NNELS

Accessibility Report for Blackstone Unlimited
April 2024

About NNELS

The National Network for Equitable Library Service (NNELS) is a digital public library of ebooks for Canadians with print disabilities, and an advocate for an accessible and equitable reading ecosystem for Canadians with print disabilities[1]. NNELS supports principles of openness, inclusion, and choice. NNELS is hosted by the BC Libraries Cooperative, a community service not-for-profit cooperative and a national leader in information and technology services.

Our team of Accessibility Testers has expert knowledge in the areas of accessibility testing, analysis, software development, and leadership. The team works to educate and advise publishers, technology vendors, and public libraries on best practices for accessibility. Our testers have lived experience with a range of

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[1] Print disabilities are defined by Canada's Copyright Act and include visual, mobility, or comprehension impairments such as dyslexia.

print disabilities, including blindness, low vision, and learning disabilities.

Accessibility Summary

Audiobooks are a naturally accessible format for blind and low-vision users. Potential barriers that can be encountered with e-text formats, such as images lacking text descriptions, hyperlinks which screen readers do not recognize or cannot click, and limited font or text size customization, are not a concern with audiobooks. Unless an audiobook refers listeners to supplemental material, its content will be equally accessible to all listeners, whether or not they have a visual disability.

The platform used to access audiobooks, however, must follow accessibility guidelines if it is to be usable by people with disabilities. Blackstone Unlimited falls far short and is challenging to use for both blind and low-vision users alike. Overall, our testers found many controls difficult to identify and operate. Stability was also a notable concern, with users experiencing poor performance, freezing, and crashes.

Introduction

Blackstone Unlimited is an audiobook library that can be accessed through a smartphone application or via a website. Patrons of participating libraries link their library card to their account, which allows them to borrow and read audiobooks distributed by Blackstone Publishing. Audiobooks can be streamed using an Internet connection, or users can download them to their mobile devices for offline listening.

Our testers used screen-reading and magnification software to assess the usability of the Blackstone Unlimited website, iOS app, and Android app. The Systems and Assistive Technology section of this report contains a complete list of all the software and operating systems used in this assessment.

This assessment aims to determine the usability experience of readers with print disabilities and to what extent they can access Blackstone Unlimited effectively and efficiently. While this report aims to provide an overview of the accessibility performance across supported platforms, this is not an in-depth review of Blackstone Unlimited itself. As a result, some functionality may not be discussed at all or in-depth.

The accessibility of Blackstone Unlimited is overall very poor. Testers on all platforms encountered features they were not able to use, features they could use but which took additional exploration to figure out, and poor app and website performance, which degraded the experience of using the platform.

Introduction to Assistive Technology

All mainstream operating systems include built-in screen readers (Narrator on Windows, VoiceOver on Apple devices, and TalkBack on Android) that read the contents of the screen out loud, allowing users with visual disabilities to browse apps and websites, send and receive texts and emails, and accomplish many other tasks with ease. Keyboard commands and custom touch gestures provide a flexible way for a user to find and interact with the controls on-screen. Windows also has alternative screen-reading software available, most notably a commercial option called Job Access with Speech (JAWS) and a free and open-source option called Non-Visual Desktop Access (NVDA). The text spoken by a screen-reader can be sent to a refreshable Braille device. Mainstream operating systems are also equipped with user interface magnification, large text options, and high-contrast viewing mode to assist people with low vision.

To ensure usability and accessibility of an application by people with print disabilities, all functions and controls must be accessible using assistive technologies. The DAISY Consortium explains that the basic assumption of accessibility evaluations is that reading systems "should support reading with eyes, ears, and fingers." (DAISY Consortium, 2017). It should be possible for users to read the content of the document by:

- Reading the text with screen readers or self-voicing text to speech (TTS) applications.
- Adjusting the display, including font size, alignment, and colour contrast, or a combination of some or all these options.
- Reading the text with a refreshable braille display.
- Reading with assistive technologies designed for persons with dyslexia or other disabilities.
- Reading with the app's built-in read-aloud functions.

Accessibility Performance and Recommendations

This section will dive deeper into specific accessibility issues encountered while testing the Blackstone Unlimited website and mobile applications. Below are the testing results and their related recommendations as they pertain to:

- Sign-Up and Login
- Layout and Navigation
- Searching and Browsing
- Reading
- Visual Adjustment

Finally, the *development recommendations* sections contain suggestions for improving the interface on each platform. These suggestions will be relevant to any issues or observations noted above.

Blackstone Unlimited Website

- Tested operating systems: Windows 10 and 11, MacOS 14.4
- Tested browsers: Firefox 123, Chrome 122, Safari 17.4

Sign-up and Login

The testing team was given access to a test account to use for their testing. All testers were able to locate the sign-in link and enter the account credentials. Screen reader users observed that focus returns to the top of the page after activating the sign in link, and recommend focus being moved to the form to speed up

the process and eliminate any confusion about whether or not the form successfully loaded.

VoiceOver and Narrator users were presented with CAPTCHA challenges that were not presented to testers using other assistive technology. Our Narrator tester was required to complete the challenge to log in, which was difficult to complete both with screen reading and magnification tools. When using VoiceOver, the CAPTCHA challenge was present but seemingly unconnected to anything and did not unlock any pages or functionality when completed. Whether these issues are caused by the CAPTCHA frame being improperly hidden or by analytics falsely identifying Narrator and VoiceOver users as bots, it results in an access barrier that could be viewed as discriminatory. If a CAPTCHA is intended to be required to log in, it should be presented to all users, and it must scale properly with magnification and have a reasonably clear audio alternative for screen reader users.

Layout and Navigation

Testers found navigating the website challenging. A primary concern of both screen reader and magnification users was lag. Testers using a variety of screen readers reported their screen readers taking a long time to respond when attempting to navigate on various pages, and magnification users observed images taking a long time to load. One tester using ZoomText noted that disabling ZoomText and reloading the website resulted in much faster loading times.

Beyond the difficulties with slow response times, screen reader users found the menus and various slides challenging to access. The 'Genres', 'Authors', and 'Featured' links in the main menu only expand their submenus when the mouse hovers over them, which is inconvenient for screen reader users who need to use advanced features to simulate this and locks out users who do not know how to use such features or who use screen readers that don't offer this functionality. Some users reported menu items being focusable by their screen reader when the menu is

supposed to be hidden. Slideshows and other elements featuring images proved difficult for screen reader users to access, due to a lack of any alternative text provided for images. This causes screen readers to fall back to reading meta information such as file names and URLs, which are handled differently depending on the screen reader and link destination.

Low-vision testers encountered their fair share of difficulties. The main menu and submenus spanning multiple columns make it hard to see all the items at once when using magnification. A similar issue occurs in other places, such as the 'Grid' and 'List' buttons when browsing and the drop-down arrows accompanying the FAQ which are located on the far-right side of the page. Enabling magnification can quickly cause these elements to be moved off the screen, and users may not be aware that they are there. Many menus and the footer use a reverse contrast scheme compared to the main content, which necessitates constantly enabling or disabling dark mode for some low-vision users.

The website makes effective use of regions and landmarks, but other aspects of the overall layout could be improved. Headings are not used consistently and do not follow best practices when they are present. There are no links at the top of the screen to quickly jump to the main navigation or other points of interest. Many controls and images are poorly labeled, making it difficult for screen reader users to determine what a button will do or where a link will take them.

Searching and Browsing

The search form in the website's header contains an edit field and buttons which are appropriately labeled for screen reader users. All testers were able to type into the field and perform a search. Autocomplete suggestions are shown as the search field is typed into, but are not announced by screen readers, and cannot easily be explored. The website only offers basic search functionality; there are no advanced search options that allow users to perform a precise search to limit the number of results.

Users browse for audiobooks using the links in the main menu, or by exploring the carousels and slides on the homepage. As covered in the Layout and Navigation section, both methods present barriers for screen reader users, who experience submenus not expanding with keyboard input and slides containing unlabeled images. The submenus also present challenges for low-vision users, particularly those who use screen readers and magnification simultaneously. The large number of submenu items was found to be visually confusing, and navigating with arrow keys caused all items to be highlighted, when visual focus should only be applied to the element which currently has keyboard focus.

Search and browse results are displayed using the same format. Users can toggle between list and grid views, although doing so can be difficult for screen reader and magnification users alike. The buttons are poorly labeled and only their title attributes identify which view they switch to. Most screen readers do not read button titles, which leaves many users with no way to know which button is which. The location of the buttons is also problematic for magnification users, who frequently find the buttons being pushed off the screen.

Both grid and list views present challenges for screen reader users. Grid view is similar to the homepage carousels, containing unlabeled images and other poorly labeled elements which are difficult to operate using a screen reader and keyboard. List view offers better screen reader accessibility, but while each result can be read without issue, results do not contain headings, meaning there is no way to quickly navigate past results that are not of interest.

Results can be filtered using controls located after the list of results. The decision to place these controls after as opposed to before the list of audiobooks is unusual, but a heading is used to mark the filter section, which makes it easier to locate. It is difficult to identify which filters are active when using NVDA, but otherwise screen reader and magnification users reported being able to filter results without difficulty.

Activating the link to an audiobook within search or browse results opens its record page. All relevant details for the audiobook are present and readable, but the page could benefit from a few improvements to increase navigability and decrease clutter. Tabs containing the audiobook description, author and narrator biographies, and other book details do not collapse properly: screen readers are able to read their contents when they are supposed to be hidden, and users do not benefit from being able to reduce clutter by collapsing information they are not interested in. The control to play an audiobook sample is not recognized as a button, which prevents keyboard users from being able to quickly navigate to it using tab or other screen reader keystrokes. When activating the 'Borrow' button, the audiobook is added to the user's bookshelf, but this is done silently, requiring a screen reader user to manually discover that the button has been replaced to verify that the title was successfully borrowed.

Low-vision users reported that while the title on an audiobook's record page is easy to see, links are considerably smaller and utilize an orange-on-white colour scheme, making them difficult to read.

Reading

Audiobooks that have been borrowed can be found in the user's bookshelf. Unlike when searching or browsing, the bookshelf page does not offer multiple views. Audiobooks are listed with their title, author, and cover image, the latter not being provided with alt text. The text 'Continue Listening' is not a separate control, but is part of the same link containing the title, author, and image. For VoiceOver users, the information is contained within an element that needs to be interacted with. Said element is labeled poorly, making it difficult to identify which audiobook is being focused without interacting with each one.

The bookshelf screen offers filter controls, but these work differently compared to those found when browsing and searching. When the filter button is activated, the filter controls

appear at the very bottom of the screen. Screen reader users were able to read and activate the filter controls, but were not able to dismiss them once they were done selecting filters. Pressing esc did not close the filters pop-up, and if a control exists to close the filters, screen readers did not recognize it.

Activating any part of an audiobook's link causes the audiobook details to appear after the bookshelf list. Screen reader focus is not moved to the newly visible content, and while there is a heading to mark the start of these details, it does not identify the audiobook's title, which makes it difficult to recognize. The play button is part of this details section, so a user needs to locate it and activate the button to begin listening, even if they initially activated the part of the link which read 'Continue Listening'. Screen reader testers were unable to locate other controls pertaining to each audiobook; notably, there appears to be no way for a screen reader user to return a borrowed title. Like the filter options, there is no way for a screen reader user to close or otherwise hide the audiobook details.

For low-vision users, the bookshelf page has a focus indicator to help identify which element has keyboard focus, but it is sometimes unnecessarily wide, which can cause confusion. Once navigated to the list of audiobooks on the shelf, the focus indicator properly encompasses the currently focused title. The details which pop up when a title is selected are also confusing for low-vision users, because the covers of other audiobooks are still present, and the heading of the details section does not identify the title of the selected audiobook.

When playback is initiated for an audiobook, the player screen opens in a separate tab. Screen reader and magnification users alike found the audiobook player to be very inaccessible. Low-vision users capable of using a mouse had the least amount of difficulty controlling audiobook playback, but some of our testers found the controls to be very small, requiring a high degree of magnification to sufficiently enlarge them.

Users of all screen readers reported that the controls for essential functions including play/pause, rewind/fast forward, and adjust playback speed could not be focused or activated. Screen readers can read the list of tracks and information about elapsed and remaining time, but each track is not identified as a link which would allow the user to jump to said track. Screen reader users are able, with some difficulty, to begin playback, but are completely unable to control playback once it has started.

Visual Adjustment

The website does not offer any visual accessibility settings. Users are entirely reliant on options within their browser, operating system, or third-party software. This can result in less than perfect compatibility, such as controls being unintentionally hidden due to being pushed outside of the available screen area when magnification is used. Such issues are not present when a website correctly implements its own accessibility settings and employs a responsive layout which suits the user's needs.

Development Recommendations

- Provide labels for all controls and alternative text descriptions for all images.
- Apply roles to custom controls so screen readers can recognize, focus, and activate them.
- Move screen reader focus when modal content appears on the screen and implement accessible methods to close the modal.
- Limit the number of images being loaded or optimize the loading process to improve responsiveness.
- Remove the CAPTCHA challenge or fix inconsistencies regarding when it is presented to users.
- Use consistent colour schemes everywhere on the site.
- Implement native magnification, text size, and colour contrast options.

Blackstone Unlimited App for iOS

- Tested OS version: 16.7, 17.4.1
- Tested app version: 1.2.1

Sign-up and Login

Testers were given access to a test account to use for their testing. VoiceOver and magnification testers were able to log in, with magnification users reporting that the process was straightforward and did not pose any difficulties. Testing with VoiceOver identified some controls that are only recognized as images, specifically a toolbar and the show/hide password option. The login screens feature other images with poor or no alt text, but these do not get in the way of typing a username and password and activating the button to sign in.

Layout and Navigation

The app uses a standard tab interface which is compatible with VoiceOver. Users can hear which tab is currently active, double tap on a tab to switch to it, and in most instances can perform a two-finger scrub to return to the previous screen. The contents of each tab do not make effective use of headings, so VoiceOver users cannot use the rotor to quickly jump to sections of the screen.

While the tabs along the bottom of the screen are correctly recognized by VoiceOver, buttons in the top banner of each tab are not. Many of these buttons are unlabeled, making their purpose unclear to VoiceOver users. One of these buttons cannot be activated by VoiceOver users at all, because it causes the app to freeze up and crash.

Navigation was generally comfortable and responsive for magnification users, but testers identified some potential for improvement. The text of the title and buttons within the top banner was found to be a little too small, and the colour contrast of the tabs along the bottom was more difficult to see than that of the top buttons.

Searching and Browsing

Searching and browsing each have their own dedicated tab within the app. On the Search tab, VoiceOver testers were able to type

into the search field, which is conveniently focused as soon as the tab is switched to. However, the instruction label identifying what types of searches can be performed is not associated with the field, and VoiceOver does not announce that search results automatically appear as the user types. While VoiceOver users can search for books, the process is not very efficient and new users may initially miss information and results.

The Browse tab is where VoiceOver users will feel the lack of heading navigation most keenly. The main screen displays several genres and other categories and lists books within each of those categories, but because each genre or category is not a heading, much exploration and navigation is needed to locate a genre of interest. A more efficient browsing option exists in the form of the 'Genres' button at the top of the screen, but this is another example of something VoiceOver users need to take time to discover.

While browsing and searching, exploring the available results proved problematic for both VoiceOver and magnification testers. VoiceOver users can swipe through the screen to navigate results, but this requires three swipes to navigate through each result, which is clunky. One of these three elements is a 'More' button, which has a generic label that does not identify which audiobook it relates to. When exploring the screen manually by touch, users will instead encounter many cover images with no alt text, which are displayed in such a way as to make it difficult for a VoiceOver user to locate the text containing the title or author of the audiobook.

Unlike the website, the app does not provide any sort or filter options when searching for browsing. While not an accessibility issue on its own, being unable to narrow results forces users to navigate past more titles to locate the one they are interested in, exacerbating the accessibility barriers encountered while navigating.

Low-vision testers found the author names of audiobooks difficult to read due to a low colour contrast ratio. Additional difficulties

arose when Accessible Text settings were enabled: book titles becoming larger caused them to start bleeding into the cover images, author names were only partially visible and were cut off at the bottom and the right, and category titles remained the same size causing them to be dwarfed by the 'See All' buttons. Combined, these issues made it difficult to select a category and identify which books were being displayed.

Audiobooks' record screens presented their fair share of challenges. The screen features several tabs which can be expanded or collapsed to show or hide certain information, but this does not work correctly with VoiceOver, which reads the information in the wrong section of the screen instead of hiding it when the information is supposed to be collapsed. All the important information is present, and users can activate the 'Borrow' or 'Play' buttons, but it may take more time than it should to locate information of interest.

Low-vision testers encountered issues when changing an iPad's screen orientation. Specifically, the expandable sections such as 'Description' remained in the landscape position when the device switched to portrait, causing much of the text to be cut off. Author names suffered from low colour contrast here as well, resulting in eye strain while attempting to read them.

Reading

The Bookshelf tab, where books which have been borrowed will appear, was a confusing experience for VoiceOver testers. Book titles could be located and double tapped to open the playback screen. Other information was presented in a nonsensical order and was poorly labeled: the download button for each audiobook, as well as the duration, current progress, and download status appeared inconsistently and in an incorrect order which made it difficult to identify which title they were associated with.

The Bookshelf tab offers options to sort and filter audiobooks, which VoiceOver is able to navigate to and operate. Unusually, the filter button has a label which can be read by VoiceOver but

not by low-vision users. Low-vision testers had to activate the button to discover its purpose.

VoiceOver and low-vision testers were able to explore the audiobook playback screen and operate most of the controls. All testers were able to play and pause, skip backward and forward, adjust playback speed, and set sleep timers. As is common with audio playback on iOS, users can minimize the app and control playback via the control centre or lock screen, which provides another accessible method.

While the playback screen controls can be explored and activated, many of their labels are lacking. VoiceOver testers found most of the buttons' labels to be too short and not specific enough, for example 'List' rather than 'Chapters and Bookmarks'. One button, specifically the AirPlay button, could not be activated when using VoiceOver, depriving users of a convenient shortcut. Similar to when browsing, the audiobook's cover image seems to overlap with several of the buttons, requiring VoiceOver users to swipe through the screen to locate them. Labels for the AirPlay, chapter list, and bookmarks buttons were lacking for magnification users, who had to tap these buttons to discover their purpose.

The feedback provided when placing a bookmark was inadequate for both VoiceOver and low-vision testers. A confirmation appears for only a couple of seconds and is not announced by VoiceOver, which makes it difficult for a user to be aware of its presence. Low-vision testers were mislead by the button's label, believing the button would display a list of bookmarks rather than create one.

Visual Adjustment
The app provides some preferences which can be set, but none of them pertain to visual accessibility. Users must rely on iOS's low-vision accessibility settings, which the app is not fully compatible with. Issues such as larger text being cut off and orientation not properly transitioning between landscape and portrait do not occur when apps are fully compatible with device accessibility features, or if they implement their own settings.

Development Recommendations

- Provide labels for all controls and alternative text descriptions for all images.
- Hide cover images from VoiceOver or otherwise allow VoiceOver users to more easily locate their associated controls and labels.
- Improve focus order and content labeling on the bookshelf screen.
- Fix event handlers of buttons which currently cannot be activated by double tapping with VoiceOver or which crash when activated while VoiceOver is enabled.
- Improve compatibility with Zoom and Accessible Text settings, or provide an in-app option to increase contrast and enlarge text and buttons.

Blackstone Unlimited App for Android

- Tested OS version: 14
- Tested app version: 1.2.1

Sign-up and Login

Testers were able to log into the account provided for the purpose. Entering the email address and password was accessible using TalkBack and magnification, and the 'Sign-In' button was able to be activated. TalkBack users reported that images were provided with poor alt text, including the icons used as labels for the email and password field. The colour contrast of the 'Sign-In' button was found to be insufficient, with light text on a light background being difficult to see by low-vision users.

Layout and Navigation

The app uses a tabbed navigation layout with the tab controls at the bottom of the screen. TalkBack testers experienced the title of the currently selected tab being read twice, which is unexpected behaviour that can cause confusion and irritation. TalkBack and magnification users were able to navigate between tabs and explore their contents. The app's content does not make effective use of headings, limiting the methods TalkBack users

have to quickly locate points of interest. TalkBack testers encountered pop-up menus throughout the app which lack accessible close buttons, requiring them to use TalkBack's back gesture to exit them.

Searching and Browsing

Testers were able to type into the search field and browse results. TalkBack users experienced excessive verboseness while navigating search results due to cover images being focused and announced. Poorly labeled controls were also an issue, as each result was accompanied by a more actions menu control which was neither labeled nor identified as a button by TalkBack. While not specifically an accessibility barrier, all testers lamented the lack of any sort or filter options for search results.

The Browse tab is divided into sections listing audiobooks by category. The lack of headings to denote each category frustrated TalkBack users, denying them the ability to quickly navigate from section to section. Audiobook cover images were frequently presented without alt text, requiring a TalkBack user to double tap on them to determine which title they are associated with.

The record screen for audiobooks has a straightforward layout, and testers were able to find and read all of the audiobook's details, as well as add them to their bookshelves. This was not without issues for TalkBack users, who needed to swipe past background images and encountered improperly labeled controls. The button to play an audiobook's sample had a verbose and nonsensical label, and controls to expand contents such as a title's description, author biography, and reviews were not identified by TalkBack as controls that can expand content.

Reading

Testers were able to access their bookshelves, browse their borrowed titles, and select an audiobook to read. TalkBack users experienced challenges throughout this process. While they were able to search, filter, and sort titles on the shelf, TalkBack was unable to activate the control to switch the sort order between

ascending and descending. Various buttons had poor or no labeling, including the buttons to download an audiobook and to access more options such as returning titles and marking them as finished. Some informational labels were presented out of order or without clear context. These included the labels for the runtime filter sliders, the remaining time in each audiobook, and the label indicating how many titles have been downloaded to the device.

TalkBack and magnification users encountered numerous challenges with listening to audiobooks and operating the playback screen. Most of the controls were either not labeled or labeled poorly with extra, unnecessary words, which caused TalkBack to either announce nothing useful or talk too much, depending on the button. The order in which controls were focused while swiping did not make sense, with TalkBack users reporting that the 'Play' button was located within the middle of the playback speed options, rather than with the rewind and fast forward controls. The controls to select a playback speed were not identified by TalkBack as controls, further complicating the process of adjusting the speed. TalkBack testers were unable to locate the control to set a bookmark, suggesting it is either not focusable by TalkBack or is labeled so poorly that a TalkBack user cannot recognize it.

Low-vision testers found the playback screen to be easy to see, noting that the name of the current track and progress within that track were clearly indicated. Issues arose when attempting to control playback: magnification users experienced poor app performance when attempting to skip forward and backward through an audiobook, reporting that the app would constantly freeze and would occasionally need to be forcibly closed and restarted. It is unclear whether this is due to incompatibility issues with system magnification settings or being resource intensive for lower-end hardware, but it is of concern regardless, as people with disabilities are more likely to have a limited budget to spend on accessible devices.

Visual Adjustment

The app provides some preferences which can be set, but none of them pertain to visual accessibility. Users must rely on Android's low-vision accessibility settings, which the app is not fully compatible with. Implementing text size and contrast settings within the app would ensure that low-contrast elements could be adjusted and made easier to see by all users.

Development Recommendations

- Provide labels for all controls and alternative text descriptions for all images.
- Hide cover images from TalkBack or otherwise allow TalkBack users to more easily locate their associated controls and labels.
- Improve focus order and content labeling on the bookshelf and audiobook playback screens.
- Fix event handlers of buttons which currently cannot be activated by double tapping with TalkBack.
- Improve compatibility with system magnification settings, or provide an in-app option to increase contrast and enlarge text and buttons.
- Optimize app performance to eliminate freezing when controlling playback.

Conclusion

Blackstone Unlimited features many accessibility barriers which impact blind and low-vision users. While our testers were able to utilize the mobile apps with some difficulty, it required more trial and error and took longer than using a fully accessible app would. The website was even more problematic, with screen reader users being unable to control audiobook playback at all. Since being able to search for and borrow audiobooks does not do much good if the user cannot listen to those audiobooks, this makes the website practically unusable by screen reader users.

The Blackstone Unlimited platform will require a considerable amount of work to be made accessible. It will not simply be a

matter of labeling buttons and images, because while that is necessary, there are more complex issues of degraded app performance and stability when used with assistive technology which will need to be sorted out.

Systems and Assistive Technology

- Operating Systems
  - Windows 10, 11
  - macOS 14.4
  - iOS 16.7, 17.4.1
  - Android 14
- Mobile Applications
  - Blackstone Unlimited 1.2.1 (iOS)
  - Blackstone Unlimited 1.2.1 (Android)
- Browsers
  - Chrome 122 (Windows)
  - Safari 17.4 (MacOS)
  - Firefox 123 (Windows)
- Screen-readers
  - NVDA 2023.3.3 (Windows)
  - JAWS 2023 (Windows)
  - Narrator (Windows)
  - VoiceOver (macOS, iOS)
  - TalkBack 14.1 (Android)
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  - Magnifier (Windows)
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  - Zoom (iOS)
  - Magnification (Android)

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