>Lesson 2</li> <li>Lesson 3</li> <li>Lesson 4</li> <li>Lesson 5</li> <li>6. Doct</li> <li>Lesson 1</li> <li>Lesson 1</li> <li>Lesson 2</li> <li>Lesson 3</li> </ul>	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application <b>o diving</b> Advanced networking         Data and network security         Servers and storage         Cloud storage         I'm an IT administrator         uments for a purpose         Advanced documents         Customizing content         Spreadsheets	224 225 232 242 261 273 <b>298</b> 299 309 316 323 336 <b>350</b> 351 362 377
	4. Deve Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 5. Deep Lesson 1 Lesson 2 Lesson 3 Lesson 4 Lesson 5 6. Doct Lesson 1 Lesson 2 Lesson 3 Lesson 4	eloping mobile applications I         Introduction to applications         Designing a mobile application         Developing with MIT App Inventor         Adding functionality         Finalizing the application <b>Advanced networking</b> Data and network security         Servers and storage         Cloud storage         I'm an IT administrator         Advanced documents         Customizing content         Spreadsheets         Presentations	224 225 232 242 261 273 <b>298</b> 299 309 316 323 336 <b>350</b> 351 362 351 362

Welcome! You're about to embark on a journey that goes beyond just using technology—you'll learn how it really works and how you can shape the future with it. From coding challenges to real-world applications, this course will help you sharpen your skills and spark new ideas. Let's level up together!

### **Key Features**

An innovative approach to building digital competencies, developed by expert educators.

Each unit offers straightforward explanations and contemporary examples, making technology concepts accessible and relevant.

			Date bypes and	teiranen
Now that your new database h information in your database.	has been created, continue	e by creating a table of structured	Data Type	Purpose
When a blank database is created	eted, Microsoft Access goe	is to Detasheet View and creates a blank	Short Text	For up to 255 characters of text.
table named "Tablet" in Datasi program build the table structu	sheet View, you can immed une automatically.	diately enter data in your table and let the	Long Text	A block of text that is more than 255 characters long and that may also contain formatted text.
In this lesson, you are going to your table to be structured. The	o use Design View instead. Sen you either switch to Da	In Design View, you decide how you want tasheet View to enter data, or you enter	Number	A numeric value that can be used in calculations.
your data by using some other	r method, such as a form. Y	fou will learn about forms in the next activity.	Large Number	Use this data type to efficiently calculate large numbers.
To create a table in Design V	View	B ♡·♡·* Anter Inter Deteriouteriorenti-	Date/Time	For date or time data.
> On the Home tab, in the W	ñews group.	Name Court EnteralDate Database ball. Holy Same Sont	Cuntercy	For numeric values that refer to money and always include decimals.
click on the drop-down am Design View. > In the Save As window, in t	the Table Nome	A AS 12 U A A A A A A A A A A A A A A A A A A	ActoNumber	Use on AutoNumber field to provide a unique value that serves to make second unique. The most common use for an AutoNumber field is that of primary key.
"Student Grades", () and c	click OK O	E ange Ver	Nes-No	For Boolean values like Yes/No. True/False, On/OIE 10.
In the Field Name column, each field in your table. O	type a name for	sevi .	OLE Object	For attaching an OLE Object, such as a Microsoft Excel workbook, to a re
Type list, click a data type.	0	Section 7 X	Hyperlink	For an email address or a website URL
Let's name our first field 'S leave the Data Type is Air	StudentID" and utoNumber.	Tubia Name:	Auschment	Exception first or impose to a record for exemple you can use an
are in the screenshot and a appropriate data types.	amos as they assign the		Field proper	attachment field to attach a photo of each of the students.

Curriculum aligns with the latest industry standards, preparing students for certifications and future careers.

Every unit includes a variety of tasks and activities designed to help students build essential digital competencies.

Projects and exercises throughout the course reinforce students' understanding and practical application of digital skills in real-world scenarios.

The second secon	Constitutes UPE     Constitutes and put a check mark for the connect answer.     Constitutes and put a check mark for the connect answer.     Constitutes and manage multiple values of thems is a constituted way.     To a three and manage multiple values of thems is the application.
Once your opportunities investige you can create an injek the tas there your application with the familiant <b>Charles and King concernent</b> - Conce shall all - A conce shall all - A concernent all - A c	Bred the questions and put a check mark for the conect answer,     Used is the purpose of using lists in MT Age Inventor?     a. It bases and maxago multiple values or bress is a tryctured way.     b. This market models and the second thems to come in the autiplication.
To blade en Arre porcage: - 3 oc cin Anto Q - 7 port no Antol Antol - 7 was to no Program Barro K - 9 was to no Program Barro K	What is the purpose of using lists in MIT App Inventor?     a. To store and manage multiple values or items in a structured way     b. To reinspre between different screens in the application.
To ballo de JARK package: > Cicle Build. 0 > Homote Build (0). > Homote Build (0). > Homote De Jargers Bart of A. > Enging the package which cicle is the <b>Dewnload Lipk nom</b> button to devided the	a. To store and manage multiple values or items in a structured way. b. To revisate between different screens in the application.
Cick Build:      O     Figure 3B weights this select Android App (apk):      Point the Margins this select Android App (apk):      Wate for the Progress Betro 16     Figure 3P opp cay window, cick if the Devenked Lapk now builton to download the	b. To nevigate between different screens in the application.
Youn the Budg Los Levict Address App Laple.     Yout for the Progress Bar to fit.     You the progress Bar to fit.     You the progress Bar to fit.	
> From the pop-up window, click the Download .apk now button to download the	c. To handle data storage.
ADV the to youry statisticator 1	d. None of the above.
	2. In MIT App Inventor, how are lists of items created for the "ListPicker" component?
0	a. By edding individual buttons.
MIT Paper - Constant America Strape - Martine Vertical State Apartment	<ul> <li>b. By initializing a global variable.</li> </ul>
Mashing Good Dennis P Andred Au (all)	c. By using a database.
Public Verw Andred Aug Burdle ( add ) Al Company's 4	d. By using a "make list" block in the Blocks palette.
Sand Company to Design Sector companying in Sector	3. What action occurs when a user clicks on an item in the "LittPicker" component?
User Informer Prove case (CD x 101) w III Type	a. The item is strend in a temperary list.
i hen a Adativitati v tron	b. The itera's volue is assigned to a clobal variable.
Sealing Prochages for	c The explication ringer
675	d. The application changes color
Conversing per 2 (stream more)	4. What is a method in MIT App Inventor?
	a. A type of variable
Autoric Age Tar Reality Find	<ul> <li>b. A type of function used to perform a specific task.</li> </ul>
	c. A type of list
Both the download Scale the GR	d. A component's property
code are active Destinal aptiver and install your	5. What is the purpose of the "Download .apk now" button in the APK packaging proce
af time. Out to have de toute of the set split cits or the set of balance denies.	a. To preview the application on the web browser.
Note the lots extransion an indexal for 2 hours, for <u>BuckSQ</u> for effective particular participant when	b. To save the application as a project file in MIT App Inventor.
Danis	c. To download the application file to your computer.
	d. To share the application with other developers instantly.

Well-defined learning goals and hands-on, applicable digital skills.



# 1. Handling databases

Managing structured data ensures information is organized and accessible for decision-making and problem-solving. This unit covers organizing data using tables in a database, creating forms and reports for inputting and sharing data, and extracting specific information to gain valuable insights.

### **Learning Objectives**

#### In this unit, you will:

- > describe structured data, its importance, and how to manage it effectively in database management systems.
- > create a database by defining tables and fields in a database management tool.
- > input, organize, and manage different data types in a table using appropriate data types, field properties, and sorting functions.
- > troubleshoot common database issues by identifying and resolving errors related to data input, queries, and forms.
- > create and customize a data entry form using a form creation tool, including steps to insert, edit, delete records, adjust layouts, and attach labels to fields.
- create and run queries using a query design tool, by adding tables, selecting fields, applying filters, and designing parameter queries.
- > design and save custom reports using a report creation tool, including grouping data, sorting fields, and adding calculations like totals and averages.
- > export data from a database system to spreadsheet or CSV file formats using export functions.
- > import data from spreadsheet or CSV file formats into a database system using an import tool.

### Tools

> Microsoft Access



LESSON 1

## **Structured information**

What is a database? How do database tables simplify the process of comparing and analyzing information?

Do you make a list before you go grocery shopping? A grocery list is an example of **structured information**. The term "structured" means organized and arranged in a specific way. In particular, a simple list is usually divided into rows and columns. In this example, the grocery list could be structured like a table, where each row represents a product and the following columns contain its details:

- 1. Product name
- 2. Quantity
- 3. Estimated price (to help you estimate the total cost of all the products)

Grocery list										
Product name	Quantity	Est. price								
Apples	5	\$5.5								
Yogurt	3	\$3								
Bags of rice	2	\$2.5								
Bottles of milk	4	\$3.5								
Bottle of orange juice	1	\$2.5								
Shampoo	1	\$6								
Cereal	1	\$4								
Total		\$27								

Structured information always consists of rows (records) and columns (fields), like a table. Each column has its own title that defines the column data.



For Review Purposes Only

Ð

<del>(</del>\$7

ক্ল

헤

### **Databases and structured information**

A **database** stores and organizes structured information, such as data arranged in rows and columns within tables. For example, in a student management system, the database could include tables for storing student details, course information, and grades. Building such a database is essential to ensure that the data is well-organized, readily accessible, and reliable.

The following diagram details the stages of building a student management system database:



### **Create a database**

In this unit, you will focus on setting up a database. You will create and develop a student management system database using **Microsoft Access**.

To create your database:

- > Open Microsoft Access.
- > From the available templates, click **Blank database**. 1
- In the pop-up window, type a file name for your new database in the File Name field.
   Your database file will be saved to the location indicated below the File Name field.
- > Click Create. 4



Optionally, click the **Browse** button next to the **File Name** box and browse to a different location in which to save the database.



# 

Ы

Ð

#### **Creating a table**

Now that your new database has been created, continue by creating a table of structured information in your database.

When a blank database is created, Microsoft Access goes to Datasheet View and creates a blank table named "Table1." In **Datasheet View**, you can immediately enter data in your table and let the program build the table structure automatically.

In this lesson, you are going to use Design View instead. In **Design View**, you decide how you want your table to be structured. Then you either switch to Datasheet View to enter data, or you enter your data by using some other method, such as a form. You will learn about forms in the next activity.

To create a table in Design View:

- > On the Home tab, in the Views group, click on the drop-down arrow and select Design View. 1
- In the Save As window, in the Table Name field, type the name of your table, e.g.,
   "Student Grades", 2 and click OK. 3
- In the Field Name column, type a name for each field in your table, 4 and in the Data Type list, click a data type. 5
- > Let's name our first field "StudentID" and leave the Data Type as AutoNumber.
- > Type the rest of the field names as they are in the screenshot and assign the appropriate data types.
- > Press **Ctrl** + **s** to save your table.



Save As		?	×
Table Name:			
Student Grades	3		
2	OK	Ca	ancel

### In the **Description** column, you can enter additional information for each field.

File     Home     Create     External Data     Databa       Image: View view     Primary     Builder     Builder     File     Builder       View views     View     Tools     Modify	ase Tools Help Times Tools Help Times Tools Help Times Tools Help Times Tools	Indexes Cre M	Control Tell me what ye     Tell me what ye     Control Tell     Contro     Control Tell     Contro     Control Tell     Control Tell	ou war [ Relat	tionships Relationships			
All Access Objects $\odot$ <	Student Grades	×Д		5				×
	Field	Name	Data Type			Descripti	on (Optional)	-
Search D	StudentID		AutoNumber		This column counts e	ach record v	we insert in our table.	I
Tables ^	Name		Short Text		The name of each of	the student	s.	
Student Grades	Address		Short Text		The address of each of	of the stude	nts.	
	City		Short Text		The city of each of th	e students.		
6	Postal Code		Short Text		The postal code of ea	ch of the st	udents.	
	Telephone nun	nber	Short Text	Short TextThe telephone number oShort TextThe class number of each			f the students.	
	Class No		Short Text				students.	
	Course		Short Text		The name of the cour	rse, of each	student.	
	1st Semester G	rade	Number		We update this colum	nn with the	grades of the 1st Semester.	
	2nd Semester 0	Grade	Number		We update this colun	nn with the	grades of the 2nd Semester.	
	Final Grade		Number		We update this colun	nn with the	final grade.	
While field	General Lookup				Field Properties			G
	Field Size	Long Integ	ger					
mandatory, including	New Values	Increment						
them in large tables	Caption							
	Indexed	No						
with multiple fields	Text Align	General					field name can be up to 64 characters long	
can improve clarity.						inc	luding spaces. Press F1 for help on field names.	

Data types and their uses									
Data Type	Purpose								
Short Text	For up to 255 characters of text.								
Long Text	A block of text that is more than 255 characters long and that may also contain formatted text.								
Number	A numeric value that can be used in calculations.								
Large Number	Use this data type to efficiently calculate large numbers.								
Date/Time	For date or time data.								
Currency	For numeric values that refer to money and always include decimals.								
AutoNumber	Use an AutoNumber field to provide a unique value that serves to make each record unique. The most common use for an AutoNumber field is that of a primary key.								
Yes/No	For Boolean values like Yes/No, True/False, On/Off, 1/0.								
OLE Object	For attaching an OLE Object, such as a Microsoft Excel workbook, to a record.								
Hyperlink	For an email address or a website URL.								
Attachment	For attaching files or images to a record. For example, you can use an attachment field to attach a photo of each of the students.								

### **Field properties**

In **Design View**, when you click any of your fields' characteristics (Field Name, Data Type, or **Description**), you can check and edit several of that field's properties in the Field Properties pane at the bottom of the window. In addition, on the **Table Design** tab, you can click **Primary Key** 1 to make the selected field the primary key. You will next learn about the concept of primary keys and their essential role in database design and integrity.

File H	Home	External Dat	a Databas	e Tools	Help Table Desig	gn	,O Tell me what yo	ou want to	o do				
View Views	Primary Key	Test Validation Rules Tools	∃← Insert Rov ∃× Delete Ro [] Modify Lo	vs ws ookups	Property Indexes Sheet	Create Mac Field,	e Data Rename/ ros ~ Delete Macro Record & Table Events	Relation	ships De Relationsh	Object ependencies hips		v	
All Acc	All Access Objects $\odot$ < 🔳 Student Grades ×												
Search			Q	Stud	Field Name lentID		Data Type AutoNumber	Tł	his colur	mn counts e	Desci each reco	ription (Optional) ord we insert in our table.	
Tables			^	Nam	ie		Short Text	Tł	he name	e of each of	the stud	ents.	
🛄 Stude	ent Grades			Add	ress		Short Text	Tł	he addre	ess of each o	of the sti	udents.	
				City			Short Text	Tł	he city o	of each of th	ne studer	nts.	
				Post	al Code	Short Text	T	he posta	al code of ea	ach of th	f the students.		
				Tele	phone number	Short Text The telephone number of			hone numb	per of eac	each of the students.		
				Class	s No	Short Text The class number of each			number of e	each of t	of the students.		
				Cour	rse	Short Text The name of the course, of			e of the cou	rse, of ea	ach student.		
				1st S	emester Grade		Number	W	/e updat	te this colun	mn with	the grades of the 1st Semester.	
				2nd	Semester Grade		Number	W	/e updat	te this colun	mn with	the grades of the 2nd Semester.	
				Fina	Grade		Number	W	We update this column with			the final grade.	
								Fie	eld Proper	rties			
				Genera	Lookup								
				Field Siz	ze Long	Integer							
				New Va	lues Incre	ment							
				Format									
				Indexed	Ves (	No Dupl	icates)				_		
				Text Alie	gn Gene	eral	reatesy						
												A field name can be up to 64 characters long, including spaces. Press F1 for help on field names.	

For Review Purposes Only

P

(ŝ)

\$P

헤

Field properties overview									
Property	Use								
Field Size	The maximum size of your field's data. For example, Short Text fields can range from 1 to 255 characters. It's recommended to use the smallest field size sufficient for the data to ensure better performance. Some data types have a fixed field size, for example, date/time or currency.								
Input Mask	This displays editing characters to guide data entry. For example, an input mask for a field with an amount of money might display the dollar currency symbol (\$) at the beginning of the field and allow only numbers to be typed.								
Caption	This is the label text that is displayed by default for this field in forms, reports, and queries. If this property is empty, the name of the field is used. An effective caption is usually brief.								
Default Value	The specified value is automatically assigned to the field when a new record is added.								
Validation Rule	An expression that must be true whenever you add or change the value in this field.								
Validation Text	A message that is displayed when a value that is entered violates the validation rule.								
Required	This property requires that data must be entered in the field. Use this for fields that are required, such as Name.								
Allow Zero Length	This allows entry (by setting it to Yes) of a zero-length string ("") in a Hyperlink, Short Text, or Long Text field.								
Indexed	This specifies whether the field has an index. Use indexes on fields that are frequently used to make the operations involving that field faster.								

### Simplifying database structure

The structure of a database table can be simplified by separating this table into smaller related tables. This is helpful for keeping the data organized and manageable. For example, by separating student details, course information, and grades into separate tables, we can avoid repeating personal information for every course a student takes.

So, let's divide the "Student Grades" table into three separate tables, as we describe below.

#### **Students**

StudentID, Name, Address, City, Postal Code, Telephone number, Class No

#### Courses

CourseID, Course Name, Class, Teacher

#### Grades

StudentID, CourseID, 1st Semester Grade, 2nd Semester Grade, Final Grade

#### Let's make these changes to our database and then relate the tables to each other.

To rename a table:

- > Click the **Close** button, **1** to close the **Student Grades** table.
- In the Navigation pane, right-click the Student Grades table, 2
   and click Rename. 3
- > Type "Students" and press Enter -1. 4

File	Home Create	e Ex	ternal [	Data Database Tools	Help Ta	ble Desig	<mark>gn</mark> ,	ne what yo	ou want to do			
View Views	Primary Key	₹ er Test	Validati Rules Tool:	ition → Delete Rows Modify Look	Property Sheet Show/b	Indexes	Create Data Rei Macros ~ Delet Field, Record & Tabl	name/ te Macro e Events	Relationships Ob Depend Relationships	ject dencies		~
All Ac	cess Objec	cts⊙	<	🔳 Student Grades 🗙								×
Search			Q	Field Nam StudentID	ne	AutoNu	Data Type mber	Description (Optional) This column counts each record we insert in our table.				Î
Tables			~	Name	Short Tex		ext	The name of each of the students.				
Stu	dent Grades			Address		Short Te	ext	The add	ress of each of the st	udents.		
3tu	dent Grades		_	City		Short Te	ext	The city	of each of the stude	nts.		
				Postal Code		Short Te	ext	The pos	tal code of each of th	ne studen	ts.	
				Telephone number		Short Te	ext	The tele	phone number of ea	ch of the	students.	
				Class No		Short Te	ext	The clas	s number of each of	the stude	nts.	
				Course		Short Text		The name of the course, of each student.			ent.	
				1st Semester Grade		Numbe	r	We upd	ate this column with	the grade	es of the 1st Semester.	
				2nd Semester Grad	e	Numbe	r	We upd	ate this column with	the grade	es of the 2nd Semester.	
				Final Grade		Numbe	r	We upd	ate this column with	the final	grade.	
							Fi	eld Propert	ies			•



Did you notice the small key next to the StudentID field name? The key tells you that the StudentID field is the primary key. The primary key is unique and cannot be the same in two records.

All Access Objects 🖲	<
Search	ρ
Tables	^
E Students 4	

### **Smart Tip**

Give a relevant name to each field so that you can tell what it contains without having to check the data.

### For Review Purposes Only

Ð

<del>(</del>\$7

ᠫᡍᡄ

Ы

#### To set up a new table structure:

- > On the Create tab, in the Tables group, click Table Design. 1
- > Type the field names given in the screenshot with the appropriate data types. 2 Make sure to set the CourseID field as the Primary Key. 3
- > Click the Save button. 4 This will be the Courses table. The program will ask you to name your table. Type "Courses" and click OK. 5

File Home C	reate External D	ata Database Tools	Help 🔎 Tell r	ne what you	want to do						
				🐼 Form Wiz	ard	面目	₹	eport Wizard	<b></b> 🗞		
Application	Table SharePoin	nt Query Query	Form Form Blank	🛅 Navigatic	n * Repor	t Report Bla	ink 🗏 La	bels	Macro		
Templates	Tables	Queries	Design Form Forms	E More For	ms Y	Design Rep	eports		Macros & Code	$\sim$	
All Access Ob	ojects⊙ <										
Search	<u>م</u>										
Tables						0.7.1					
Students	File Home	Create External D		Help I	able Design	D lelln	ne what yo	ou want to do			
		S 🕅 🖳	Insert Rows		=7		Lī				
	View Prima View Key	ary Builder Test Validatio / Rules	Modify Lookups	Property Sheet	Indexes Crea Ma	ate Data Re acros ∽ Dele	name/ te Macro	Relationships	Object Dependencies		
	Views	Tools		Show	Hide Fiel	d, Record & Tab	le Events	Relati	onships		~
	All Access	Objects 🔍 <	Table1 X	ne	Data	Type			Description (O	ptional)	>
	Search	2	CourseID		AutoNumber	· //	This colu	umn counts e	ach course we i	nsert in th	e table.
	Tables		Course Name Class		Short Text Short Text		The cou The clas	rse name of t s number in v	he class. vhich each cour	se is taugh	ıt.
	students		Teacher		Short Text		The nam	ne of the teac	her, of each cou	urse.	
						F	ield Propert	ies			
			General Lookup						_		
			Field Size New Values	Long Integer					_		
			Format Caption						_		
			Indexed Text Align	Yes (No Dup General	licates)				A field nam	e can be un	o 64 characters long
									including spa	ices. Press F1	for help on field names.
4											
	□ v マ Database	1 : Database- C:\Users\lo	ocaladmin\Documents\D	atabase1.acc	db (Access 2007	- 2016 file f	Bi	nary Academy	ва —		<
File Home C	Create External D	Data Database Tools	Help Table Desi	an Q	Tell me what	vou want to	do				
	~ m	≓← Insert Rows			(TP)		E				
	Ruilder, Test Validati	→ → Delete Rows		Create Dat		Belationsk	eine O	hiest			
~ Key	Rules	Modify Lookups	Sheet	Macros ~	Delete Macro	Relationsi	Depe	ndencies			
Views	Tools		Show/Hide	Field, Recor	d & Table Events	R	elationships	;		`	
All Access Of	ojects⊙≺	Table1 X	10 Ac	2 ¥			Descr	iption (Optio	nal)		
Search	م	CourseID Tab	ve Name:	-	This co	olumn count	s each co	urse we inse	rt in the table.		
Tables	^	Course Name Class	urses		The co The cl	ourse name o ass number i	of the clas in which (	ss. each course i:	s taught.		-
Students		Teacher	ок	Cancel	The na	ame of the te	eacher, o	f each course			
			5		Field Prop	erties					
		General Lookup									
		Field Size New Values	Long Integer Increment				_				
		Format Caption									
		Indexed Text Align	Yes (No Duplicates)								
		Text Alight	ocherur				ir	A field name can ocluding spaces.	n be up to 64 chara Press F1 for help or	cters long, n field names	
Designation of the											
Design view. F6 = Switch	n panes. F1 = Help.						_		Num Lock		

#### To modify an existing table structure:

- > In the Navigation pane, right-click the Students table, 1 and click Design View. 2
- > Select all the extra fields that are not needed in this table, 3 and press Delete.
- > Click the Save button. 4
- Now create the Grades table on your own and type the appropriate fields.
   No Primary Key is required here. 5

File Home	Create External	Data Database Tools Help	Table Design 🔎 Tell	I me what you want to do		
View						
~						
Views					~	
All Access	Obiects	Courses X			×	
	,	Field Name	Data Type	Description (Optional)		
Search		CourseID	AutoNumber	This column counts each course we insert in the table.		
Tables		Course Name	Short Text	The course name of the class.		
Courses		Class	Short Text	The class number in which each course is taught.		
		Teacher	Short Text	The name of the teacher, of each course.		
Students	Open				-1	
	Design View	2				
I <u>m</u> port Export		>				
		>				

4 2			Binary Academy 🖪 🗌 🗌	×				
File Home Create External D	Data Database Tools Help Ta	ble Design 🖉 🔎 Tell me	what you want to do					
View view View		Indexes Create Data Rena Macros ~ Delete	me/ Macro					
Views Tools	s Show/I	Hide Field, Record & Table	Events Relationships	~				
All Access Objects 💿 <	Courses X 🛄 Students X			×				
Search	Field Name	Data Type	Description (Optional)					
	<sup>®</sup> StudentID	AutoNumber 1	This column counts each record we insert in our table.					
Tables ^	Name	Short Text T	The name of each of the students.					
Courses	Address	Short Text 1	The address of each of the students.					
	City	Short Text 1	The city of each of the students.					
Students	Postal Code	Short Text 1	The postal code of each of the students.					
	Telephone number	Short Text 1	The telephone number of each of the students.					
	Class No	Short Text 1	The class number of each of the students.					
	Course	Short Text 1	The name of the course, of each student.					
	1st Semester Grade	Number N	We update this column with the grades of the 1st Semester.					
3	2nd Semester Grade	Number N	We update this column with the grades of the 2nd Semester.					
	Final Grade	Number N	We update this column with the final grade.					

File	Home	Create	External I	Data	Database Tools	Help Ta	ble Desig	gn S	D Tell m	ie what ye	ou want to do								
View	Primar Key	y Builder	Test Validat Rules	ion	G ← Insert Rows Celete Rows Celety Lookups	Property Sheet	Indexes	Create D Macros	ata Rei Y Delet	name/ mame/	E E Relationships	Object Dependencies							
Views			Tool	s		Show/	Hide	Field, Red	cord & Tabl	e Events	Relatio	onships	~	1					
All Ac	cess (	Dbiect	s⊙ <		Courses X 🛄 St	udents X	Grad	les $\times$						×					
7 7		Jeer		2	Field Nam	e		Data Type		Description (Optional)				4					
Search $ ho$			StudentID	)		Number		Relates to the StudentID field of the Students table.											
Tables		^		0	CourseID	Number			Relates to the CourseID field of the Courses table.										
	irses	les 5		5 1st Semester Grade 2nd Semester Grade Final Grade		1st Semester Grade		Numb		Number N		We update this column with the grades of the 1st Semester.							
										1	2nd Semester Grade		Number		We update this column with the grades of the 2nd Semester.				
Gra	ides					Number		nber We		We update this column with the final grades of each of the			al grades of each of the students.						
📃 Stu	dents																		

# For Review Purposes Only

P

(\$)

<u></u>

허

### **Keys and relationships**

Each record must be unique to ensure accurate data management when working with databases. For example, each person is unique. Even when two people have the same name, they have different emails or telephone numbers. In a database about people, such as friends, each record needs to describe a unique person.

#### Primary key

A **primary key** consists of one or more fields that can uniquely identify each record in your database table. For example, if you know that there cannot be two people with the same email address in your friends database, you can use the Email Address field as the primary key. Similarly, if you are sure that the combination of name and email address is unique for your friends, then the Name and Email Address fields can be the primary keys.

° Students						
	StudentID	Name	Telephone Number	Email Address		
	1	Tom	212 500 202	tom.bacademy@outlook.com		
	2	Tom	212 500 202	tomas.bacademy@outlook.com		

### Why primary keys matter:

If no field is unique, you create an ID field (e.g., 1, 2, 3...) to identify records efficiently.

> They keep records unique and avoid duplicates.

They save space and make databases work faster.

#### The ID field

Sometimes, you cannot find a good primary key even if you include all the fields. Occasionally, you may need to include so many fields in your primary key to make it unique that it becomes too large, taking up too much space. So, what do you do in such cases? You can create a new

one if you cannot find a primary key in your existing fields. We usually refer to that as the **ID field**. ID comes from the word "identity," a very fitting name since this field identifies each record. For example, StudentID in the "Students" table is a primary key because it uniquely identifies each student.

#### **Table relationships**

In databases, relationships are connections between tables that allow you to combine data from different tables to extract useful information. Databases have the following relationship types between tables:

**1. One-to-One:** Each record links to only one record in another table. For example, a table of student profiles could be linked one-to-one with a table of student login credentials.



2. One-to-Many: One record links to many records. For example, one student can have grades for multiple courses.



**3. Many-to-Many:** Records in both tables link to multiple records. For example, a student can take many courses, and a course can have many students enrolled.



#### To create relationships between tables:

- > On the Database Tools tab, in the Relationships group, click Relationships. 1
- In the Add Tables pane, select all the tables, 2 click Add Selected Tables, 3 and then click the Close button at the top corner of the pane. 4
- > Drag the StudentID field from the Students table and drop it on the StudentID field of the Grades table. 5
- > In the Edit Relationships window, click Create to establish the relationship. 6
- In the same way, drag the CourseID field from the Courses table and drop it on the CourseID field of the Grades table.
- > Click **Close**. **8** If prompted, save your changes. Your tables are now successfully related.





File Home Create External [	Data Database Tools Help	Relationships Design	Tell me what you want to do
Edit Relationships Tools	Add Hide Table Add All Relationships Relationships	Close 8	
All Access Objects 🗟 <	Relationships X		
Search	Courses	Grades	Students
Tables ^	CourseID	- StudentID	· · · · · · · · · · · · · · · · · · ·
Courses	Course Name	CourseID	Name
Grades	Class	1st Semester Grade	Address
	Teacher	2nd Semester Grade	City
Students		Final Grade	Postal Code
			Class No

**Enforce Referential Integrity** prevents "orphan" records and keeps references synchronized so that you won't have any records that reference other records that no longer exist.

**Cascade Update Related Fields** updates all the related records if a primary key changes in a table.

**Cascade Delete Related Records** deletes all the related records, if a record is deleted. This way, you avoid orphan records in your tables and records not connected to anything else in your database.





#### 1. Read the following sentences and put a check mark for True or False.

TrueFalse1. Structured information is always displayed in rows and columns.I2. In Microsoft Access, a table created in "Datasheet View" allows<br/>you to immediately enter data.I3. In "Design View," the table structure is automatically built by the<br/>program.I4. The "Primary Key" ensures that every record in a table is unique.I5. The "Data Type Currency" can include decimals for numeric<br/>values.I

#### 2. Read the questions and put a check mark for the correct answer.

- 1. Which of the following is the first step to create a blank database in Microsoft Access?
  - a. Click on "Create Table" under "Table Tools."
  - b. Open Microsoft Access and choose "Blank Database."
  - c. Select an existing template for tables.
  - d. Enter data directly in "Datasheet View."
- 2. What is the purpose of an "AutoNumber" data type?
  - a. To allow numeric values used for calculations
  - b. To attach files or images to a record
  - c. To provide a unique value for each record automatically
  - d. To store "Yes/No" values for a record

# For Review Purposes Only

P

<del>(</del>\$7

ᢓᡀ

Ы



4.	Сс	omplete with the missing word.							
	1.	In Microsoft Access, structured information is typically arranged in rows, called							
	, and columns, called								
	-								
	2.	The "Field Properties" pane allows users to edit a field's size, data type, and							
		for additional details.							
	3.	The most common use of the "AutoNumber" field is to set a							
		for each record, ensuring uniqueness.							
	4. "Table Relationships" can combine data from multiple tables. The most comm								
		relationship is, where one record links to many records.							
	5.	The "Primary Key" is important because it prevents and							
		ensures every record is unique.							
5.	Yo the	u have to create a library inventory database to manage information about authors and e books they have written.							
	1.	Open Microsoft Access and create a blank database. Name the database "LibraryInventory."							
	2.	Create a new table to store authors' details including the following fields:							
		AuthorID (AutoNumber, Primary Key)							
		Author Name (Short Text)							
	3.	Save the table as "Authors."							
	4.	Create a new table to store book details including the following fields:							

- BookID (AutoNumber, Primary Key)
- Title (Short Text)
- AuthorID (Number)

# For Review Purposes Only

Ð

(ŝ)

ॠ

Ð

- Author (Short Text)
- Genre (Short Text)
- Year Published (Number)
- 5. Save the table as "Books."
- 6. Enter the following records in Datasheet View:
  - Authors Table:
    - > Record 1: AuthorID: Auto-generated, Author Name: Antoine de Saint-Exupéry
    - > Record 2: AuthorID: Auto-generated, Author Name: Roald Dahl
  - Books Table:
    - > Record 1: BookID: Auto-generated, Title: The Little Prince, AuthorID: 1, Genre: Fiction, Year Published: 1943.
    - > Record 2: BookID: Auto-generated, Title: Charlie and the Chocolate Factory, AuthorID: 2, Genre: Fiction, Year Published: 1964.
- 7. Create relationships between "Books" and "Authors" tables.
- 8. What type of relationship exists between tables?
- 9. Save and close the database.



LESSON 2

### **Data entry forms**

Why might it be helpful to use a tool to add or edit one record at a time instead of scrolling through a large table? How can a simple, organized interface facilitate the entry of details such as name, address, and telephone number?

Now that tables have been created in the database, a **data entry form** can be created. This form helps add information or edit existing data. Data can always be added from the tables. Forms serve as the interface created for users, providing a simple way to enter data without directly editing the tables or understanding how the database is structured.

Forms also allow control over which data the user can access, ensuring that only specific fields or records in the database can be checked or edited.

For this activity, you will work on the "Students" table that you created in the previous lesson.

#### To create a form using the Form Wizard:

- Make sure all database objects are closed, and select the Students table, 1 from the Navigation pane.
- > On the Create tab, in the Forms group, click Form Wizard. 2
- > In the Form Wizard window, click the >>> button, 3 to include all the fields in the form.
- > The StudentID field is excluded from the form, as it contains no relevant data for the user and is updated automatically. To remove it, click it in the Selected Fields list, 4 and click the button. 5
- > Click Next. 6
- > In the next screen leave Columnar layout selected and click Next. 7
- > Click Finish. 8

File Hom	e <b>Create</b> External Data	Database Tools	Help $\wp$ Tell me w 2 u want to	o do		
Application Parts ~	TableTableSharePointDesignLists ~	Query Query Wizard Design	Form Form Blank Design Form Torms Y	Report Report I Design R		
Templates	Tables	Queries	Forms	Reports		
All Access Objects  <						
Tables	^					
E Courses						
🛄 Grades						
<b>Students</b>						

For Review Purposes Only

Ð

<del>(</del>\$7

्री

허

Form Wizard		F
	Which fields do you want on your form? You can choose from more than one table or query.	
<u>T</u> ables/Queries		:
Table: Students	~	Ē
<u>A</u> vailable Fields:	Selected Fields:	
StudentiD Name Address City Postal Code Telephone number Class No	<ul> <li>&gt;&gt;3</li> <li>&lt;</li> </ul>	
Ca	ncel < <u>B</u> ack Next > Einish	

Form Wizard	
	Which fields do you want on your form? You can choose from more than one table or query.
<u>T</u> ables/Queries	
Table: Students	~
<u>A</u> vailable Fields: 5	Selected Fields: Studentio Address City Postal Code Telephone number Class No
Ca	incel <back next=""> Einish</back>



Columnar     Iabular     Datasheet     Austified
7

Alternatively, you can choose another layout which suits your personal taste.

Form Wizard	What title do you want for your form? Students	You can change the name of your form.
	That's all the information the wizard needs to create your form. Do you want to open the form or modify the form's design?	This option opens the form in <b>Form View</b> and lets you type data.
	Cancel < Back Mext > Einish	

#### To insert records in your form:

- > Simply fill in the form you have already created. 1
- > When you are done, on the **Home** tab, in the **Records** group, click **Save**. 2



নি

Ē

In the same way, you enter data into a form, you can also enter data into a table. Open the "Students" table and type these records.

_												
	9	Students ×										
1		Student ID	<ul> <li>Name</li> </ul>	<ul> <li>Address</li> </ul>	• •	City	-	Postal Code	Telephone number -	Class No	<ul> <li>Click to Add</li> </ul>	1 -
	+		1 Marco	44 Woodrow Way		Dallas		12345	212500432	2		
	+		2 Lisa	36 Cambridge Court		Dallas		12346	212500202	1		
	+		3 Kim	22 Alfred Drive		London		12347	212500441	2		
	+		4 Tom	36 Cambridge Court		Dallas		12346	212500202	3		
	+		5 Alex	202 Newport Lane		London		12348	212500516	3		
	+		6 Stella	2048 Central Avenue		London		12349	212500123	3		
	+		7 Paul	43 Oxford Street		London		12341	212500526	1		
*		(Ne)	(M)									

#### To delete a record:

- > Navigate to the record you want to delete, e.g., the 7th record, and click the record selector next to the record. 1
- > On the Home tab, in the Records group, click the drop-down arrow next to Delete, and then click Delete Record. 2
- > In the warning message box, click Yes. 3



Because the StudentID field is auto-numbered, when you delete a record, its StudentID number is not replaced. If you delete the last record, e.g., No 6, the StudentID for the next new record will be 7.

### 🔆 Smart Tip

To fill in a form faster, you can press Tab after typing each field to move to the next one. If you press Tab a while working on the last field of a form, you move to the next page to insert another record.

### **Personalize your forms**

You can customize your form in various ways. For instance, you can add or change fields and labels.

#### To change the layout of your form:

- > On the Home tab, in the Views group, click on the drop-down arrow and select Layout View. 1
- > In Layout View, you can resize and drag all the fields and put them in the order you prefer. 2



# Change the data source

You can also change the **Data Source** of your **text boxes**. This means that you can choose a specific field in your table, so that the text you type in the text box is saved in it.

#### To change the data source of a text box:

- > Click a text box to select it, e.g., the text box that contains the name Marco. 1
- > On the Form Layout Design tab, in the Tools group, click Property Sheet. 2
- In the Property Sheet pane, on the All tab, click the Control
   Source list and click a field to link to that text box, e.g., Name. 3
- > Now, whatever you write in that text box will be saved in the field you selected.



Ē

€∎j

<del>,</del> ę,

ារដ



×	Property Sheet	×				
	Selection type: Text Box	₹↓				
	Name	$\sim$				
	Format Data Event O	ther All				
Marco	Name	Name				
	Label Name	Name_Label				
	Control Source	Name 🔍 🗝				
44 Woodrow Way	Format	Student ID				
	Decimal Places	Name 3				
	Visible	Address				
Dallas	Text Format	City				
	Datasheet Caption	Postal Code				
	Show Date Picker	Telephone number				
12345	Width	Class No				
	Height	0.4"				
	Тор	0.2375"				
212500432	Left	2"				
	Back Style	Normal				
-	Back Color	Background 1				
2	Border Style	Solid				
	Border Width	Hairline				
	Border Color	Background 1, Darker 35%				
	Special Effect	Flat				
	Scroll Bars	Vertical				
	Font Name	Aptos (Detail)				
	Font Size	11				
	Text Align	General				
	Font Weight	Normal				

#### To attach a label:

- > On the Form Layout Design tab, in the Controls group, click the Label button.
- > Click anywhere inside your form. A new Label Box will be on your screen. Type "Contact Information". 2
- > Drag the Label Box above the Contact Information data. 3
- > With the Label Box selected, on the Form Layout Design tab, in the Tools group, click Property Sheet. 4
- > In the Property Sheet pane, change Font Size to "18". 5
- > Close the **Property Sheet** pane, **6** and save your form.



File Home	Create External Data	Database Tools	Help	Form Layout Design	Arrange	Format	✓ Tel
View Them	es A Fonts ~	abl Aa			Insert	Logo Title	ind Time
Views	Themes		Header / Footer				
All ⊙ <	😑 Students 🛛						
Search	Students						
Grades Students	Name Contact Informa	tion	0				
Forms ^	Class No	2					
Name	Marco						

Name	Marco	
Class No	2	
	Contact Information 3	
Address	44 Woodrow Way	
City	Dallas	

### For Review Purposes Only

Ð

(\$)

\$ F

নি

You can experiment and change some of the other properties and check what happens. The changes will be in the **Layout View**.

Database	e Tools Help	Form Layout Design	Arrange Format	✓ Tell me what you want to do
L 🔛 L	ogo Title Date and Time Pader / Footer	Add Existing Fields	hart ttings	6
		>	Property She	× ×
			Selection type: Label	₽↓
			Label13	~
			Format Data Even	t Other All
	Marco		Border Style	Transparent
			Border Width	Hairline
			Border Color	Text 1, Lighter 50%
	•		Special Effect	Flat
	2		Font Name	Aptos (Detail)
			Font Size	18 5
			Text Align	General
Cor	ntact Info	rmation	Font Weight	Normal
			Font Underline	No
	44 Woodrov	w Way	Font Italic	No
			Fore Color	Text 1, Lighter 40%
			Line Spacing	
	Dallas		Hyperlink Address	
			Hyperlink SubAddress	
			Hyperlink Target	
	12345		Gridline Style Top	Transparent
			Gridline Style Bottom	Transparent
bor	212500402		Gridline Style Left	Transparent
iber	212500432		Gridling Width Top	1 pt
			Gridline Width Bottom	1 pt
			Gridline Width Left	1 pt
			Gridine Width Left	i pt

It's very important for your forms to be simple. Most often, people who work on a database mainly focus on the forms, because it's the interface of the database.



1. Read the following sentences and put a check mark for True or False.



- 2. Read the questions and put a check mark for the correct answer.
  - 1. What is the purpose of a data entry form in Microsoft Access?
    - a. To print the records in a table.
    - b. To create an automatic backup of a table.
    - c. To add, edit, or access records in a simple way.
    - d. To delete all fields in a table.
  - 2. In the "Form Wizard," how do you include all the fields in your form?
    - a. Click the ">" button.
    - b. Click the ">>" button.
    - c. Click the "<" button.
    - d. Click the "<<" button.

# For Review Purposes Only

<del>(</del>\$7

्रीफ्र

Ы

3. Wh	y is the "StudentID" field not included in the form by default?							
	a. It is not an important field for users.							
	b. It is automatically updated and does not require manual input.							
	c. It is a text field and cannot be added.							
	d. It can only be added through "Design View."							
4. Wh sto	at button would you use to ensure that changes made to a record in a form are							
a. The "Save" button, on the "Home" tab, in the "Records" group								
	a. The "Save" button, on the "Home" tab, in the "Records" group							
	red and not lost? a. The "Save" button, on the "Home" tab, in the "Records" group b. The "More" button, on the "Home" tab, in the "Records" group							
	red and not lost? a. The "Save" button, on the "Home" tab, in the "Records" group b. The "More" button, on the "Home" tab, in the "Records" group c. The "New" button, on the "Home" tab, in the "Records" group							

3. Forms are often called the interface of a database because they help users interact with the data.

Why is it important to make forms that are straightforward and user-friendly? Can you think of a real-life example, like an online form, and explain what makes it easy to use or challenging to use?

Ē

<del>,</del>\$7

्रास्टे

न्तु

- 4. Open Microsoft Access and navigate to the "Authors" table and "Books" table you created in the previous lesson.
  - 1. Use the Form Wizard to create forms for the following:
    - From the "Authors" table include the fields: AuthorID and Author Name.
    - From the "Books" table include the fields: AuthorID, BookID, Title, Genre, and Year Published.
    - Use the Columnar Layout for both forms.
  - 2. Once the forms are created, insert new records. More specifically:
    - On the "Authors" form, add the following data: AuthorID: Auto-generated, Author Name: Shel Silverstein.
    - On the "Books" form, add the following data: AuthorID: 3, BookID: Auto-generated, Title: The Giving Tree, Genre: Literature, Year Published: 1964.
  - 3. Save and close the database.





How can you quickly find books by a specific author from a list of titles, authors, and publication years? Why is this helpful for organizing your reading list?

Database tables can store vast amounts of records, sometimes millions or even billions. Therefore, when searching for specific information, it's necessary to filter the records and choose which ones to display. This is done by creating a query. A **query** is a request made to the database to retrieve particular data and obtain the information needed. For this lesson, let's continue working with the "Students" table from earlier.

#### To create a query:

- > On the **Create** tab, in the **Queries** group, click **Query Design**. **1**
- > In the Add Tables pane, click the Students table, 2 and click Add Selected Tables. 3
- > Then click the **Close** button to close the pane. 4
- > The Query Design tab will be on your screen, along with your table. Double-click the fields of the Students table that you want to display (Name, Class No, Telephone number, and City). 5
- > The fields you selected will be on your screen at the bottom of the window. 6
- > On the Query Design tab, in the Results group, click Run. 🤈
- > The results of your query will be in Datasheet View. 8
- > On the Home tab, in the Views group, click on the drop-down arrow and select Design View, 9 to switch back to the Query Design View. Here, you can continue to tweak your query in more ways.





1	ile	Home	Create	Exter	rnal Dat	a Data	base Too	ls Help	s , c	) Tell me	what yo	ou want	to do						
	View	Paste ×	X C1 3	Filter	$\begin{array}{c} A \\ Z \\ A \\ A \\ C \\ C$	ending cending nove Sort	<b>%</b> ₩ ~ ♥	Refresh All ~	E New	∑ abc ✓	~ ~	Find	b → ~ b <sup>c</sup> → ~	Aptos (De B I A ~	etail) U	, ≡	) >¶ →   = = =		
	•••	1			Sort	& Filter			Re	8		Find				Text Format	ting		L7
A		Datas <u>h</u> e	et View	C	) <	Quer	y1 ×												
Se	SQL	SQL Viev	N		9	Marce	ame - D	Class 2	sNo -	Telepho 2125004	ne num 32	ber -	Ci Dallas	ty –					
Т	NE	1			^	Lisa		1		2125002	02		Dallas						
E	₽£	<u>D</u> esign \	/iew 🧹	9		Kim		2		2125004	41		Londo	n					
	Gra	des				Tom		3		2125002	02		Dallas	;					
I	Stu	dents				Alex		3		2125005	16		Londo	n					
	- Stu	acinto			~	Stella		3		2125001	23		Londo	n					
	C+11	donte				*		1		212000	20		Londo	n					
		uents																	
						0													
Re	adv					Record: I	<ul> <li>1 of 7</li> </ul>		<u>▶</u> ≋   _ }×́	No Filter	Search					N	um Lock	TT.	SOL N
Live	uay															IN	UNITLOCK		-4r F

## For Review Purposes Only

P

\$

्री

훤

### **Add criteria**

Now choose some of your data to display in response to your query. Let's ask your database a question.

#### To choose some of your data:

- > In Query Design View, locate the City field column and in the Criteria row, type "Dallas". (1)
- > On the Query Design tab, in the Results group, click Run. 2
- > As you can notice from the results, 3 the query that you created ordered your database to select and display only the records which contained the word Dallas in the City field.
- You can save your query at any point, preferably after you run it and check that it displays the desired results. To save it, right-click the query tab and click Save. 4
- > Type a name, e.g., "Students from Dallas", and click OK. 5
- > Your query is in the Navigation pane on the left. 6



The aim of this activity is to ask the program: "What are the names, classes, and telephone numbers of all students who live in Dallas?"




Note that the quotes here are not necessary, but it's a good practice to wrap any text in the **Criteria** row in quotes. That way, the program understands that you mean the word "Dallas" and not something else, e.g., a field named Dallas.



### For Review Purposes Only

<del>(</del>\$7

 $\widehat{}$ 

### **Complex criteria**

You can narrow down your results even more by applying more **complex criteria** to more than one field.

To apply complex criteria:

- In Query Design View, locate the Class No field column and on the Criteria row, type "1" Or "3". 1
- > On the Query Design tab, in the Results group, click Run. 2
- > Check the results. 3



For Review Purposes Only

**1. Handling databases** 

### **Parameter queries**

Let's say you want to create a query that will give you the contact information of a specific student. You can simply type the name of the student in the **Criteria** row of the **Name** field. But what if you had a big database with hundreds of students? It's not practical to create a new query every time you want to search for a different student. In this case, you can use **parameter queries**.

#### To create a parameter query:

- In Query Design View, locate the Name field column, and in the Criteria row, type "[Student Name?]". 1 Clear any other Criteria, if any.
- > On the Query Design tab, in the Results group, click Run. 2
- There is a message box, displaying your message and asking for a student's name.
   Type a name, e.g., "Marco", and click OK.
- You can use the same query and type different student names without changing anything or creating a new query.

Image: Select Name   Select Name<	File Home Create External Data	n Database Tools Help <mark>Query</mark>	Design $\mathcal{O}$ Tell me what you want to do				
All Access Objects	View Run Results	Update Union Crosstab Pass-Through Delete Data Definition Query Type	Add Tables     Insert Rows     ↓↓↓ Insert Columns       → Delete Rows     ↓↓↓ Delete Columns       → Builder     ↓↓ Delete Columns       Query Setup	Totals			
Field:       Name       Class No       Telephone number       City         Table:       Students       Students       Students         Sort:       Show:       Image: Class No       Image: Class No         (Criteria:       Image: Class No       Image: Class No       Image: Class No         (Students       Image: Class No       Image: Class No       Image: Class No       Image: Class No         (Students       Image: Class No       Image: Cl	All Access Objects  All Access  All Ac						
		Field: Name Class No Table: Students Students Sort: Show: Criteria: [Student Name?]	Telephone number     City       Students     Students				

All Access Objects	⊙ <		Students from D	allas X			
<b>j</b>		2	Name 👻	Class No 🔫	Telephone number -	City -	
Search	<u></u>		Marco	2	212500432	Dallas	5
Tables	^	*					

## For Review Purposes Only

P

E

(ŝ)

<u></u>

헤

### **Queries on tables with relationships**

So far, creating queries to ask questions about a single table in the database has been covered. However, most databases contain multiple tables that relate to each other in specific ways. It is now time to learn how to create queries for such databases and ask questions about data from multiple tables simultaneously.

In this example, you will use all three related tables from our database: "Courses", "Grades" and "Students."

Based on what you have learned so far, fill in the rest of the tables as the example below.



 Grades A					
StudentID 🗃	CourseID 👻	1st Semester Grade 👻	2nd Semester Grade 👻	Final Grade 👻	
1	4	85	89	95	
1	. 5	90	92	94	
1	6	73	75	80	
2	1	79	83	85	

If the relationships in your tables need adjustment, you can delete and redefine them as necessary. You can even create relationships between tables only for a specific query.

c	Courses ×									
	CourseID	•	Course Name	*	Class	Ŧ	Teacher	×	Click to Add	•
Ŧ		1	Science		1		Mr Smith			
+		2	Math		1		Mrs Taylor			
÷		3	History		1		Mrs Jones			
+		4	Science		2		Mr Smith			

	Students >	<										×
	Student	ID 👻	Name	-	Address	-	City	-	Postal Code	-	Telephone number -	Class No
Ð	-	1	Marco		44 Woodrow Way		Dallas		12345		212500432	2
H	-	2	2 Lisa		36 Cambridge Court		Dallas		12346		212500202	1
Ð	-	3	3 Kim		22 Alfred Drive		London		12347		212500441	2
Ð	3	4	1 Tom		36 Cambridge Court		Dallas		12346		212500202	3
Ð	•	5	5 Alex		202 Newport Lane		London		12348		212500516	3
H	3	6	6 Stella		2048 Central Avenue		London		12349		212500123	3

### R History

IBM started research on relational databases in 1974 and its first product was SQL/DS in 1981. However, Relational Software were the first to release a commercially available Relational Database Management System with their product Oracle in 1979. Now you have to create a query to find all the courses that a certain student has taken, along with their final grade in each course. Then, you will display the student's name and class, the course name, and the final grade for all the courses that meet the specified criteria.

#### To create a query on multiple tables:

- > On the Create tab, in the Queries group, click Query Design. 1
- > In the Add Tables pane that opens, select all the tables and click Add Selected Tables. 2
- > Click the **Close** button at the top of the pane. 3
- On the Query Design tab, double-click the fields from the tables that you want to display (Name, Class No, Course Name, and Final Grade).
- > Now you will add the parameters you want. In the Name field Criteria, type "[Student Name?]". 5
- > On the Query Design tab, in the Results group, click Run. 6
- > A message box opens, displaying your message and asking for a student's name! Type a name, e.g., "Marco", and click OK. 7
- > You now have the query result, containing information on the specific student that you asked for. 8

File Home Create External Data	Databa Jols Help 🔎	Tell me what you want to do 3	
File       Home       Create       External Data         Application       Table       Table       Tables       Tables         Tables       ^       Courses           Courses       Students            Students       from Dallas            Forms       ^	Databar ols Help Query Query Wizard Design F Queries	Tell me what you want to do     3       Add Tables     ×       Tables     Links     Queries     All       Search        Courses     Grades       Students	Report Wizard Labels Macros & Code
		2	
		Add Selected Tables	

4	Field:	Name	Class No	Course Name	Final Grade	$\sim$	
	Table:	Students	Students	Courses	Grades		
	Sort:						
	Show:	$\checkmark$		$\checkmark$			
	Criteria:						
	or:						
							-
		4					
							- 2

## For Review Purposes Only

Ð

(ŝ)

<u></u>

헤





All Access Objects 💿	<	đ	Query1 X				
		2	Name 🔫	Class No  👻	Course Name 🛛 👻	Final Grade 👻	
Search	2		Marco	2	Science	95	
Tables	^		Marco	2	Math	94	
Courses			Marco	2	History	80	
Grades Students		*	8				
Queries	^						
5tudents from Dallas							
Forms	^						
🗐 Students							

### Sort

You can choose the results of a query sorted in ascending or descending order.

To sort the results of your query by one field:

- > Create a new query in Design View using the Students table and the fields: Class No, Name, Telephone number, and City. 1
- In Query Design View, locate the Class No field column and in the Sort row, click Ascending in the drop-down list. 2
- > On the **Query Design** tab, in the **Results** group, click **Run**. **3**
- > The query records are on your screen starting with the students from class 1 and ending with the students from class 3. 4





For Review Purposes Only

Ð

i 🗐

<del>(</del>\$7

**\$** 

Ы



- 1. Read the following sentences and put a check mark for True or False.
- True False 1. A database table can hold from 0 to billions of records. 2. With a "Query," you can add new fields to a database. 3. In a "Query," you can apply criteria to more than one field. 4. "Complex criteria" allow you to use multiple conditions to filter data. 5. In the "Criteria" row, you type dates in quotes only. 2. Complete with the missing word. 1. To start creating a query, you select the \_\_\_\_\_\_ option from the "Create" tab. 2. Add tables to your query using the \_\_\_\_\_ button in the "Add Tables" pane. 3. To focus on certain records in a query, type your condition in the \_\_\_\_\_ row. 4. To get the query results, click the \_\_\_\_\_ button. 5. The results of the query will be displayed in "\_\_\_\_\_\_ View."

**1. Handling databases** 

3. Why is adding criteria in the Criteria row helpful when working with a large table? How does it help you find the data you need?



#### 4. Create a query using the "Books" and "Authors" tables to retrieve specific information.

- 1. Open the "LibraryInventory" database you worked on in the previous lesson.
- 2. Include the following fields in your query:
  - Author Name (from the Authors table)
  - Title (from the Books table)
  - Genre (from the Books table)
  - Year Published (from the Books table)
- 3. Apply complex criteria to your query:
  - Display only books in the Fiction genre AND published in 1943.
- 4. Create a parameter query based on the "Books" table to ask the user to input a specific genre.
  - Use the parameter [Enter Genre:?] in the Genre field of the Criteria row.
- 5. Sort the results of the query in ascending order by Title.
- 6. Run the query, observe the results, and close the database.

## For Review Purposes Only

Ē

(\$)

\$ F

নি



Why might presenting data in a report be more effective than displaying it directly from a table? How can grouping and sorting data in a report make the information clearer to understand?

Data can be entered, modified, and categorized with a database program, but to present this information in an easy-to-read format for others or for personal use, a report must be created. A database **report** illustrates information from a table or query in an attractive, preformatted manner.

#### To create a report:

- > On the Create tab, in the Reports group, click Report Wizard. 1
- > When the Report Wizard window opens, in the Tables/Queries drop-down list, click Table: Students. 2
- > Move all the fields except StudentID, 3 from the Available fields to the Selected Fields.
- > Click Next. 5

[▲ ピ・ペ・ ⇒				Binary Academy BA	- 0
File Home Create External Data	Database Tool	s Help 🔎 Tell m	e what you want to	do <b>1</b>	
Application Parts v Templates Tables	Query Query Wizard Design	Form Form Blank Design Form	Form Wizard	Report Report Blank Export Wizard	Macro & Code
All Access Objects © <	Queries	Toma		i cporto	i inderos de code i
Search	Re	eport Wizard	Which	fields do you want on your report?	
Grades Students Queries			You ca	n choose from more than one table or q	uery.
Student Final Grades	I	jables/Queries			
Students from Dallas Forms Students Ready	3	able: Students ,vailable Fields: StudentID	>>><<	Selected Fields:	n Loc
			Cancel	< Back Next >	Einish
Fo	r Re	view P	urpo	ses Only	

### Group the data

In the next step, you can create groups and subgroups of your data.

#### To add grouping:

- > Move all the fields which you want to create groups from to the right.
- > Note that the order in which you move them matters: the top field has priority over the ones that follow. 2
- > Click Next. 3



Grouping allows you to concentrate all related data, e.g., all the data for one person. This way, on one page are all the data for a specific person.

### Sort the data

In the next step, you can add more fields to **sort** and define their **sort order**.

You can change the sort order from **Ascending** to **Descending** by clicking the button next to the list. You can add up to four fields.



#### To add sorting:

- Click a field from the first drop-down list, e.g., Address. 1
- > Click Next. 2

€Ðj

Ę\$7

Ы

### Set the layout

In the next step, you can select how your report will appear on the screen.

#### To set the layout:

- > Under Layout, click Outline. 1 You can experiment with the other layouts later if you want.
- > Click Next. 2

How would you like to lay out your report?		
	Layout Stepped Block Outline	Orientation
	Adjust the field widt page.	th so all fields fit on a
Cancel	< <u>B</u> ack <u>N</u> ext	> <u>E</u> inish

### Name the report

In the final step, you can **name** your report.

To give	e your report a nan	ne:	Report Wizard	Report Wizard				
> Type the t	e a name for your re ext box, e.g., " <b>Stud</b> e ort". <b>1</b>	eport in ent		What title do you w Student Report	vant for your report?			
> Click	Finish. 2			That's all the infor	nation the wizard needs to create your report.			
			[=\////s		port.			
					orts design.			
	Student Report Class No Name Address	1 – Lisa City	Your fir have g Class N Postal Code	rst report is ready. You grouped your data by No and then by Name. Telephone number	2 Jext > Einish			
	36 Cambridge Court	Dallas	12346	212500202				
	Class No 2	2						
	Name Address	Kim City	Postal Code	Telephone number				
	22 Alfred Drive	London	12347	212500441				
	Name	Marco						
	Address	City	Postal Code	Telephone number				
	44 Woodrow Way	Dallas	12345	212500432	<b>•</b>			
Page: 14 4 1	► ► ► ★ 🔀 No Filter	-			Þ			
			Num Lock	- ₪ ₪ ⊡	T 100%			

#### To edit a report:

- > Right-click the Student Report in the Navigation pane. 1
- > Click Layout View. 2
- In this window, your data is presented as it is displayed when you open the report. You can delete anything unnecessary.
- For example, delete the Name label, 3 and change the position of the Name text
   box. 4
- Click the text boxes that are more important, e.g., the Class No text box, and on the Home tab, in the Text Formatting group, make them bold using the Bold button.
- > Your report is now ready. 6



All Access Objects 😔 <		Student Report X			×
Search O	1	_			ī
Tables ~		Student Report			
Queries 🗸					
Forms ~					
Reports ^		Class No 3 1			
Student Report					
		Name	Lisa		
		Address	City	Postal Code	Telephone number
		36 Cambridge Court	Dallas	12346	212500202
		Class No 2			
		Name	Kim		
		Address	City	Postal Code	Telephone number
		22 Alfred Drive	London	12347	212500441
		Name	Marco		
		Address	City	Postal Code	Telephone number
		44 Woodrow Way	Dallas	12345	212500432

For Review Purposes Only

Ð

<del>(</del>\$7

\$ }

헤

File	Home Crea	ate Ext	ernal Da	ata Da	tabase Too	s Help	Report	Layout Desi	gn A	rrange	Format	Page Setup	Q	Tell me	
View Views	Paste	Filter	$A \downarrow As$ $A \downarrow De$ $A \Diamond Re$	cending scending move Sor	) ∦7 ~ ⊊ ~ t ∏	Refresh All ~	New Save	∑ abc ✓	Find	$\downarrow \downarrow 5$ $\downarrow \downarrow \downarrow$	Aptos (I B I <u>A</u> ~	Detail) $\underline{U} \Rightarrow = \frac{1}{2}$ $\underline{\omega} \sim \underline{\Delta} \sim$ Text For	>¶11 Ξ   >¶ \   Ξ = Ξ		
		anta C	301	Stuc	dent Report	X	Records			inu		lextre		121	
	cess Obj	ects		Stut											
Search			P					_		(					
Tables			~	St	uden	: Rep	ort	6			You c	an also c	hange	e position,	
Queries			~			1750		Ŭ –			font	t size and	l align	ment as	
Forms			~		Class No			1			we	ell as any	of the	e other	
Reports			^								know	n text for	mattir	a options	
🔚 Stu	dent Report			4	Lisa						for				
								0.1		l	TOP a	II text bo	xes ar		
					Ad	aress		City			1 Ootat	0000	100	i <del>bamon onondo</del>	
					36	Cambri	dge Cour	t Dallas			12346		21	2500202	

### Grouping and sorting

You may want more control of the grouping and sorting options for your report than the **Report Wizard** can provide.

#### To change the grouping and sorting options:

- > On the Report Layout Design tab, in the Grouping & Totals group, click Group & Sort. 1
- You can find the Group, Sort, and Total pane at the bottom of the screen. 2



### Totals

Sometimes in your reports, it is useful to include **calculations** in your data that are calculated every time someone views the report. Let's explore how you can calculate and display the average final grade of each student in a report.

#### To create a report with totals:

- > On the Create tab, in the Reports group, click Report Wizard. 1
- In the Report Wizard window, in the Tables/Queries list, select Name, Class No, Course Name, and Final Grade from the relevant tables and click Next. 2
- > In the next step, click by Students and click Next. 3
- > In the next steps, group by Class No, 4 and sort by Course Name. 5
- > Under Layout, click Outline and then click Next. 6
- > Finally, name your report, e.g., "Student Final Grades" and click Finish. 🥑
- > As a result, you have a report with the final grades of all students in all their courses. 3

File Home Create External Data Dat	abase Tools Help $ ho$ Tell me what you want to do	
Application Parts × Templates Tables CharePoint Tables Tables CharePoint Design Lists × Tables CharePoint	y Query rd Design Porms Forms Vizard Design Porms Forms Porms Porm	Macros & Code
All Access Objects 🕤 <		
Search $ ho$	Report Wizard	
Tables   ~     Queries   ~     Forms   ~     Reports   ^	Which fields do you want on your report? You can choose from more than one table or query.	
Student Report	Iables/Queries	· · · ]
	Labe: Grades       Available Fields:       StudentID       CourseID       CourseID       StudentID       Class No       Course Name       Pinal Grade       Pinal Grade       Cancel       Cancel	
Report Wizard	Report Wizard	

Report Wizard	Report Wizard
How do you want to view your data?         by Courses         by Grades         course Name, Final Grade         Show me more information	Do you want to add any grouping levels? Course Name Final Grade Priority •
	Grouping Options Cancel < Back Next > Einish

For Review Purposes Only

Ð

<del>(</del>\$7

\$ }

Ы

Report Wizard		Report Wizard	
What sort order and summary	information do you want for detail records?	How would you like to lay out your report?	
	can sort records by up to four fields, in either         1       course Name       Ascending         2       V       Ascending         3       V       Ascending         4       V       Ascending		out Stepped Block Dutline Clandscape A Orientation Orientation Orientation Orientation Clandscape A Orientation Orientatio
	Summary Options	pa	age.
			6
	Cancel < Back Next > Einish	Cancel < Br	ack <u>N</u> ext > <u>E</u> inish
Report Wizard		Student Final Grades ×	×
	What title do you want for your report? Student Final Grades	Student Final Grades	
		Class No 1	
		Name Lisa	
	That's all the information the wizard needs to create your report.	Course Name History	Final Grade 79
	Do you want to preview the report or modify the report's design?	Math	94
	Preview the report.	Science	85
		Class No 2	
		Name Marco	Final Grade
		History	80
		Math	94
		Science	95
	Cancel < Back Nevt > Einish	Page: I I I N N S No Filter	

#### To add totals:

- > Open the Student Final Grades report in Layout View. 1
- > Click a Final Grade box. 2
- > On the Report Layout Design tab, in the Grouping & Totals group, click Totals, and then click Average.
- You can find a new text box, containing the average grade from each class group.
- > Finally, an average for all students of all classes is presented at the end of the report.



File Home Create	Externata D	atabase Tools Help	Report Layout Design Ar	range Format Page Setup	🔎 Tell me what you want to do
Views Themes	Content of the second seco	Contro s Insert V Image V	Page Date and Time	Add Existing Property Chart Fields Sheet Settings	~
All Access Object	ts ତ < 🔳 st	udent Final Grades X			
Search Tables Queries Forms Reports Student Final Grades Student Report		Sum Average Count Records Count Values Max Min Standard Deviation Variance HISTORY Math Science	Grades 1 Lisa		Final Grade 2 79 94 85

File Home Create External D	oata Database Tools Help Report Layout De	sign Arrange Format Page Setup $ ho$ Tell me what you want to do
Size Margins Print Data Only Page Size	Portrait Landscape Columns Page Setup Page Layout	~
All Access Objects 💿 <	Student Final Grades ×	×
Search	Name Lisa	•
Tables	Course Name	Final Grade
Queries	<b>Right-click on the numbe</b>	er <sup>79</sup>
Forms	and coloct <b>Set contion</b> t	94
Reports	and select set caption to	85
Student Final Grades	add a label, explaining th	Class Average Grade 86
Student Report	new field on your report	
	nen nen on year report	
	Name Marco	o
	Course Name	Final Grade
	History	80
	Math	94
	Science	95
	Name	
	Course Name	Final Grade
	Course Name	Final Grade
	Math	70
	Science	72
	30101100	Class Average Grade 84.1666666667
Layout View		Num Lock 📶 🔒 🖽 №

All Access Objects	. <	Student Final Grades	x	×
Search	Q	Class No	3	1
Tables Queries	*	Name	Tom	
Forms	~	Course N	Name	Final Grade
Reports	^	History		92
Student Final Grades		Math		92
Student Report		Science		91
		Name	Alex	
		Course	Name	Final Grade
		History		96
		Math		93
		Science		97
		Name	Stella	
		Course	Vame	Final Grade
		History		96
		Math		98
		Science		Class Average Grade 93.88888889 6 Overall Class Average Grade 89.33333333
Layout View				Num Lock 🗐 🛱 🔀

Ð

(\$<del>)</del>

ॠ

<u>ک</u>



- 1. Read the following sentences and put a check mark for True or False
- True False 1. A report is used to present information in a clear and readable format. 2. In a report, you can change the position of the field names, the title, and the record fields. 3. You cannot change the sorting order in a report. 4. In a report, you can add a group, sort data, and rearrange the order of groups and sorts. 5. If you apply totals to a report with one group, three types of text boxes will be displayed. 2. Complete with the missing word. 1. To start creating a report, you select the \_\_\_\_\_\_ option from the "Create" tab. 2. Adding \_\_\_\_\_\_ in reports helps organize data by categories, such as Class No or City. 3. To edit the design of a report after it is created, use the \_\_\_\_\_ option. 4. To calculate and display the average grade of students in a report, use the \_\_\_\_ option. 5. After designing and naming your report, click the \_\_\_\_\_ button to save and view it. For Review Purposes Only

3. Why is it important to group information in a report and include calculations like averages or sums? How do these features make the report clearer to understand and more useful?



#### 4. Create a report using the "Books" and "Authors" tables to display grouped information.

- 1. Open the "LibraryInventory" database you worked on in the previous lesson.
- 2. Include the following fields in your report:
  - Author Name (from the Authors table)
  - Title (from the Books table)
  - Genre (from the Books table)
- 3. Ensure the report groups the data by Genre.
- 4. Sort the data in the report by Title in ascending order.
- 5. Name the report "BooksReport."
- 6. Customize the layout of the report:
  - Use Bold text for Genre and Author Name.
  - Display a summary at the end of the report that counts the total number of books.
- 7. Change to Report View, to verify the output, and close the report.
- 8. Close the database.

## For Review Purposes Only

P

(\$)

\$ F

নি



LESSON 5

### **Import and export data**

Why is it useful to be able to export data from a database to a program like Microsoft Excel? When might importing data into a database save time compared to entering it manually?

**Importing** and **exporting** data are important features for any software, especially databases. These functions allow data to be transferred between different programs for further use. For example, you can export data from a database to a spreadsheet for analysis, or take an old database stored in a spreadsheet and move it into a more powerful database program to simplify updates and maintenance.

#### To export data to Microsoft Excel:

- In the Navigation pane, click the object you want to export data from, e.g., the Students table. You can export data from any table, query, form, and report objects.
- > On the External Data tab, in the Export group, click Excel. 2
- In the Export Excel Spreadsheet window, specify the destination file name and format for your Microsoft Excel file, e.g., "Students.xlsx". 3
- > Click OK. 4
- > Click Close on the next window. 5
- > Your data has been exported to Microsoft Excel. 6

File Home Create External D	ata Database Tools Help , P Tell me what you want to do
New Data Source ~	Saved Dataverse Excel Text PDF Email Exports File or XPS
Import & Link	Export
All Access Objects 🕤 <	
Search	
Tables ^	
E Courses	
🛄 Grades	
Students 1	
Queries ~	
Forms ~	
Reports ~	

	Export - Excel Spreadsheet			?	×
	Select the destination	n for the data you want to exp	port		
	Specify the destination file n	ame and format.			
	<u>F</u> ile name: C:\Users\le	ocaladmin\Documents\Students.xlsx	3	B <u>r</u> owse	
	File forma <u>t</u> : Excel Wor	cbook (*.xlsx)		Select another	
this	option, you can pre-	serve most of your forma	atting	location for your fi	ile.
	Specify export options				
	We will not import table rela	tionships, calculated columns, validatior	n rules, default values, and columns of o	certain legacy data types such as OLE	
	Object. Search for "Import" in Micro	soft Access Help for more information			
	Export data with fr	prmatting and layout.			
	Select this option to	preserve most formatting and layout ir	nformation when exporting a table, que	ery, form, or report.	
$\dashv$	Open the destination	on file after the export operation is co	mplete.	u ovnort formatta d data	
	Select this option to	ected records	n. This option is available only when yo	u export formatted data.	
	Select this option to	export only the selected records. This c	option is only available when you expor	rt formatted data and have records	
	selected.			4	
	Select and export	specific records from yo	ur table.	OK Cancel	
1					
mat	tically opens the	Export - Excel Spreadsheet		?	×
file	for your results.	Save Export Steps			
		Successfully exported 'Students'.			
e the	steps you want	Do you want to save these export steps? This	will allow you to quickly repeat the operation with	hout using the wizard.	
repe	eat every time.	Save export steps			
AutoSave	● off) 📙 🏷 ~ 🤜 📼	Students	D Binary Academy BA -		
Hom	e Insert Page Layout For	nulas Data Review View Auto	omate Help 🖓 Commer	nts 🖻 Share 🗸	
<mark>م ۲</mark>	$ A  \equiv  \%$	Conditional Formatting ~			
.e L≞ ∖ ≪≪	Font Alignment Numb	r Format as Table ~ Ce	ells Editing Sensitivity Add-ins	Analyze Data	
ooard		Styles	Sensitivity Add-ins	· ·	
	$\checkmark$ : $\times \checkmark f_x \checkmark$	6		~ 5	
A	B C	D E City Postal Code Te	F G	H Clos	e
uent	1 Marco 44 Woodrow V	Vay Dallas 12345	212500432 2		
	2 Lisa 36 Cambridge	Court Dallas 12346	212500202 1		
	3 Kim 22 Alfred Drive	London 12347	212500441 2		
	4 Iom 36 Cambridge	ane London 12346	212500202 3		
	5 Alex 202 Newport I				
	5 Alex 202 Newport L 6 Stella 2048 Central A	venue London 12349	212500123 3		
	5 Alex 202 Newport L 6 Stella 2048 Central A	venue London 12349	212500123 3		
>	5 Alex 202 Newport L 6 Stella 2048 Central A Students +	venue London 12349	212500123 3		

#### To export data to a text file using Comma Separated Values (CSV):

- In the Navigation pane, click an object which you want to extract data from, e.g., the Students table. 1
- > On the External Data tab, in the Export group, click Text File. 2
- > In the Export Text File window, type a file name for your text file, e.g., "Students.txt," 3 and click OK. 4
- > In the next window, leave Delimited selected and click Next. 5
- > In the next window, click Include Field Names on First Row, 6 and then click Next. 7
- > In the next window, change the name of the file if you want and then click Finish. (3)
- > In the next window, click Close. 9

File Home Create External D	ata Database Tools Help $ ho$ Tell me what you want to do		
New Data E Linked Table Manager	Saved Dataverse Excel File or XPS Email		
Import & Link	Export	~	
All Access Objects 💿 <			
Search $\mathcal{P}$			
Tables ^			
Courses			
Grades			
Queries			
Forms ~			
Reports ~			
			L
	Browse to select	t anoth	er
	location for y	our file.	
			$ \frown $
	Export - Text File	?	×
	Select the destination for the data you want to export		
	Select the destination for the data you many to export		
	Specify the destination file name and format.		
Ready	File name: CAL level local design design Decumpath Students but		
		Browse	
	Specify export options.		
	We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types Object.	such as OLE	
	Search for "Import" in Microsoft Access Help for more information.		
	Export data with formatting and layout.		
(	Select this option to preserve most formatting and layout information when exporting a table, query, form, or report.		
	Open the destination file after the export operation is complete.		
With this option.	Select this option to view the results of the export operation. This option is available only when you export formatted data.		
vou can preserve	Export only the selected records.		
most of your	Select this option to export only the selected records. This option is only available when you export formatter and has	ve records	
formatting	selected.		
lornaturig.		Cancel	
	UK	Cancel	
F	or Review Purposes Only		

58

Are these steps familiar to	Export Text Wizard	×
you? Remember when you exported a CSV file from	This wizard allows you to specify details on how Microsoft Access sh Which export format would you like?	hould export your data.
Microsoft Excel? These		
steps are very similar.	Pelimited - Characters such as comma or tab separate each fi     Fixed Width - Fields are aligned in columns with spaces between	ield een each field
Evport Tevt Wizard		X
		500432","2" 212500202","1" 00441","2"
What delimiter separates your fields? Select the appropriate	delimiter and see how your text is affected in the preview below.	12500202","3" 2500516","3" "01250122" "2"
Choose the delimiter that separates your fields:	ace Other:	, 212300123 , 3
Include Field Names on First Row	Text Qualifier:	
Student ID","Name","Address","City","] ,"Marco","44 Woodrow Way","Dallas","1 !,"Lisa","36 Cambridge Court","Dallas !,"Kim","22 Alfred Drive","London","12 !,"Tom","36 Cambridge Court","Dallas", j,"Alex","202 Newport Lane","London"," ;,"Stella","2048 Central Avenue","Lond	<pre>vostal Code","Telephone number","Class No" 2345","212500432","2" ,"12346","212500202","1" 347","212500441","2" "12346","212500202","3" 12346","212500516","3" lon","12349","212500123","3"</pre>	5 Sack Next > Einish
Adyanced	Cancel < Back Next > Eir	hish
Export Text Wiza	rd	×
	That's all the information the wizard needs to export your data. Export to File: C:\Users\localadmin\Documents\Students.txt	
xport - Text File		7 × 8
_Save Export Steps		ext > Einish
Finished exporting table 'Students' to file 'C\Users\localadr Do you want to save these export steps? This will allow you Save export steps	nin\Documents\Students.txt'. to quickly repeat the operation without using the wizard.	9 Close
Students.txt	× +	×
Students.txt File Edit View	× +	- □ × *⁄2 × • ©
Students.txt File Edit View "Student ID","Nam 1,"Marco","44 Woo 2,"Lisa","36 Camb 3,"Kim","22 Alfre 4,"Tom","36 Cambr 5,"Alex","202 New 6,"Stella","2048	<pre></pre>	- C × */ ~ • • • • • • • • • • • • • • • • • •

#### To import data from a Microsoft Excel file:

- > Open Microsoft Access and create a new blank database.
- > On the External Data tab, in the Import & Link group, click New Data Source. 1
- > In the menu that opens, click From File and click Excel. 2
- In the Get External Data Excel Spreadsheet window, click Browse to select the Microsoft Excel file you want to import, e.g., "Students.xlsx," and click OK. 3
- > Click Next. 4
- In the next window, make sure First Row Contains Column Headings is checked if you have a header row in the Microsoft Excel file you are importing, and then click Next. 5
- Click each displayed field and make sure the Data Type is correct. If not, change it to the correct value. Then, click Next.
- In the next window, if your data from Microsoft Excel contains a field that is or can be used as a primary key in your database, click **Choose my own primary** key and click the appropriate field in the drop-down list, e.g., "StudentID." Then, click Next.
- > Finally, in the Import to Table box, type a name for the table that is going to be filled with your data, e.g., "Students". Then, click Finish. 3
- > In the next window, click Close. 9

File Home Create Exte	e <b>rnal Data</b> Database Tools Help	ho Tell me what you want to do	
Average Action A	ager Saved Dataverse Excel Text Exports Exc	PDF Email Word Merge or XPS Email More ~	、
All Access Objects	From <u>File</u> >		
	From <u>D</u> atabase	HTML Document	
	From <u>O</u> nline Services >	K∰L File	
	From O <u>t</u> her Sources	Text File	
Ready			Num Lock



Make a table that it is connected to Microsoft Excel. Every change that you make to Microsoft Excel will be applied to Microsoft Access but not vice versa.



Field Name:	Student ID	Data Type:	Double		~			
Indexed:	Yes (Duplic	ates OK)	nport field ( <u>s</u>	kip)				
Student ID	Name	Address	City	Postal	Code	Telephone	number	Class No
L 2 3 4 5	Marco Lisa Kim Tom Alex Stella	<ul> <li>44 woodrow way</li> <li>36 Cambridge Court</li> <li>22 Alfred Drive</li> <li>36 Cambridge Court</li> <li>202 Newport Lane</li> <li>2048 Central Avenue</li> </ul>	Dallas Dallas London Dallas London	12345 12346 12347 12346 12348 12348		212500432 212500202 212500441 212500202 212500516 212500123		2 2 3 3



### 🏹 Smart Tip

Most of the time, the only thing you have to do when a wizard pops up is to click "Next" until you finish all the steps. Although it's fully automated, check at each screen to make sure that the preselected options are the ones you want.

62

#### To import data from a CSV text file:

- > Open Microsoft Access and create a new blank database.
- > On the External Data tab, in the Import & Link group, click New Data Source. 1
- > In the menu that opens, click From File and click Text File. 2
- In the Get External Data Text File window, click Browse, 3 to select the text file you want to import, and click OK. 4
- > Click Next. 5
- In the next window, make sure First Row Contains Field Names is checked, 6 if you have a header row in the CSV file you are importing, and then click Next. 7
- > The remaining steps are exactly the same as in the previous example when you imported data from a **Microsoft Excel** file.

Find Cettor Database Tools   Find Batabase Tools							
Sector      Cet External Data - Text File Second Cet External Data - Text File Second Cet External Data - Text File Cet External Data - Text File Second Second Cet External Data - Text File Second Cet External Data - Text File Second Second Second Cet External Data - Text File Second Second Second Second Second Second Second Second Text Rise 2 Second Secon	File Home	e Create I	External Data Database To	ools Help 🔎 Tell me	what you want to do		
All Access Objects Search.  Prom Bile Bile Bile Bile Bile Bile Bile Bile	New Data Source ~	nport & Link	Aanager Exports	e Excel Text PDF Email File or XPS	<ul> <li>▲ Access</li> <li>▲ Word Merge</li> <li>▲ More ×</li> </ul>		
Search. Search. From Database From Database From Database From Database From Database From Database From Data Searcies From Data Searcies	All Access	Objects	From File >	Excel			
From Database   From Options Services Toxt File Toxt File Toxt File Toxt File Toxt File Select the source and destination of the data Select the source of the definition of the objects. Select the source of the definition of the objects. Bile name: CutSensylocaladmin/Documents/Students.bt Specify how and where you want to store the data in the current database. Ke will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object. Specify how and where you want to store the data in the current database. Ke will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object. Specify how and where you want to store the data in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the current database. If the source data into a new table in the source data will not be reflected in the database. If the source data into a new table in the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.	Search						
Select the source and destination of the data     Select the source data in the cur			From <u>D</u> atabase >	HTML Document			
Image: row Other Source:			From <u>O</u> nline Services >	XML File			
Get External Data - Text File       ? ×         Select the source and destination of the data       ? ×         Select the source of the definition of the objects.       3         Elle name:       C\Users\Cocledmin/Documents\Students.tst       3         Specify how and where you want to store the data in the current database.       Browse.         Specify how and where you want to store the data in the current database.       Browse.         Specify the source data into a new table in the current database.       Cubers of the specified table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.         Sarech for "Import" in Microsoft Access Help for more information.       If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.         In the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.         In the to the data source by creating a linked table.         Cocess will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.			From O <u>t</u> her Sources	Iext File 2			
Get External Data - Text File       ?       X         Select the source and destination of the data.       Specify the source of the definition of the objects.       3         Elle name:       CUBersNocaladminiDocuments\Students.txt       Browse.         Specify how and where you want to store the data in the current database.       Browse.         We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.       Sectified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.         If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.         If the specified table does not exist, Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.							
Select the source and destination of the data         Specify the source of the definition of the objects.         Elie name:       CtUsers\localadmin\Documents\Students.txt         Specify how and where you want to store the data in the current database.         We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.         Search for "Import" in Microsoft Access Help for more information.         If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.         If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.         Import the data source by creating a linked table.         Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.		Get External [	Data - Text File			? ×	
Specify the source of the definition of the objects.     Elle name:     C:\Users\\ocaladmin\Documents\Students.txt   Specify how and where you want to store the data in the current database.   We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.   Specify for 'Import' in Microsoft Access Help for more information.   If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the importe data. Changes made to the source data will not be reflected in the database.   If the to the data source by creating a linked table.   Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.		Select_tl	he source and destinatio	in of the data			
Elle name:       C\Users\localadmin\Documents\Students.txt         Specify how and where you want to store the data in the current database.         We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.         Search for "Import" in Microsoft Access Help for more information.         If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.         In the the data source by creating a linked table.         Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.		Specify the	e source of the definition of the ol	bjects.		3	
Specify how and where you want to store the data in the current database. We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object. Search for "Import" in Microsoft Access Help for more information. Infunct the source data into a new table in the current database. If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database. Link to the data source by creating a linked table. Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.		<u>F</u> ile n	name: C:\Users\localadmin\Docun	nents\Students.txt		Browse	
<ul> <li>Specify how and where you want to store the data in the current database.</li> <li>We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.</li> <li>Search for "Import" in Microsoft Access Help for more information.</li> <li>Import the source data into a new table in the current database.</li> <li>If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.</li> <li>Link to the data source by creating a linked table.</li> <li>Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.</li> </ul>							
Specify how and where you want to store the data in the current database. We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object. Search for "Import" in Microsoft Access Help for more information. Import the source data into a new table in the current database. If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database. Link to the data source by creating a linked table. Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.							
Specify how and where you want to store the data in the current database. We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object. Search for "Import" in Microsoft Access Help for more information.  Import the source data into a new table in the current database. If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.  Link to the data source by creating a linked table. Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.							
<ul> <li>Specify now and where you want to store the data in the database.</li> <li>We will not import table relationships, calculated columns, validation rules, default values, and columns of certain legacy data types such as OLE Object.</li> <li>Search for "Import" in Microsoft Access Help for more information.</li> <li>Import the source data into a new table in the current database.</li> <li>If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.</li> <li>Link to the data source by creating a linked table.</li> <li>Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.</li> </ul>		Specify bo	w and where you want to store th	e data in the current database			
<ul> <li>Search for "Import" in Microsoft Access Help for more information.</li> <li>Import the source data into a new table in the current database. If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.</li> <li>Link to the data source by creating a linked table. Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.</li> </ul>		We will no Object.	ot import table relationships, calcu	lated columns, validation rules, def	ault values, and columns of certain legacy data	a types such as OLE	
<ul> <li>Import the source data into a new table in the current database. If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.</li> <li>Link to the data source by creating a linked table. Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.</li> </ul>		Search for	"Import" in Microsoft Access Help	o for more information.			
If the specified table does not exist, Access will create it. If the specified table already exists, Access might overwrite its contents with the imported data. Changes made to the source data will not be reflected in the database.   Link to the data source by creating a linked table.  Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.		O <u>i</u> n	mport the source data into a new	w table in the current database.			
<ul> <li>Link to the data source by creating a linked table.</li> <li>Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.</li> </ul>		lf ir	f the specified table does not exis mported data. Changes made to t	t, Access will create it. If the specifie he source data will not be reflected	d table already exists, Access might overwrite in the database.	its contents with the	
Access will create a table that will maintain a link to the source data. You cannot change or delete data that is linked to a text file. However, you can add new records.		0 <u>L</u> i	ink to the data source by creatir	ıg a linked table.			
		A	Access will create a table that will you can add new records.	maintain a link to the source data. Y	You cannot change or delete data that is linked	d to a text file. However,	
OK Cancel					ОК	Cancel	

## For Review Purposes Only

Ð

(ŝ)

<u></u>

헤



	Students X									
	Student ID 👻	Name 👻	Address 👻	City 👻	Postal Code 👻	Telephone number 👻	Class No 🔫			
	1	Marco	44 Woodrow Way	Dallas	12345	212500432	2			
	2	Lisa	36 Cambridge Court	Dallas	12346	212500202	1			
	3	Kim	22 Alfred Drive	London	12347	212500441	2			
	4	Tom	36 Cambridge Court	Dallas	12346	212500202	3			
	5	Alex	202 Newport Lane	London	12348	212500516	3			
	e	Stella	2048 Central Avenue	London	12349	212500123	3			
str.										

To import database objects like tables, queries, forms, and reports from another Microsoft Access database file:

- > Open Microsoft Access and create a new blank database.
- > On the External Data tab, in the Import & Link group, click New Data Source. 1
- > In the menu that opens, click From Database option and click Access. 2
- In the Get External Data Access Database window, click Browse, 3 to select the Microsoft Access database file from which you want to import objects, e.g., "Database.accdb."
- > Click **OK**. **4**
- In the Import Objects window, select the objects you want to import, e.g., the Courses and Students tables, 5 and then click OK. 6
- > Click **Close**, **7** and your objects will be waiting for you in the **Navigation** pane.







All Access Objects	<	<b>Students</b>	×	Course	s >	<			•	×
		Student ID	*	Name -		Address -	City -	Postal Code -	Telephone number -	Class No -
Search	 2		1	Marco	44	Woodrow Way	Dallas	12345	212500432	2
Tables	^		2	Lisa	36	Cambridge Court	Dallas	12346	212500202	1
Courses			3	Kim	22	Alfred Drive	London	12347	212500441	2
	_		4	Tom	36	Cambridge Court	Dallas	12346	212500202	3
Students			5	Alex	202	2 Newport Lane	London	12348	212500516	3
			6	Stella	204	18 Central Avenue	London	12349	212500123	3
		* (Ne	ew)							

For Review Purposes Only

<del>(</del>\$7

ᢓᡀᡄ

নি





- 2. Read the questions and put a check mark for the correct answer.
  - 1. What does selecting "Delimited" during export mean?



b. Data is separated by characters like commas or tabs.



- c. Data is grouped by rows.
- d. Data is exported without separators.
- 2. When exporting data to Microsoft Excel, which feature ensures you save time in future operations?
  - a. Select "Include Formatting."
    - b. Save Export Steps.
    - c. Use the "Navigation Pane."
    - d. Export only selected records.

3. What should you do when importing data from a CSV file into Microsoft Access?	
a. Choose "Link Table" for automatic synchronization.	
b. Select "Delimited" and ensure the first row has field names.	
c. Use the "File Properties" option to edit the table structure.	
d. Ensure that "Primary Key" is unchecked.	
4. Which field is typically used as a "Primary Key" when importing data into Microsoft Access?	
a. A field with unique values for each record	
b. A field with multiple duplicates	
c. A field with all text values	
d. A field left blank in the source data	
5. How do you ensure data formatting is preserved when exporting to Microsoft Excel?	
a. Select "Open File after Export."	
b. Choose "Export Data with Formatting and Layout."	
c. Save the export as a text file instead.	
d. Click "New Data Source" and export.	
3. Complete with the missing word.	
1. To export a table from Microsoft Access to a spreadsheet, choose	
as the format.	
2. A file uses characters like commas to separate data.	
3. When importing data, always define a to ensure unique	
identification for each record.	
4. Use to repeat export operations with the same settings.	
5. When you data, ensure the first row contains field names to	
maintain consistency.	

## For Review Purposes Only

Ð

<del>(</del>\$<del>)</del>

ॾ

<u>ک</u>

4. Why is it important to export data to formats like Excel or CSV when sharing information with others? How does exporting data in these formats make it more efficient for teams to analyze and collaborate?



5. Export the report in the default folder to a Microsoft Excel file named "Books.xlsx."

- 1. Open the database you created in the previous lesson and the report "BooksReport."
- 2. Ensure:
  - Data formatting and layout are preserved.
  - The file automatically opens after the export.
- 3. Export the "Books" table as a CSV file:
  - Name the file "BooksExport.csv."
  - Ensure field names and data formatting are preserved.
- 4. Save and close the database.



### **Plan an Event Database**

Create a database in Microsoft Access to track event details. This database will track event details, attendees, and tasks.

#### **1.** Create three tables.

.....

- The "Events" table will include information about the events being organized.
- The "Attendees" table will store details about the people attending the events.
- The "Tasks" table will track the tasks associated with each event, including deadlines and statuses.
- You can use the following fields in your tables:

Events ×			Attendees X			Tasks X		
	Field Name	Data Type		Field Name	Data Type	_	Field Name	Data Type
Ũ	EventID	AutoNumber	ţ.	AttendeeID	AutoNumber	Ŭ.	TaskID	AutoNumber
	EventName	Short Text		Name	Short Text		Description	Short Text
	Date	Date/Time		Email	Short Text		Deadline	Date/Time
	Location	Short Text		Phone number	Short Text		Status	Short Text
	Organizer	Short Text		EventID	Number		EventID	Number

- Don't forget to set "Primary Keys" for your tables.
- After you create the tables above, connect them using relationships. Each event can have multiple attendees and tasks, as illustrated in the relationship diagram below.



## For Review Purposes Only

Ð

<del>(</del>\$7

<u></u>

퇴

#### **2.** Use the Form Wizard to create one data entry form for each table. Use the forms to input sample data into your database.

- For the "Attendees" table, use your classmates' personal details.
- For the "Events" table, add sample events, such as "Science Fair" or "Cultural Fest."
- For the "Tasks" table, list tasks like "Decorations" or "Prepare Invites", including deadlines and statuses such as "In Progress" or "Completed."

#### **3.** Create a report using the Report Wizard.

- Use the fields EventID, EventName, Name, Email, Description, and Deadline from the available tables.
- Group the report by EventID.
- Sort the report by EventName in ascending order and set the Layout to Outline and the Orientation to Landscape.
- Name the report "EventsReport."

#### **4.** Create and run the following queries.

- Find all attendees for a specific event based on "EventName" input.
- Display all tasks that are marked as "In Progress" and their deadlines.

#### **5.** Export and import data.

- Export the "Tasks" table to a Microsoft Excel file named "TasksList.xlsx." Ensure data formatting and layout are preserved.
- Modify the Microsoft Excel file by adding a new column named "AssignedTo" and fill it with team member names.
- Import the modified Microsoft Excel file back into Microsoft Access as a new table named "UpdatedTasks."
- Ensure the First Row Contains Field Names option is selected during the import process.
- Save and close the database.



1. What did you learn about organizing data in a database that you didn't know before?

2. How did creating relationships between tables help you understand the connection between different types of data?

3. What was the most challenging part of designing and managing the database for the project? How did you overcome this challenge?

4. How did your team collaborate to input data and create forms and reports? Was everyone able to contribute effectively?

## For Review Purposes Only

<del>(</del>\$7

्री

নি

# Discover more

### HanDBase for iOS

With HanDBase you can track almost anything on an iPhone or iPad. Here, you can have a shopping list, music and DVD collections, project organizers, sports schedules, or that list of passwords you keep handy in the desk drawer.

Carrier 🗢			1:56 AM	100%		
	Databases	Cancel =	Edit Record	Save		
$\sim$ AII						
Checkb	book v3	Category	Music	No Value 🗸		
Custom	ner List	Product Info	Carrier ♥ Databases	Back	146 AM Report	100%
Monthly	y Budget	Item		Results for: Categ	ory	
Movie Passwo Sell on Time Bi Time Bi	JukeBox ord Keeper eBay orig illing illing Detail	Product Image	Checkbook v3 Customer List EZShop Monthly Budget	Categor	y (25 entries)	
> Busine	ess	Price Paid	Movie JukeBox Password Keeper			
✓ Finance	cial	High Bid	Time Billing	Kids		3
Monthly Person	y Budget	Sold	Time Billing Detail	···· Insurance		
Checkt	book v3	Shipping	> Business	Home		e
EZShop	þ	Ship Date	✓ Financial			
Passwo	ord Keeper	Profit	Monthly Budget	Utilities		
+	0 0 5	à   🗹	└─ Personal	Field		1
			Checkbook v3 EZShop	Geterlatement		2
			+ ① ③	SM	Choose Items (61	1/61) 🔿

### Memento for Google Android

Use Memento to gather all the information about DVD collection or books. Categorize your database by Director or Author and extract any information that you want. Find out how many books you have by a certain author or how many movies with your favorite actor.



### **Obvibase and Caspio**

If you want to keep everything organized and readily accessible, you can use online database creators like Obvibase and Caspio. Now you can access your data from any web browser, and your data is secure and manageable.






## Take a moment to reflect on your progress.

## How confident are you in your ability to apply the following skills?

- > I can explain what structured information is and describe its importance.
- > I can create a database, add tables, and input data in Microsoft Access.
- > I can describe different data types and their uses in a database.
- > I can create and customize data entry forms using the Form Wizard.
- > I can create and run queries to retrieve specific data and use parameter queries.
- > I can create, customize, and save reports, including adding fields and calculations.
- > I can export data from a database to Microsoft Excel and CSV files.
- > I can import data from Microsoft Excel and CSV files into a database.

Key Terms		
criteria	field property	query
database	group	relationship
data source	import	report
data type	label	structured information
export	parameter	
field	primary key	

## For Review Purposes Only