

Accessible Document Reference Guide



Accessible Document

Welcome to making an accessible document

Digital Accessibility

Section 508 of the Rehabilitation Act requires Federal agencies to make electronic and information technology accessible to people with disabilities. Roughly 20% of the U.S. population has a disability that impacts computer and Internet use. This means more than 25 million people rely on documents being accessible. Individuals involved in the design, development, distribution, and use of documents are responsible for ensuring that those documents comply with Section 508.



Accessible Document

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Section 01 Users with Disabilities

Users with Disabilities

Types of Disabilities

Digital documents can often create barriers for people with disabilities. Many of these barriers are easy to remove with education around how people with disabilities use technology. People with disabilities are impacted by inaccessible digital documents in different ways.

Disabilities can vary person-to-person but, with digital documents, we look into four categories: Visual, auditory, motor, and cognitive and learning disabilities are the main categories.

Section 01 Users with Disabilities

People with visual disabilities

- Visual disabilities can include users that are blind, have low vision, and/or have color-blindness.
- In most cases, users who are blind use a screen reader to access electronic documents. A screen reader uses the structure of a document to present the text to the user. Images use alternative text to convey their meaning to the user.
- Users with low vision may enlarge document content so that it is more legible to them.

People with auditory disabilities

- Auditory disabilities can be a mild or moderate hearing loss in one or both ears, known as hard-of-hearing.
- Auditory disabilities can also be substantial and uncorrectable hearing loss in both ears, known as Deaf.
- Occasionally, a person with an auditory disability can hear sounds but sometimes not sufficiently enough to understand all speech, especially in the presence of excessive background noise. This includes those who use hearing aids.
- Provide captions and transcripts to all audio or multimedia content to ensure accessibility to users who are Deaf or hard-of-hearing.

Section 01

Users with Disabilities

People with motor disabilities

- Motor disabilities are also known as physical disabilities.
- These can include weakness and/or limitations of muscular control such as involuntary movements including tremors, lack of coordination, or paralysis and limitations of sensations, joint disorders, pain that impedes movements, and missing limbs.
- Some users with physical disabilities can have difficulty using a mouse. Therefore, a document should be structured to be navigable with just a keyboard.
- Some users will use a mouth stick, eye-tracking device, or a sip and puff device in place of a traditional keyboard.

People with cognitive and learning disabilities

- Users with cognitive and learning disabilities are one of the largest disability groups.
- Cognitive, learning, and neurological disabilities involve neurodiversity and neurological disorders, as well as behavioral and mental health disorders.
- These can impact how well people hear, move, see, speak, and understand information.

Section 01 Users with Disabilities

- Because users with cognitive and learning disabilities can vary widely, designing content and structure to be easy to use and understandable will help address accessibility.

Assistive Technology

- Many users' accessibility needs are met with the use of assistive technology, which includes screen readers, screen magnification, and high-contrast settings.
- Assistive technology products include a wide variety of both software and hardware.
- Assistive technology works through a standard keyboard interface and accessibility frameworks which report information about the content and structure of a document to screen readers and other assistive technologies.

Examples:

Some of the most common forms of assistive technology include:

- On-screen keyboards: these enable people to use a pointer in place of a keyboard to type text.
- Voice-recognition software: converts spoken word into typed text.
- Screen readers: converts text into spoken word or other forms of communication such as Braille.

Section 01

Users with Disabilities

- The Narrator screen reader: part of Windows that has a touch mode that can perform screen reading tasks by processing touch gestures.
- Screen adjustment programs: these can adjust the display or areas of it such as high contrast themes, dots per inch screen settings, and a magnifier tool.

Screen Readers

- Screen readers provide access to text within a document by rendering it into spoken language or a Braille output.
- The most important information that a screen reader needs in order to help users understand or navigate a document is proper document structure.
- In addition to a screen reader vocalizing what is appearing on the screen, a screen reader offers a wide range of keyboard shortcuts to navigate through the document with a greater ease.
- Screen readers can be used both on a mobile device as well as a desktop.

Braille Displays

- Users who are blind or have low vision can use Braille displays.
- Braille displays complement the standard keyboard and screen reader.
- The content of the document is transcribed into Braille.

Section 01 Users with Disabilities

Ensuring Proper Document Structure

- There are several types of structural elements built into a document that aid in navigation and organization of a digital document.
- Having structure ensures all users understand the content of the document.
- Assistive technology uses the structure of a document to allow the user to navigate using specific commands to jump to or skip through headings, lists, and bookmarks content.
- An assistive technology user relies on the keyboard to activate objects and navigate within a document. Therefore, it is important the document has both accessibility and meaningful text.
- Linked text should clearly describe the content to be found or action to be performed.
- People who use screen readers sometime scan a list of links.
- To preserve tab order and to make it easier for screen readers to read documents, use a logical heading order and built-in formatting tools.

Accessible Text

- Some users have sight limitations that make it difficult for them to read text unless it has adequate contrast against the background.
- Some users have difficulty reading text that is simply too small.

Section 02 Web Content Accessibility Guidelines

Web Content Accessibility Guidelines (WCAG)

WCAG 2.1

The Web Content Accessibility Guidelines (WCAG) are a set of guidelines that help explain how to make web content and electronic documents accessible to people with disabilities. The overall goal of WCAG is to provide a single shared standard for web content accessibility that meets the needs of individuals, organizations, and governments. WCAG has 12 guidelines grouped under 4 principles: perceivable, operable, understandable, and robust. Together, these create a solid framework for accessibility.

Section 02

Web Content Accessibility Guidelines

Perceivable

- Perceivable makes it so all users can receive and recognize content regardless of their disability.
- Provide text alternatives for any non-text content so that it can be changed into other forms people may need. This can be large print, Braille, speech, symbols or simpler language.
- Provide alternatives for time-based media.
- Create content that can be presented in different ways without losing information or structure.
- Make it easier for users to see and hear content including separating foreground from background.

Operable

- Operable makes it so all users can navigate and interact with document content and functionality.
- Make all functionality available from a keyboard.
- Provide users enough time to read and use content.
- Do not design content in a way that is known to cause seizures.
- Provide ways to help users navigate, find content, and determine where they are in the document.
- User interface components and navigation should be operable.

Section 02

Web Content Accessibility Guidelines

Understandable

- Understandable makes it so all users can interpret and process the content.
- It should be readable, legible, comprehensible, and consistent.
- Make document pages appear and operate in predictable ways.
- Help users avoid and correct mistakes.

Robust

- Robust makes it so all users can utilize content and functionality using an assistive technology device.
- Maximize compatibility with current and future assistive technologies.

Guidelines and Success Criteria

- To maximize accessibility for people with disabilities, WCAG contains 12 guidelines.
- Guidelines include: text alternatives, time-based media, adaptable, distinguishable, keyboard accessible, enough time, seizures and physical reactions, navigable, input modalities, readable, predictable, input assistance, and compatible.
- Success Criteria are used as a tool for testing to measure conformance with the guidelines.

Section 02

Web Content Accessibility Guidelines

- There are three levels of conformance defined for Success Criteria: Level A, Level AA, and Level AAA.
- Level A is the minimum level for accessibility. If the document does not reach a Level A Success Criteria rating, a user with disabilities is most likely being excluded from the document.
- To reach Level AA, your document must meet all the Level A requirements first.
- Level A/AA is typically used by the Department of Justice as a standard for document accessibility.

Types of Documents

A document is considered accessible if it meets certain technical criteria and can be used by people with disabilities. This guide will focus on Word documents and exporting as PDF.

- To improve performance for interactive viewing, PDF defines a more structured format than that used by most PostScript language programs.
- PDF also includes objects, such as annotations and hypertext links, that are not part of the page itself but that are useful for interactive viewing and document interchange.
- A logical tagged structure tree is used within each document to provide a meaningful reading order for content, as well as a method for defining structural elements role and relationship to page content. Within this tag structure, other properties such as alternative text and replacement text can be provided.

Section 03

Characteristics of a PDF

Characteristics of a PDF

Main Characteristics of a PDF Document

Optimally, document accessibility should begin with the native document format. For this guide, that means a document created in Microsoft Word and then exported as a PDF. Once the document is exported as a PDF, they should contain a few similar characteristics.

Section 03

Characteristics of a PDF

Searchable Text

Scanning a document creates images of text rather than searchable text. Assistive technology cannot read or extract the words in a graphical representation of text. If a PDF contains scanned text, it must be converted into searchable text using optical character recognition (OCR) before addressing accessibility in the document.

Accessible Fonts

All font characters in the document should be able to be extracted to text. Adobe Acrobat extracts characters in a document to Unicode text when you read a PDF with a screen reader, or when saved for a Braille embosser. The extraction will fail if the font cannot be mapped to the Unicode characters. It is important to utilize simple fonts for this reason.

Labeled Form Fields

When the document contains an interactive form a user must be able to enter values into the form field. Interactive PDF forms should have a defined tab order which will allow assistive technology to use the Tab key as a way to navigate to each form field. Overall, forms within a document should provide identification, give tips on proper completion, and prevent errors within the form.

Section 03

Characteristics of a PDF

Navigational Aids

Navigational aids within a document can be links, bookmarks, headings, a table of contents, a preset tab order for form fields. Each of these helps users skip around the document without having to read the entire document. This is especially helpful for screen reader users.

Document Structure Tags

A screen reader requires a document to be structured in order to present the text to the user in a way that makes sense. Document structure tags in a PDF define the reading order and help identify headings, paragraphs, sections, tables, and other page elements. A document structure also helps when documents are resized for viewing at larger sizes and on mobile devices.

Alternative Text

Providing good, equivalent alternative text is important for users who are blind or have low vision. Images in a document cannot be understood by the user of a screen reader unless there is alternative text associated with the image. Tooltips can also help many users, including those with learning disabilities. There should also be equivalents for multimedia, including any audio or video elements.

Section 03

Characteristics of a PDF

Simple and Clear Writing

Everyone can benefit from clear and understandable text. For people with cognitive or learning disabilities, clear and understandable text becomes a critical component of accessibility. Plain language should be used to ensure the user understands the information as quickly, easily, and completely as possible. A user can understand this kind of communication the first time they read or hear it.

Other Accessible PDF Characteristics

- Document language and Title Labeled
- No information that relies on color to convey meaning
- Contrast ratios that meet the WCAG 2.1 guidelines: 4.5:1 for normal text, 3:1 for text larger than 18 point, and 3:1 for graphics
- Audio controls
- Using text for layout rather than images of text
- No flashing objects
- No focus change without input from the user
- A consistent navigation throughout and identification of elements

Section 04

Document Structure

Document Structure

Creating an Accessible Document in Microsoft Word

Within the Word navigation pane, users can see all the headings of a document, their relative positions and the current location by clicking parts of the pane. Internal links and bookmarks are also important for proper page structure because they help users navigate within the document. Word has many features built-in that help people with different abilities read and author documents.

Section 04 Document Structure

Headings

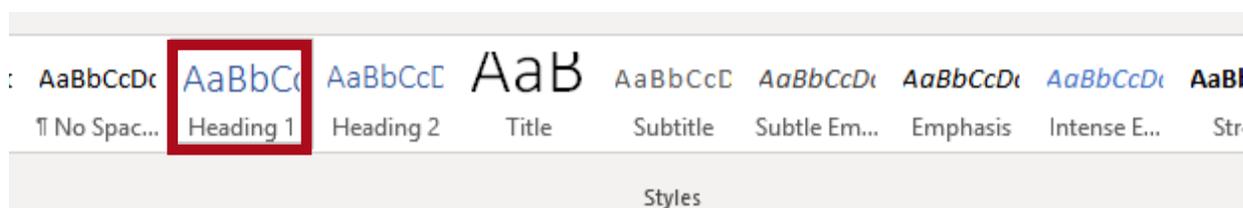
- Headings in a document are used to organize content.
- Heading structure is often the most important component of an accessible document.
- Headings are especially helpful to users who use assistive technology to understand how the information is structured and quickly navigate to specific topics.

Heading Styles

- Headings should be structured in a hierarchical way, with the level 1 headings for the title of the document, level 2 headings for the major sub-sections, and so on.
- When structuring your heading, it is important to use the Microsoft Word styles to ensure the document is accessible for assistive technology users.

Applying a Heading Style

1. Locate and highlight the text for the heading.
2. Navigate to the **Home tab** and locate the **Styles pane**.
3. Select the appropriate heading level or navigate to the more down arrow to browse other default styles.

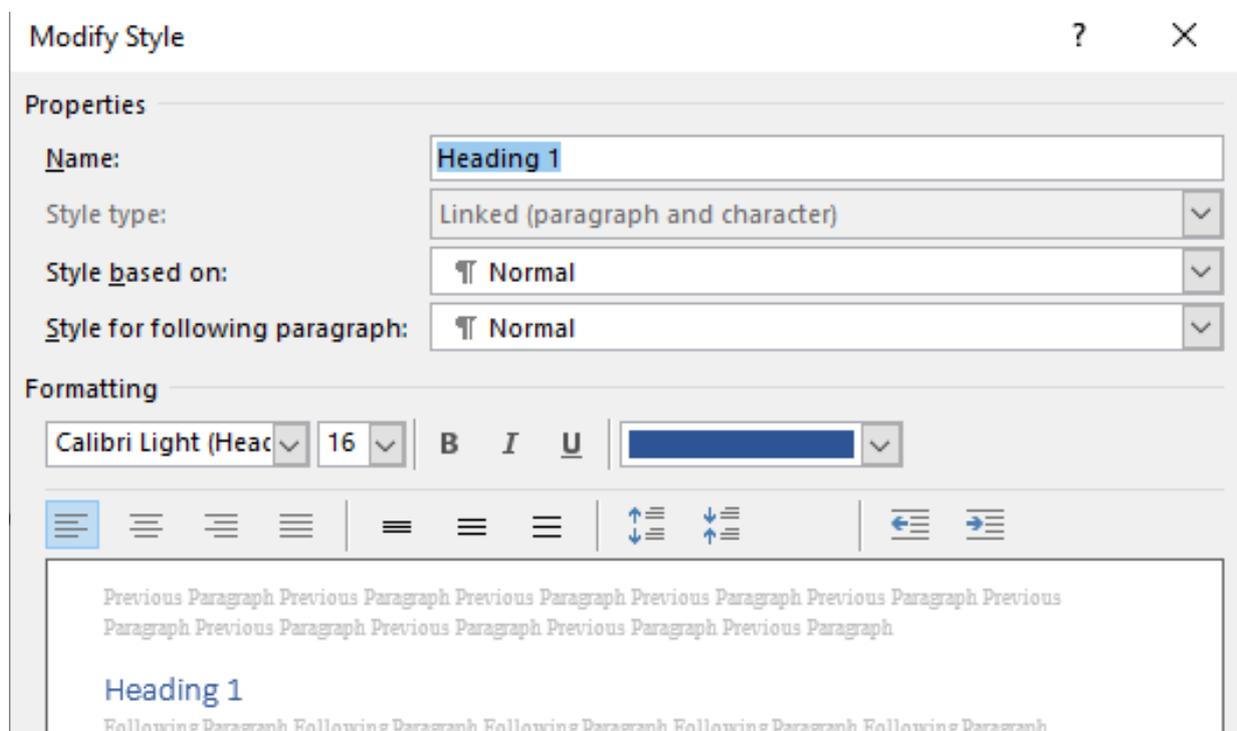


Section 04

Document Structure

Modify heading style

1. Navigate to style on **Home tab**.
2. Right-click on style and select **Modify**.
3. Edit the style in the **Modify Style** dialog box.



Heading structure

- In most instances, there should only be one Heading 1 per document.
- A Heading 2 identifies and describes a major section of the document.
- A Heading 3 identifies a subsection of the Heading 2 section.
- Headings define the document structure. Therefore, you should not skip heading levels. For example, there should always be a Heading 3 between a Heading 2 and Heading 4.

Section 04 Document Structure

Font

- Font size should be at a minimum 14 point for large print. 18 point is recommended.
- Font size should be at a minimum 11 point for normal print. 16 point is recommended.

18 Point Large Print

11 Point Normal Print

- A non-serif font is recommended because when the text is magnified, the serifs in the fonts do not smooth well and the text can look blocky.
- Non-serif fonts are Arial and Calibri. Serif fonts include Times New Roman and Century.

Non-Serif Font

Serif Font

Images

- Images can be used to convey trends and statistics, illustrate important concepts, capture moments in time, and add interest to documents.
- Screen readers rely on alternative text (alt text) on images to provide meaning.
- When applied properly, alt text is both spoken by screen readers and displayed as a tooltip for others who wish to read it.

Section 04

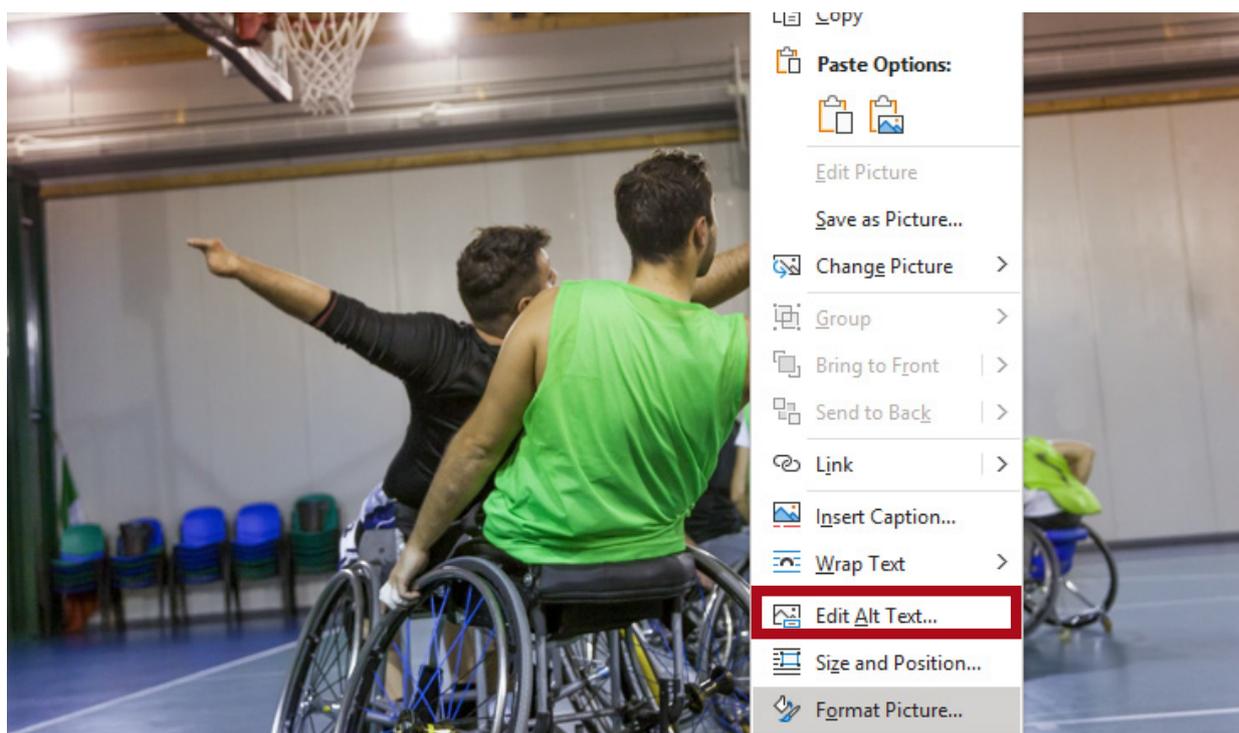
Document Structure

Applying alternative text

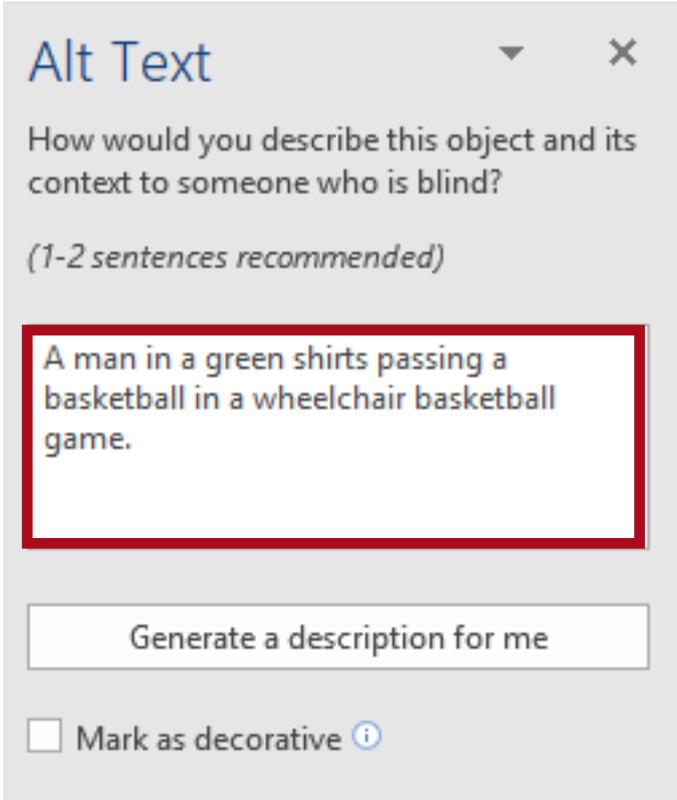
- Limit the number of characters for alt text to less than 120.
- Use concise and meaningful alt text that describes the image sufficiently.
- The description should provide enough information so the purpose of the image in a document can be understood even when removed.
- It is not recommended to use the **Generate a description for me** option for adding alt text.

Adding alternative Text to image

1. **Right-click** on image in document.
2. Select **Edit Alt Text**.
3. Add alt text to box.
4. Check **Mark as decorative** if image does not convey any meaning.



Section 04 Document Structure



Alt Text ▼ ✕

How would you describe this object and its context to someone who is blind?

(1-2 sentences recommended)

A man in a green shirts passing a basketball in a wheelchair basketball game.

Generate a description for me

Mark as decorative ⓘ

Complex Image

- Images that contain graphs, charts, and diagrams require a more detailed description to convey important or useful information.
- For descriptions that are longer than 120 characters, the description should be placed in surrounding text, footnote, or an appendix.
- The alt text can contain a title to the graph, chart, or diagram and the paragraph text below can describe the data in detail below.

Section 04

Document Structure

Color and Contrast

- Color can enhance content within the document, making it easier to understand and read for some people with learning disabilities.
- The main focus for color in a document is having enough contrast between the foreground and background, for text and images.
- Color should not be used in any way to convey meaning.
- Any important information denoted through color needs to be available through text as well.

The screenshot displays a color contrast tool interface. At the top left, it shows 'CONTRAST RATIO' as **8.56:1**. At the top right, it shows 'WCAG GRADING' as **AAA**. Below this, there are two color swatches: a blue swatch with the hex code **# 1B43AD** and a white swatch with the hex code **# FFFFFF**. To the right of the swatches, there are controls for 'TEXT SIZE' set to **12 px** and 'STYLES' with an unchecked **Bold** option.

Contrast standards

- For text less than 18 point or 14 point bolded, there should be a contrast of 4.5:1 or more.
- For text larger than 18 point or 14 point bolded there should be a contrast of 3:1 or more.
- It is best to avoid busy images as a background for text.

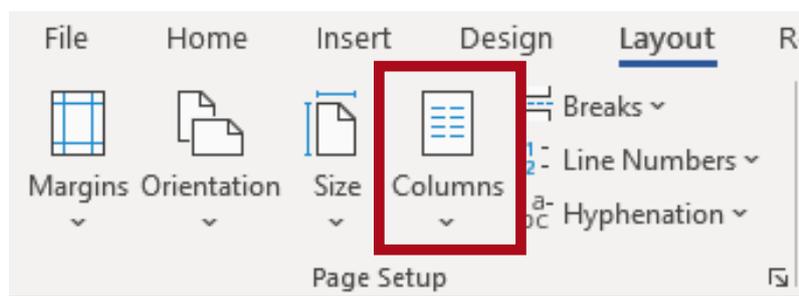
Section 04 Document Structure

Columns

- Columns are most commonly used to break up large bodies of text that cannot fit in a single block of text on a page, such as a newspaper or magazine article, long lists of items, or flyers.
- Do not use **Tab** or **Spacebar** to create columns.
- Columns must be created correctly for a screen reading software to read the text correctly and not linear.

Making columns in a document

1. Select the **text** where columns need to be applied.
2. Select **Layout** from the toolbar.
3. Find the **Page Setup** section and select **Columns**.

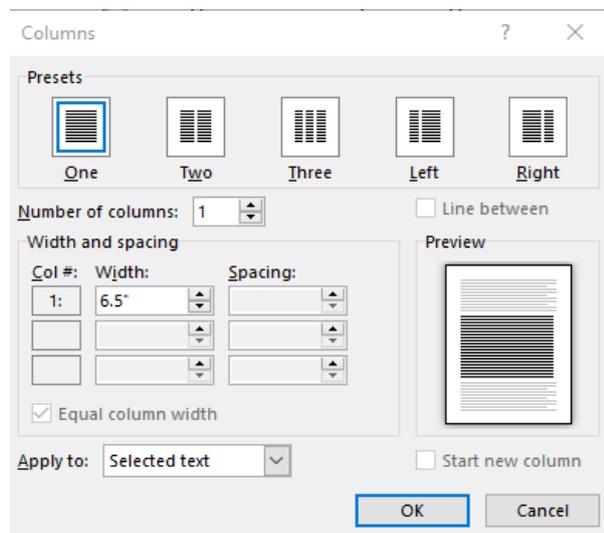


4. Select the desired number of columns from the available choices.
 - Or select **More Columns** at the bottom of the drop-down menu.
5. Customize the column options and click **OK**.

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Document Structure

Making columns in a document



Lists

- Lists are used in a document to help identify order and hierarchy. Lists must be properly formatted to allow users with screen readers the ability to identify and navigate through a related group of items.
- The built-in options in Microsoft Word programmatically identify the type of structure to screen reader users.
- Plain text bullets and numbers are more accessible than pictograph bullets and numbers.
- It is important to select the type of bullet provided in the list styling options because these characters are a type of text that can be translated by a screen reader or other assistive technology.

Section 04 Document Structure

Creating a list

1. Select the **text** where lists need to be applied.
2. Locate the **Paragraph** section on the **Home** tab.
3. Select the **Bullets**, **Numbering**, or **Multi-level** list option.
4. Select the type of bullets, numbers multi-level list from the drop-down menu.



Links

- Links can be displayed three ways in a document; raw URL's, descriptive text, or as an image.
- When using a linked object or image, it is important to have meaningful alt text about where the link leads.
- Links provide a navigation structure in a document.

Meaningful link text

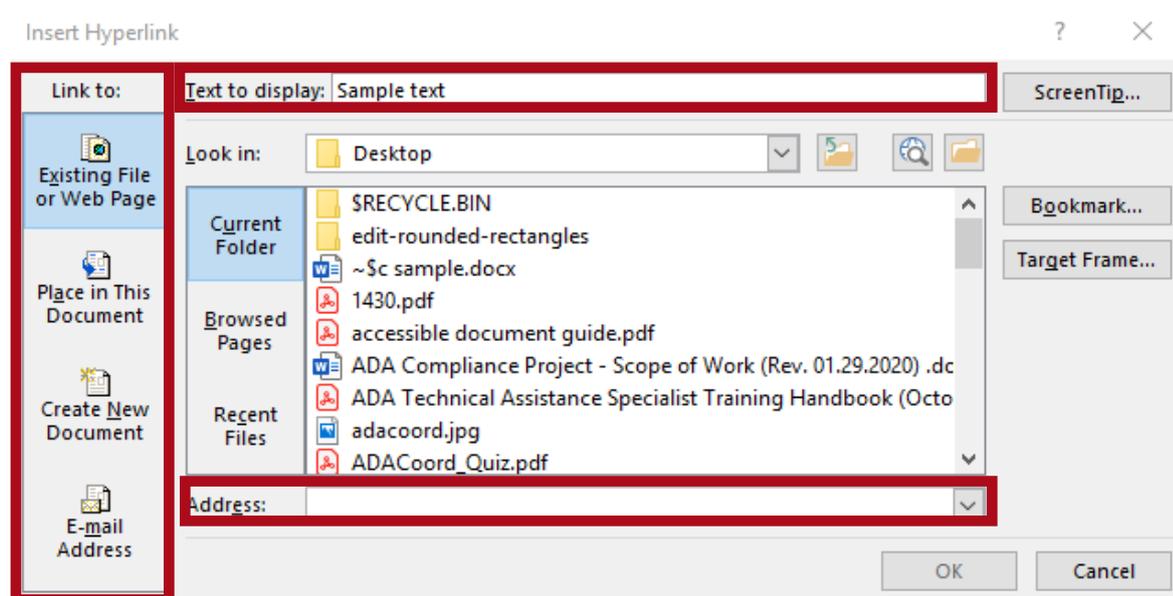
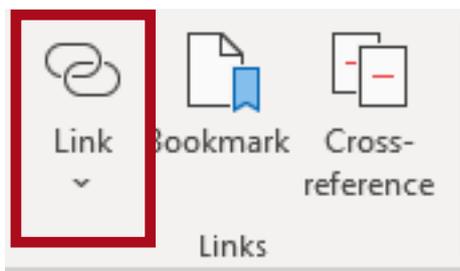
- It is very important to provide meaningful link text.
- The text should describe the content behind the link or the action that will occur by activating the link.
- Do not use "click here" or "read more" for links.
- Avoid repeated text for links throughout the document.

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Document Structure

Creating a link

1. Navigate to the **Insert** tab and click the **Link** button.
2. Select **Insert Link**.
3. Confirm the **Insert Hyperlink** dialog box appears.



4. Select the appropriate button under the **Link to:** options.
5. Insert descriptive text under the **Text to display** field
6. Insert the **Address** or location where the link should lead and click **OK**.

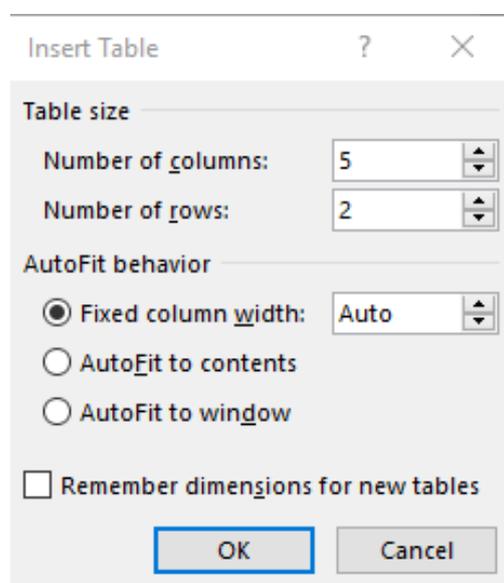
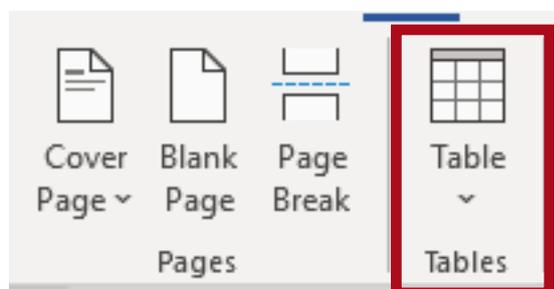
Section 04 Document Structure

Tables

- Tables within a document are used to organize and display associated data in a structural manner.
- A table can be visualized as a grid. There are horizontal and vertical lines that intersect to create individual cells.
- When the data in the table is read left to right, the user is reading the contents of a row.
- When the data in the table is read top to bottom, the user is reading column information.
- The two types of tables are layout tables and data tables.

Creating a table

1. Navigate to the **Insert** tab and click the **Tables** button.
2. Select **Insert Table** from the menu options.
3. The **Insert Table** dialog appears.



Section 04

Document Structure

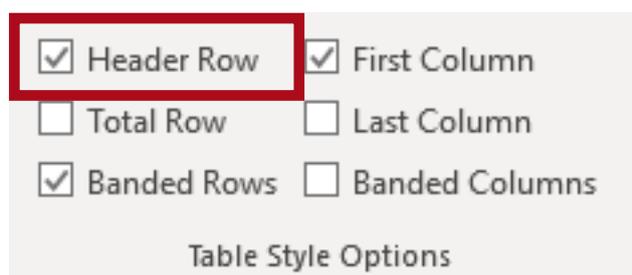
4. Enter the number of desired columns and rows in the appropriate fields.
5. Click **OK** and confirm an empty table appears in the document.

Structure of a table

- Data tables should be formatted using the Word data table structure tools.
- A header cell is the title of the row or column.
- A data cell is the meaningful content related to the header cell.
- Both the header and data point within a table needs to be placed in its own table cell.
- Data tables need to re-identify column headers after each page break.
- Screen readers display lengthy tables as independent table structures on each page.

Create a table header

1. Place the insertion point in a table cell within the desired header row.
2. Select the **Table Design** tab at the top of the screen.
3. Locate the **Table Styles Options** pane.
4. Select the **Table Layout** tab at the top of the screen.
5. Ensure the **Header Row** checkbox is checked.



Section 04 Document Structure

- Under the **Data** section ensure the **Repeat Header Rows** option is selected.

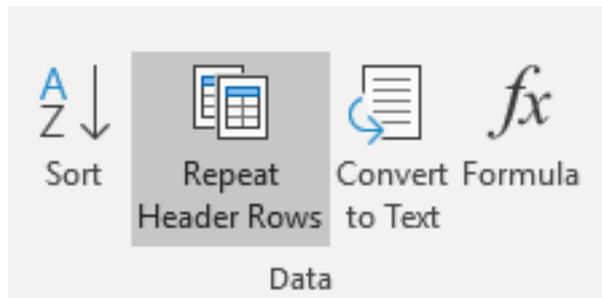


Table characteristics

- When creating a more complex table, it is recommended to create an accessible alternative in addition to the document. For example, a properly marked-up HTML or PDF table.
- Empty cells can be misinterpreted or improperly conveyed by some assistive technologies.
- Visual formatting needs to be applied with table border control rather than blank rows or columns.
- Table summaries can be helpful in describing the purpose of a table.

Forms

- Forms within a document are used to collect information.
- Examples include medical information, file purchase requests, and complete surveys.
- A basic form layout usually includes a label or question and a space for user input.

Section 04

Document Structure

- Currently, it is not possible to make a form fully accessible in Microsoft Word. Therefore, HTML and PDF formats are recommended for creating electronic forms.
- All fillable form fields should be contained in protected sections of the document.
- Instructional content for the form should be placed in unprotected sections of a document so that an assistive technology user can access the information.
- Each field needs a meaningful description so that it can be properly recognized.

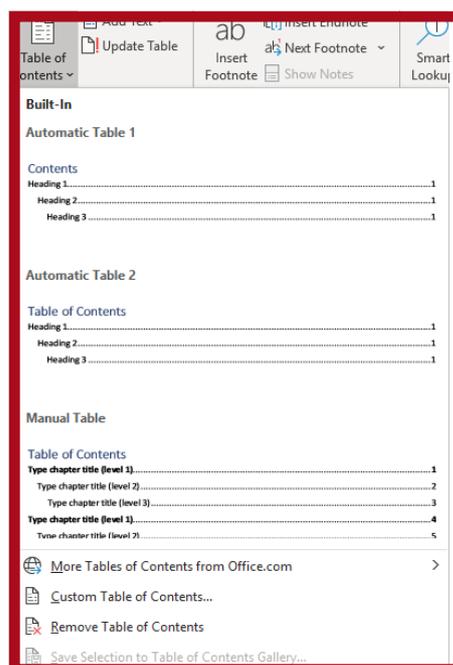
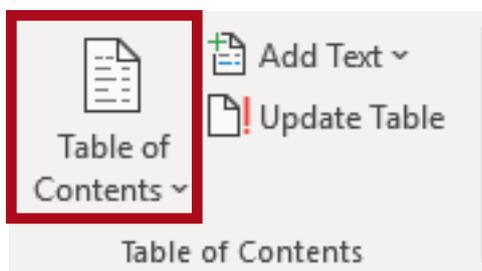
Table of Contents

- A table of contents (TOC) is an important tool to aid in document navigation and display the layout of content.
- TOCs use the same basic structure as lists.
- TOCs are especially important for larger documents so assistive technology can quickly navigate the document.
- Microsoft Word searches for heading styles and creates a TOC based on that structure.
- Each time content is nested under the main heading, it is indented visually beneath its related item.

Section 04 Document Structure

Creating a table of contents

1. Navigate to the **References** tab and locate the **Table of Contents** pane.
2. Select the **Table of Contents** drop-down menu.
3. Select one of the **Automatic** or **Manual** table options from the menu.
4. Confirm a Table of Contents structure appears in the document.



Modifying table of contents

- Word has an option to show page numbers or to make each item in the TOC into a hyperlink.
- The styles for the TOC can be customized for headings and levels.
- Any changes that are made to title and section information is important to update, as they do not automatically update.

Section 04

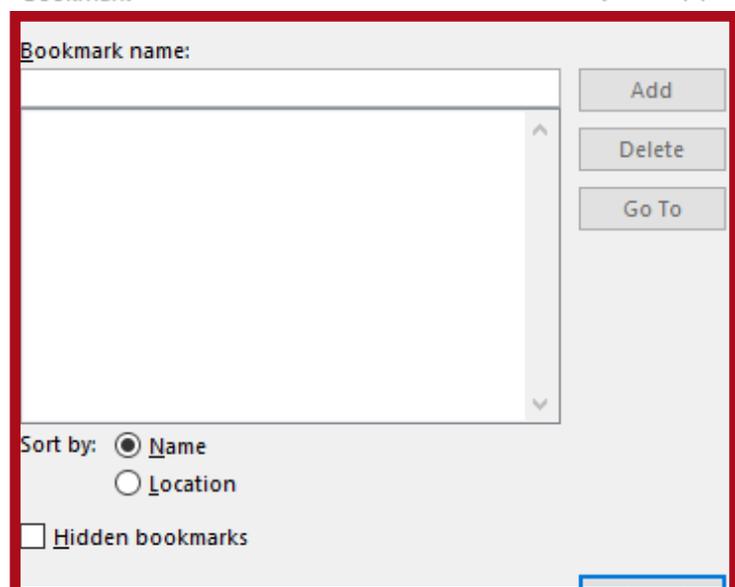
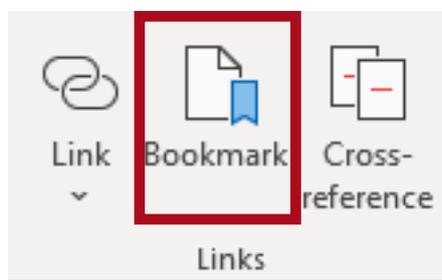
Document Structure

Bookmarks

- Bookmarks are a valuable tool for navigating lengthy documents.
- Bookmarks are used to indicate important sections or locations that a user can refer to at a later time.
- The order that bookmarks are listed should reflect the order of each relevant section within the document.

Add a bookmark

1. Place the cursor where the bookmark needs to be added.
2. Navigate to the **Insert** tab and locate the **Links** pane.
3. Select the **Bookmark** button.
4. Enter a bookmark name with no spaces and select the radio button to reference by **name** or **location** and click **Add**.
5. Use **F5** to see a list of the Bookmarks in document.



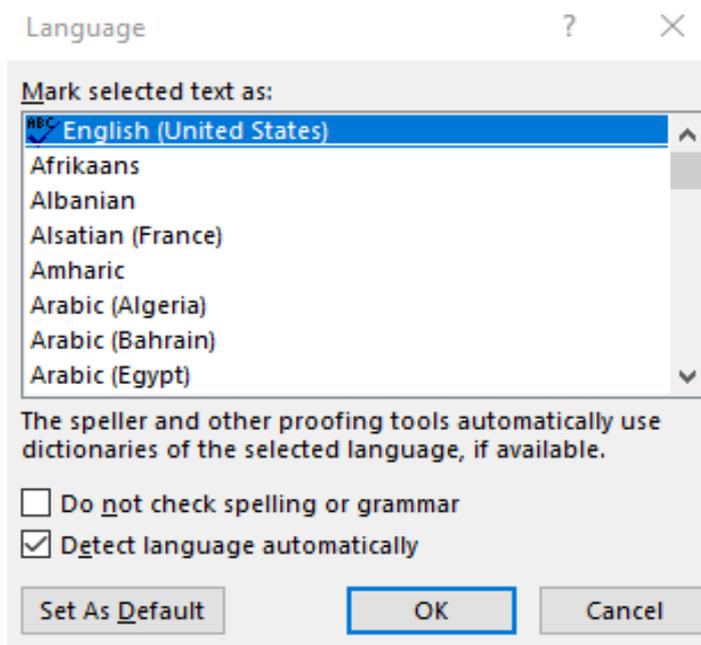
Section 04 Document Structure

Document Language

- Screen readers pronounce words according to the language specified.
- If the text is another language, a screen reader will mispronounce the words in the document.
- The language set for all or just a part of a document needs to match the language that is visually displayed.

Adding language to a document

1. Navigate to the **Review** tab and locate the **Language** pane.
2. Select the **Language** drop-down menu.
3. In the **Language** dialog box choose **English (U.S.)** or another appropriate language for the content.
4. Click **OK**.



Section 05 Testing for Accessibility

Testing for Accessibility

Accessibility Checker

Microsoft Word has a built in Accessibility Checker tool that helps to identify accessibility issues and provides a few solutions for fixing them. The checker also categorizes severity levels. The three levels are error, warning, and tip. Although the checker is a valuable tool, it cannot guarantee that a document will be 100% accessible to people with disabilities.

Section 05 Testing for Accessibility

Accessibility Checker

- The three severity levels are error, warning, and tip.
- An error means that not fixing the element will make the document extremely difficult or impossible to a user using assistive technology.
- A warning means that a document can be challenging for a user using assistive technology.
- A tip is an issue that could improve that user's overall experience.
- The checker will look into organizing content using paragraph headings, alternative descriptions for images, identify table headers, meaningful link text, and grouping related list items.

Viewing the results

1. Navigate to the **Review** tab and locate the **Accessibility** pane.
2. Select the **Check Accessibility** button.
3. Verify the **Accessibility Checker** pane opens on the right side of the document.
4. Highlight an item in the results pane to jump to where it is located in the document.

