

Application of Information & Communication Technologies

Lecture-13

Recap of Lecture 12

- ◆ Other OS
- ◆ Utility Software
 - “Programs that help manage, maintain, and control computer resources.”

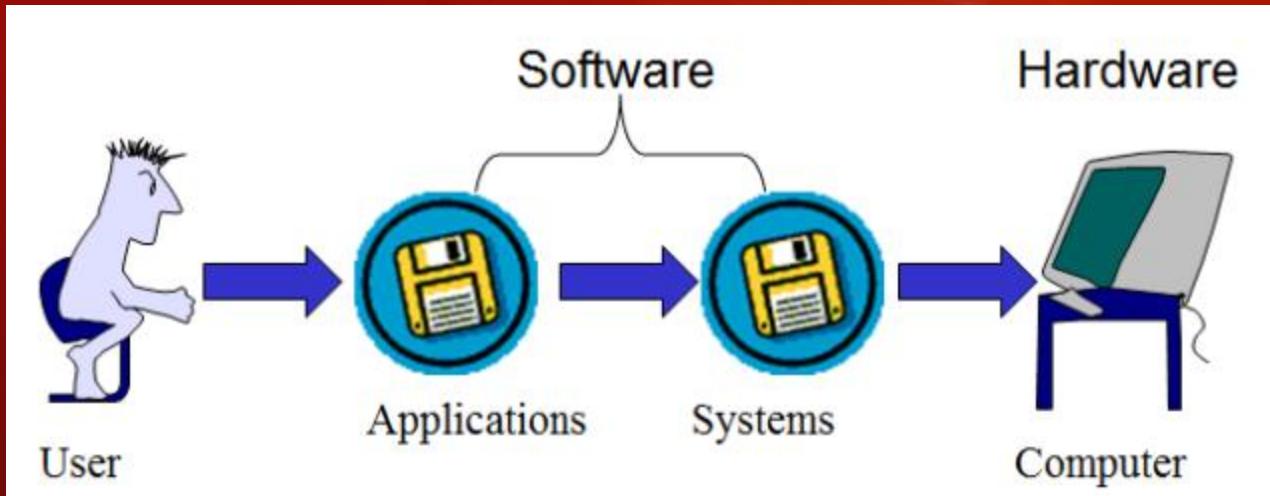
Overview of Lecture 13

- ◆ Application Software
 - Programs made for the user to perform tasks
- ◆ General Characteristics
- ◆ Major Types
- ◆ Word Processing
- ◆ Spreadsheet
- ◆ Database Software



What is Application Software?

- ◆ Programs made for users (not for running the computer itself).
- ◆ Helps us do **specific** tasks:
 - Writing documents
 - Browsing internet
 - Watching videos
- ◆ Runs on **top of system software** (OS).



What is Application Software?



General Characteristics

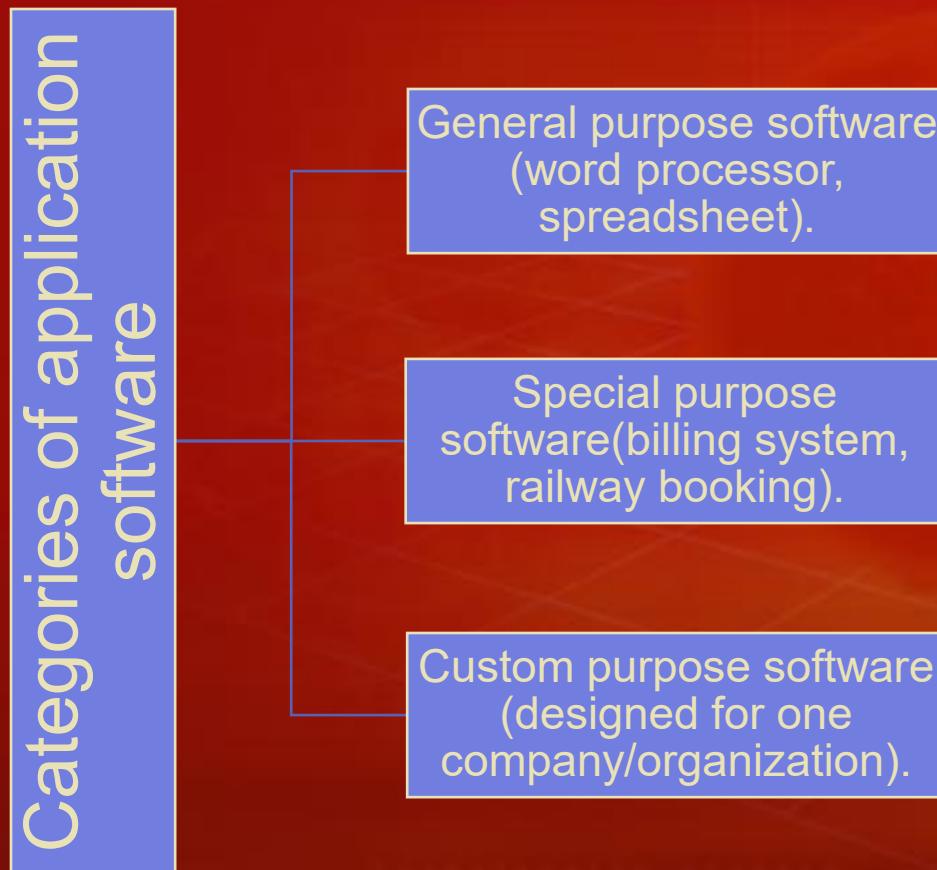
- ◆ User-oriented (solves user problems).
- ◆ Easy-to-use interface (GUI-based).
- ◆ Task-specific (e.g., word editing, calculations).
- ◆ Requires system software to run.
- ◆ Updated frequently with new features.



Examples of Application Software

Example	APPs
Office tools	Word, Excel, PowerPoint
Multimedia apps	Photoshop, VLC Player
Internet tools	Browsers, Zoom, Teams
Mobile apps	WhatsApp, TikTok

Categories of Application Software



General-Purpose Software

- ◆ Used by everyone.
- ◆ Common tasks: typing, calculation, presentations.
- ◆ Examples:
 - Word processors
 - Spreadsheet software
 - Browsers

Special-Purpose Software

- ◆ Made for specific tasks.
- ◆ Not used by all users.
- ◆ Examples:
 - Hotel management system
 - Hospital patient system
 - Library software

Custom Software

- ◆ Developed for a particular organization.
- ◆ Tailored to their requirements.
- ◆ Examples:
 - Airline reservation systems
 - University student portal
 - ERP software for a company

Packaged vs Custom Software

Feature	Packaged Software	Custom Software
Made for	General public	One client
Cost	Cheaper	Expensive
Example	MS Office	University ERP

Software Ownership Rights

- ◆ Specify how a program can be used.
- ◆ Software License:
 - Legal right to use the program.
 - Defines conditions for buyer's use.

Open Source Software

- ◆ Source code available to public.
- ◆ Growing use in industry.
- ◆ Typically cheaper, more stable, and secure.
- ◆ Examples:
 - Linux, LibreOffice, MySQL, GIMP.



The GNU Image Manipulation Program (GIMP).

Courtesy GIMP

The Basics of Application Software

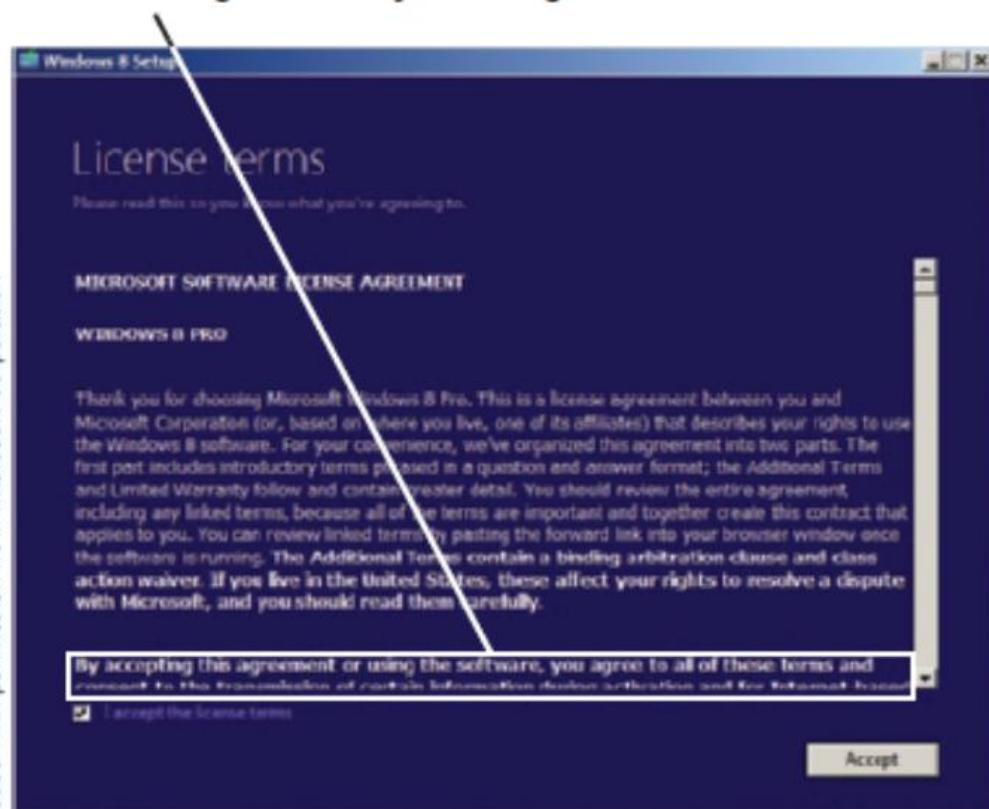
- ◆ **Commercial Software**
 - Copyrighted software developed and sold for profit
 - Typically comes with a single-user license
- ◆ **Shareware**
 - Copyrighted software distributed on the honor system
 - Consumers should either pay for it or uninstall it after the trial period
- ◆ **Freeware**
 - Copyrighted software programs that are given away by the author for others to use free of charge
- ◆ **Public Domain Software**
 - Software that is not copyrighted and ownership rights have been donated to the public domain

The Basics of Application Software

TYPE OF SOFTWARE	EXAMPLES
Commercial software	Microsoft Office (office suite) Norton AntiVirus (antivirus program) Adobe Photoshop (image editing program) Minecraft - Pocket Edition (game)
Shareware	WinZip (file compression program) Video Edit Magic (video editing program) Image Shrinker (image optimizer) Deluxe Ski Jump 3 (game)
Freeware	Chrome (Web browser) LibreOffice (office suite) QuickTime Player (media player) Evernote (notetaking/archiving software)
Public domain software	Lynx (text-based Web browser) Quake 3 (game)

The Basics of Application Software

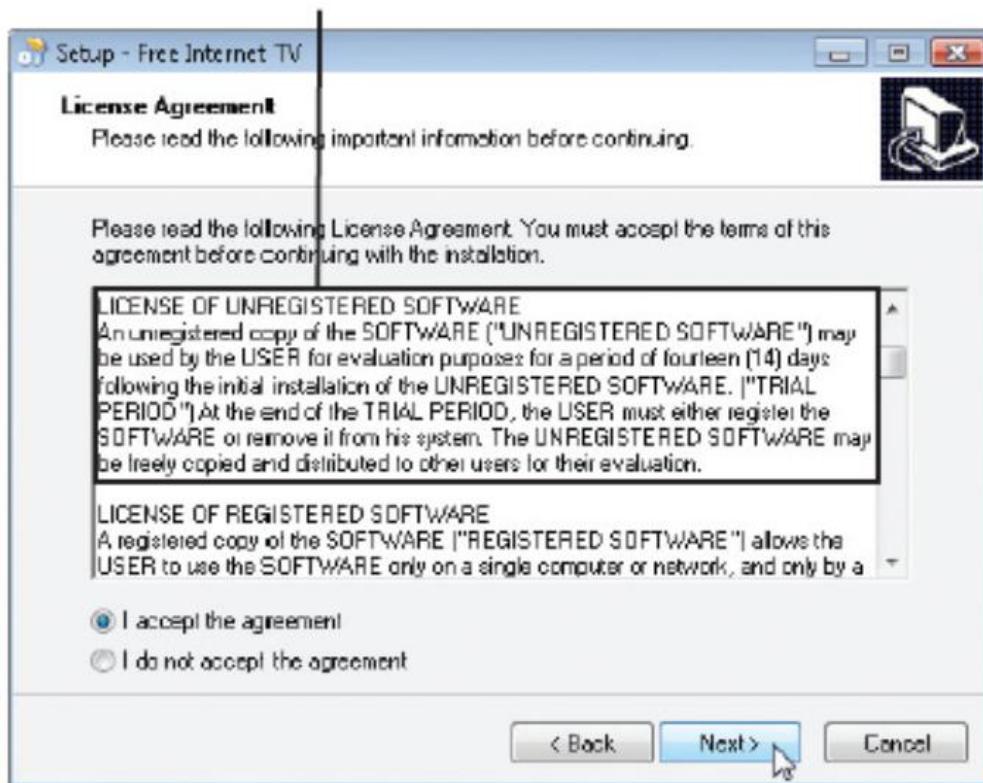
This statement explains that you are accepting the terms of the license agreement by installing the software.



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The Basics of Application Software

This statement explains that the program can be tried for 14 days and then it needs to be either registered or uninstalled.



Courtesy Holesssoft

SHAREWARE PROGRAM

Freeware vs Shareware vs Open Source

- ◆ **Freeware:**
 - Free forever (**VLC Player**).
- ◆ **Shareware:**
 - Free trial, then paid (**WinRAR**).
- ◆ **Open Source:**
 - Free + code available (**LibreOffice**, **Linux apps**).

Productivity vs Entertainment Apps & Pros/Cons of Application Software

Category	Examples	Purpose
Productivity Apps	Word, Excel, Zoom	Help in work, study, communication
Entertainment Apps	VLC, Spotify, Netflix	Provide fun, media, music, relaxation

Advantages ✓

- Makes tasks easier
- Saves time and effort
- Improves productivity
- Easy to learn and use

Limitations ✗

- Need more system resources
 - (RAM, CPU)
- Can be expensive
- May require frequent updates
- Some apps depend on internet

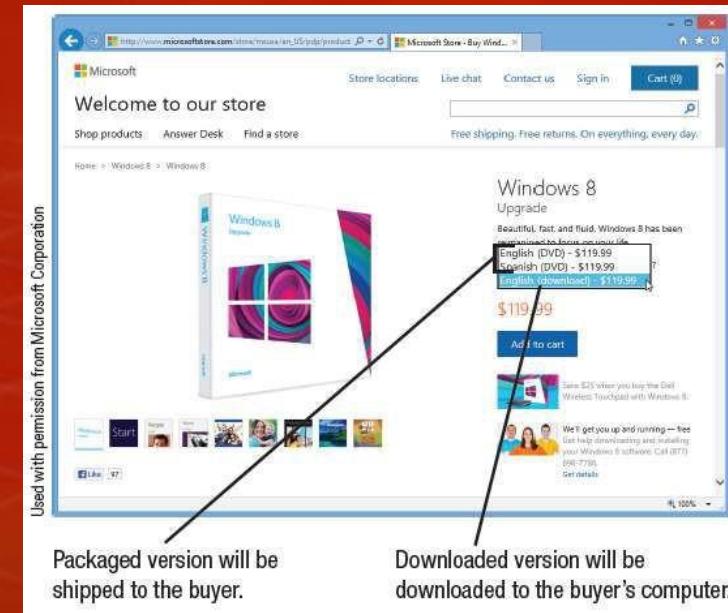
Desktop vs. Mobile Software

- Personal computers use desktop software
- Smartphones and other mobile devices typically require mobile software called apps
 - Specifically designed for a specific type of device
 - Wide range of software available via app stores (Google Play, Apple App Store, etc.)



Installed vs Cloud-Based Apps

- ◆ **Installed Apps:**
 - Download & install (Word, Photoshop).
- ◆ **Cloud Apps:**
 - Work in browser (Google Docs).
 - Software as a Service (SaaS)
 - Includes free & fee-based apps
- ◆ **Advantages of cloud software**
 - accessible anywhere, anytime.
 - Ease of implementation
 - Improved collaboration capabilities
 - Always working with the most current version of software



Advantage & disadvantages of Cloud-Based Apps

- Potential disadvantages of cloud software
 - Online applications tend to run more slowly
 - Have file size limits
 - Cost may eventually exceed the cost of purchasing a similar installed version of the software



FIGURE 6-7

Cloud software is commonly used with both computers and mobile devices.

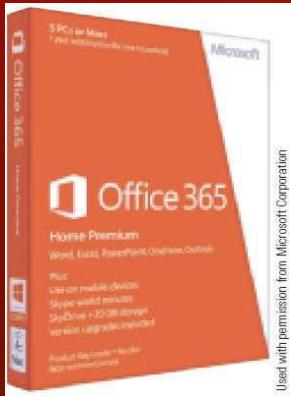
Software Suites

- ◆ Collection of software programs bundled together and sold as a single software package
- ◆ Office suites are used by most businesses/individuals to produce documents and typically include:
 - Word processing software
 - Spreadsheet software
 - Database software
 - Presentation graphics-software
- ◆ Provide a common interface among programs in the suite

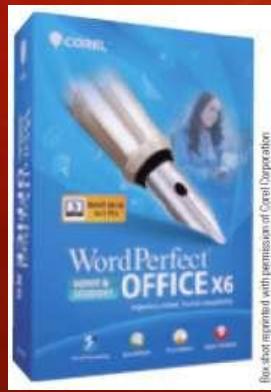
Software Suites

- ◆ Office is 2019 (traditional installed)
- ◆ Office 365 (subscription)
 - Office on Demand
 - Read mode

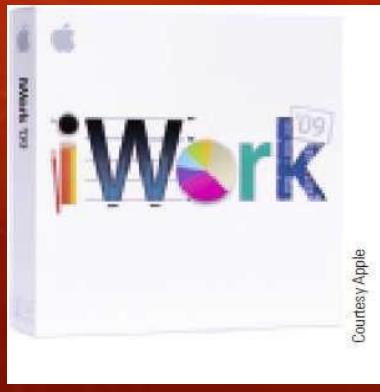
FIGURE 6-8
Office suites. Three of the most common commercial office suites are Microsoft Office, Corel WordPerfect Office, and Apple iWork.



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Used with permission from Corel Corporation



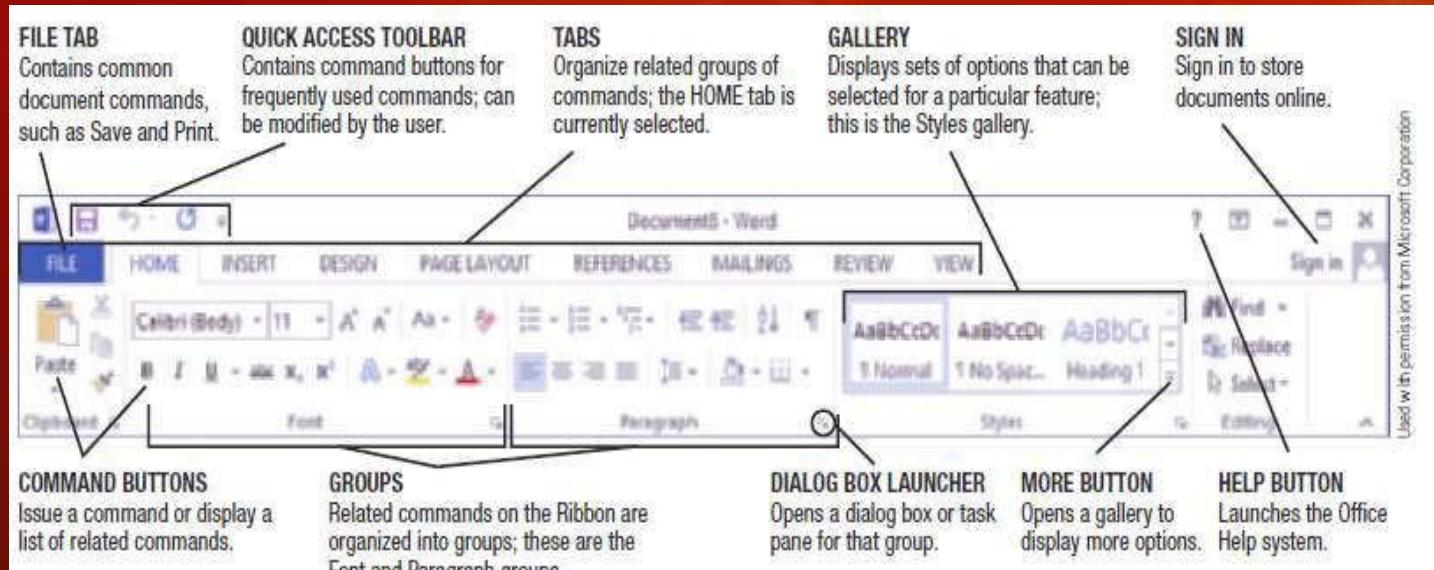
Courtesy Apple

Word Processing Software

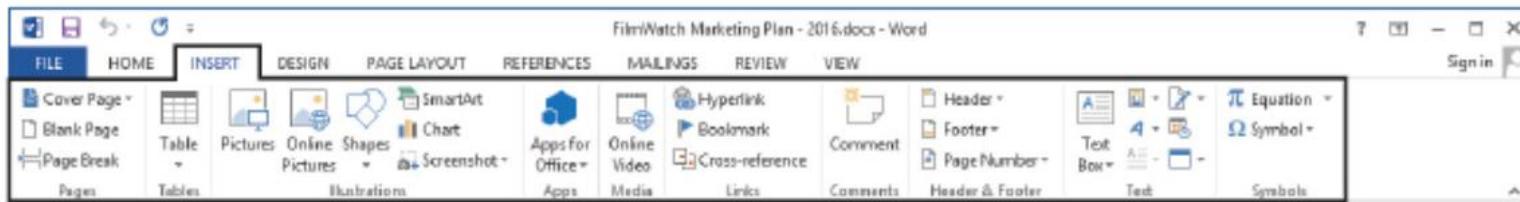
- ◆ Allows users to easily create and edit complex text-based documents that can also include images and other content.
- ◆ Features:
 - Spell/Grammar check
 - Formatting (fonts, styles, tables) Mail merge
 - Insert images/graphics
- ◆ Examples:
 - MS Word, Google Docs, LibreOffice Writer

MS Word Software

- ◆ Ribbon used in Microsoft word and later
 - Commands are organized into groups located on tabs
 - Contextual tabs appear on the Ribbon as needed and contain special commands
- ◆ Editing a Document : Changing the content of the document, such as inserting or deleting words



MS Word Software



INSERT TAB
Used to insert a table, picture, shape, or other object into the document.

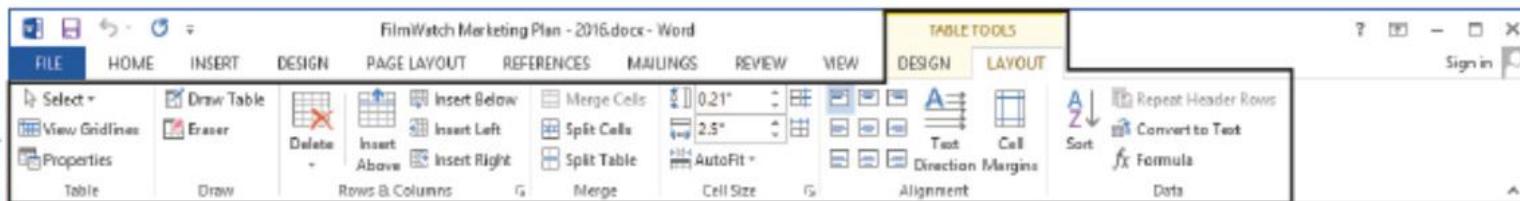
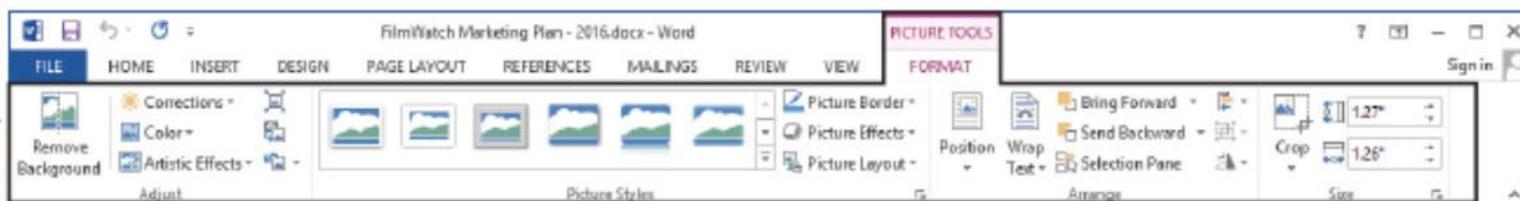


TABLE TOOLS CONTEXTUAL TABS
Used to change the design or layout of a table; available only when a table is selected.



PICTURE TOOLS CONTEXTUAL TAB
Used to format a picture object, such as to crop it or change its size, color, or border; available only when an image is selected.

Common Software Commands

COMMAND	COMMAND BUTTON	KEYBOARD SHORTCUT	DESCRIPTION
Open		Ctrl+O	Opens a dialog box so you can choose a saved document to open from a storage medium so it can be edited or printed.
Save		Ctrl+S	Saves the current version of the document to a storage medium.
Print		Ctrl+P	Prints the current version of the document onto paper.
Cut		Ctrl+X	Moves the selected item to the Clipboard.
Copy		Ctrl+C	Copies the selected item to the Clipboard.
Paste		Ctrl+V	Pastes the last item copied or cut to the Clipboard to the current location.
Undo		Ctrl+Z	Undoes the last change to the document.
Close		Alt+F4	Closes the document. Any changes made to the document are lost if the document wasn't saved first.

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FIGURE 6-9

Common application software commands.

Spreadsheet Software

- ◆ Used for calculations and data analysis.
- ◆ Features:
 - Rows & columns for data
 - Formulas and functions (SUM, IF, AVERAGE)
 - Graphs & charts
 - Sorting & filtering
- ◆ Examples:
 - MS Excel, Google Sheets

Spreadsheet Software

Used with permission from Microsoft Corporation

The screenshot shows a Microsoft Excel spreadsheet titled "Profit Statement Re Profit Q1 2016 - Excel". The spreadsheet contains data for January, February, and March, with columns for Sales, Expenses, and Profit. A pie chart titled "Total Expenses Q1 2016" is inserted into the worksheet, showing the distribution of expenses across Payroll, Materials, and Rent. The ribbon at the top is selected to the HOME tab. The formula bar shows the formula \$B\$8+\$C\$8+\$D\$8. The name box indicates the active cell is E8. The columns are labeled A through K, and rows are labeled 1 through 20. The active cell is E8, and the range D8:E9 is selected. The worksheet tabs at the bottom include Profit Q1 2016, Sheet2, and Sheet3.

NAME BOX
Identifies the active cell, which is the location of the cell pointer.

COLUMNS
Run vertically and are identified by letters.

FORMULA BAR
Lists the contents of the active cell, in this case the formula entered into cell E8.

RIBBON
Contains tabs of commands grouped by function; the HOME tab is selected.

NUMBER FORMATS
Used to specify the appearance of the numbers on a worksheet.

ACTIVE CELL/RANGE
Identifies the active cell or range; in this case the active cell is E8, and the range D8:E9 is selected.

WORKSHEET AREA
Contains the worksheet itself.

GRAPHS
Are typically based on worksheet data and can be inserted into the worksheet area.

WORKSHEET TABS
Identify the different worksheets saved in a single spreadsheet (workbook) file.

CELL FORMATTING
Can be applied to cells (this cell is shaded blue with a double bottom border) and to cell content (such as currency with two decimal places).

QUICK ANALYSIS TOOL
Allows you to quickly and easily analyze data using tools such as color-coding and graphs.

Spreadsheet Software

- ◆ Creating a Spreadsheet
 - Worksheet: a single spreadsheet
 - Workbook: a collection of worksheets saved in a single file
 - Worksheets are divided into rows and columns
 - Cell
 - The intersection of a row and a column
 - Each cell is identified by a cell address, such as A1
 - Cell pointer is used to select a cell
 - Cell pointer can be used to select more than one cell (range or block)

Spreadsheet Software

- ◆ Absolute vs. Relative Cell Referencing
- ◆ Relative cell references
 - Cell addresses are adjusted as the formula is copied
- ◆ Absolute cell references
 - Formulas are copied exactly as they are written
 - Appropriate when you want to use a specific cell address in all copies of the formula
 - Use \$ to make cell references absolute: \$B\$6

Spreadsheet Software

- Absolute vs. Relative Cell Referencing

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COPYING WITH RELATIVE CELL REFERENCES

In most formulas, cell addresses are relative and will be adjusted as the formula is copied.

	A	B	C	D	E
1	Cones	Sundaes	Total		
2	April	600	200	800	
3	May	800	500	1300	
4	June	1500	600	2100	
5	Total			4200	
6					

Formula in cell D2.
Results when the formula in cell D2 is copied to cells D3 and D4.
Formula in cell D4 is =B4+C4.

COPYING WITH ABSOLUTE CELL REFERENCES

A dollar sign (\$) marks a cell reference as absolute; it will be copied exactly as it appears in the source cell.

	A	B	C	D	E
1	Cones	Sundaes	Total		
2	April	600	200	800	
3	May	800	500	800	
4	June	1500	600	800	
5	Total			2400	
6					

Formula in cell D2.
Results when the formula in cell D2 is copied to cells D3 and D4.

IMPROPER USE

	A	B	C	D	E
1	Cones	Sundaes	Total	Percent	
2	April	600	200	800	19.05%
3	May	800	500	1300	30.95%
4	June	1500	600	2100	50.00%
5	Total			4200	100.00%
6					

Formula in cell E2.
Results when the formula in cell E2 is copied to cells E3 and E4.

PROPER USE

	A	B	C	D	E
1	Cones	Sundaes	Total	Percent	
2	April	600	200	800	19.05%
3	May	800	500	1300	30.95%
4	June	1500	600	2100	50.00%
5	Total			4200	100.00%
6					

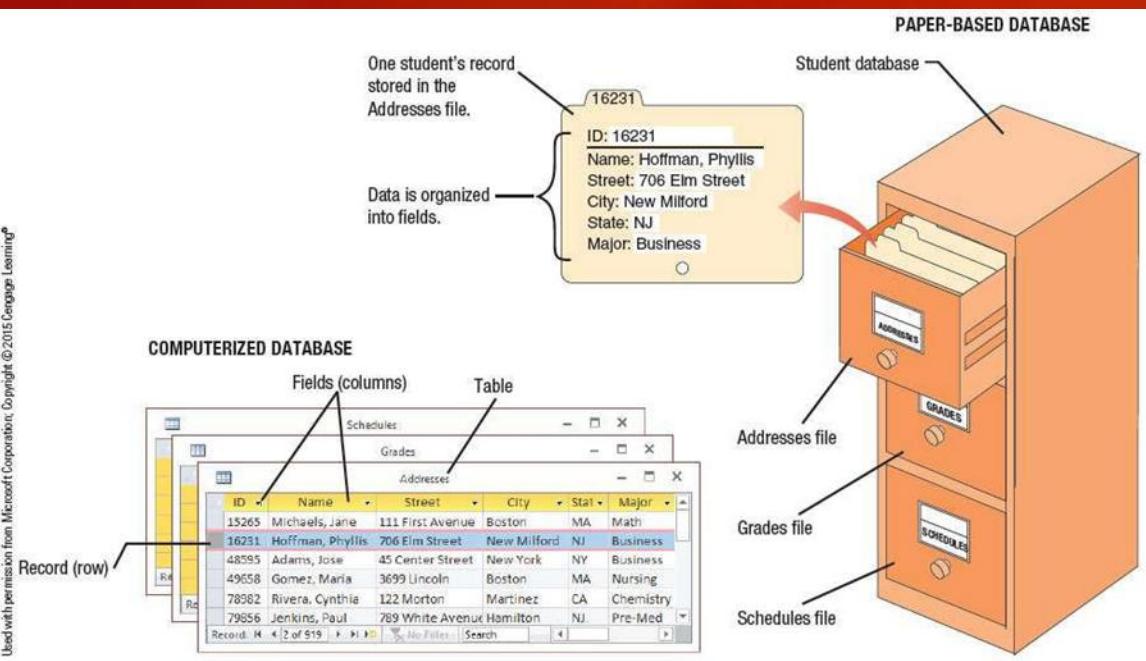
Formula in cell E4.
Formula in cell E4 is =D4/\$D\$5.

Database Software

- ◆ Used to store and manage data.
- ◆ Features:
 - Tables, queries, reports, forms
 - Searching & filtering
 - Multi-user access
- ◆ Examples:
 - MS Access, MySQL, Oracle

Database Software

FIGURE 6-19
Paper-based vs. computerized databases. Data is organized into fields (columns), records (rows), and tables.



Database Software

- ◆ Data in a database is organized into fields (columns), records (rows), and tables
 - Field (column)
 - A single type of data to be stored in a database
 - Record (row)
 - A collection of related fields
 - Table
 - A collection of related records
 - Database file
 - Collection of related tables

Database Software

- ◆ Creating a Database
 - Database file is created first
 - Contains objects, such as tables, forms, and queries
 - Tables can then be created
 - Typically, the table structure is specified first
 - Table structure includes:
 - Field name (unique identifying name)
 - Data type (text, number, date, object)
 - Field size (maximum number of characters)
 - Default value (initial content of the field)
 - The table is named and saved
 - Tables can be created in either Datasheet or Design view

Database Software

- Data can be displayed using a form or Datasheet view
- Data can be edited

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FIGURE 6-22
Table data can be modified using a form or the Datasheet view.

The figure shows two views of a database table: a form and a datasheet. The top part shows a 'Product' form with fields for Product Name (Wax), Product Number (A351), Supplier (Candle Industries), Price (\$3.00), and Number In Stock (7). The bottom part shows a 'Product' datasheet with multiple records. A callout points to the form with the text 'FORM Displays one record at a time.' Another callout points to the datasheet with the text 'DATASHEET VIEW Displays multiple records at a time.' A third callout points to the left of the table with the text 'Click to the left of a form or table record to select that record.' A fourth callout points to the record navigation buttons with the text 'Click the Record buttons to display other records.' A fifth callout points to a field in the datasheet with the text 'Click in a field to edit it.'

FORM
Displays one record at a time.

DATASHEET VIEW
Displays multiple records at a time.

Click to the left of a form or table record to select that record.

Click the Record buttons to display other records.

Click in a field to edit it.

Product Name	Product Number	Supplier	Price	In Stock
Skins	A202	Ellis	\$80.00	25
Boots	A211	Ajax Bros.	\$60.00	11
Poles	A220	Bent Corp.	\$25.00	59
Bindings	A240	Acme Corp.	\$15.00	55
Wax	A351	Candle Industries	\$3.00	7

Database Software

- ◆ Queries and Reports
 - Query
 - A question; a request for specific information from the database
 - Contains criteria to specify the records and fields to be included in the query results
 - Is named and saved so it can be run again at a later time

QUERY DESIGN SCREEN
This query will display only the records that meet the specified criteria each time the query is retrieved.

Only these three fields will be displayed in the query results.

Only the records in which the price is less than \$25 will be displayed in the query results.

The screenshot shows the Microsoft Access Query Design View window titled "Products Less than \$25". The "Fields" section lists "Product Name", "Product Number", and "Price". The "Criteria" section contains the condition "< 25".

QUERY RESULTS
The two records meeting the specified criteria are displayed.

The screenshot shows the Microsoft Access Query Results View window for the same query. It displays two records: "Bindings" with a price of "\$15.00" and "Wax" with a price of "\$3.00".

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FIGURE 6-23

Creating and using a database query

Comparison Table

Feature	Word Processor	Spreadsheet	Database
Purpose	Documents, letters	Numeric data, analysis	Data storage & management
Main Tool	Text editor	Rows & columns	Tables & queries
Examples	MS Word, Google Docs	MS Excel, Sheets	MS Access, MySQL

Summary

- ◆ Application software helps users perform specific tasks.
- ◆ Three types: General-purpose, special-purpose, custom.
- ◆ Productivity tools:
 - Word Processing → Documents
 - Spreadsheets → Data analysis
 - Databases → Data management

Suggested Reading

- ◆ Ch-06, The System Unit: Processing and Memory , “Understanding Computers: Today and Tomorrow, Comprehensive”, 15th Edition by Deborah Morley & Charles S. Parker
- ◆ Ch-03, Discovering Computers Fundamentals- Your Interactive Guide -- Gary B Shelly; Misty E Vermaat; Jeffrey J Q