

Jennifer Schneider Malamud, 1006257471
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Prof. Lucas Thung
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Individual Assignment – Research Case

Introduction

People with different abilities require websites to adhere to the principles of universal design, for usability purposes. In particular, visually impaired users rely on screen readers to process a website's content. Screen readers act as a software platforms that allows blind or visually impaired users to read the text that is displayed on the computer screen with a speech synthesizer or braille display.

According to Katie Sherwin, a research writer for the Nielsen Norman Group, “People who are blind or have low vision must rely on their memory and on a rich vocabulary of gestures to interact with touchscreen phones and tablets. Designers should strive to minimize the cognitive load for users of screen readers.” The principles of universal design most relevant to screen readers include equitable, simple and intuitive use, perceptible information, and tolerance for error. The perceptible information, which communicates that the design must “communicates necessary information effectively to the user, regardless of ambient conditions or the user's sensory abilities,” is particularly important to users of screen readers, considering that webpages primarily convey information through a visual format that, when transmitted through auditory media, greatly increases users cognitive load.

According to Chat GTP, the American Airlines website acts as an example of a poorly designed web flow for users of screen readers, due to a poorly structured page hierarchy,

navigation links with no contextual prompts, and missing alternative text for images. Hence, the aim is to redesign the web flow with the aim to allow screen reader users to book a flight.

Current State

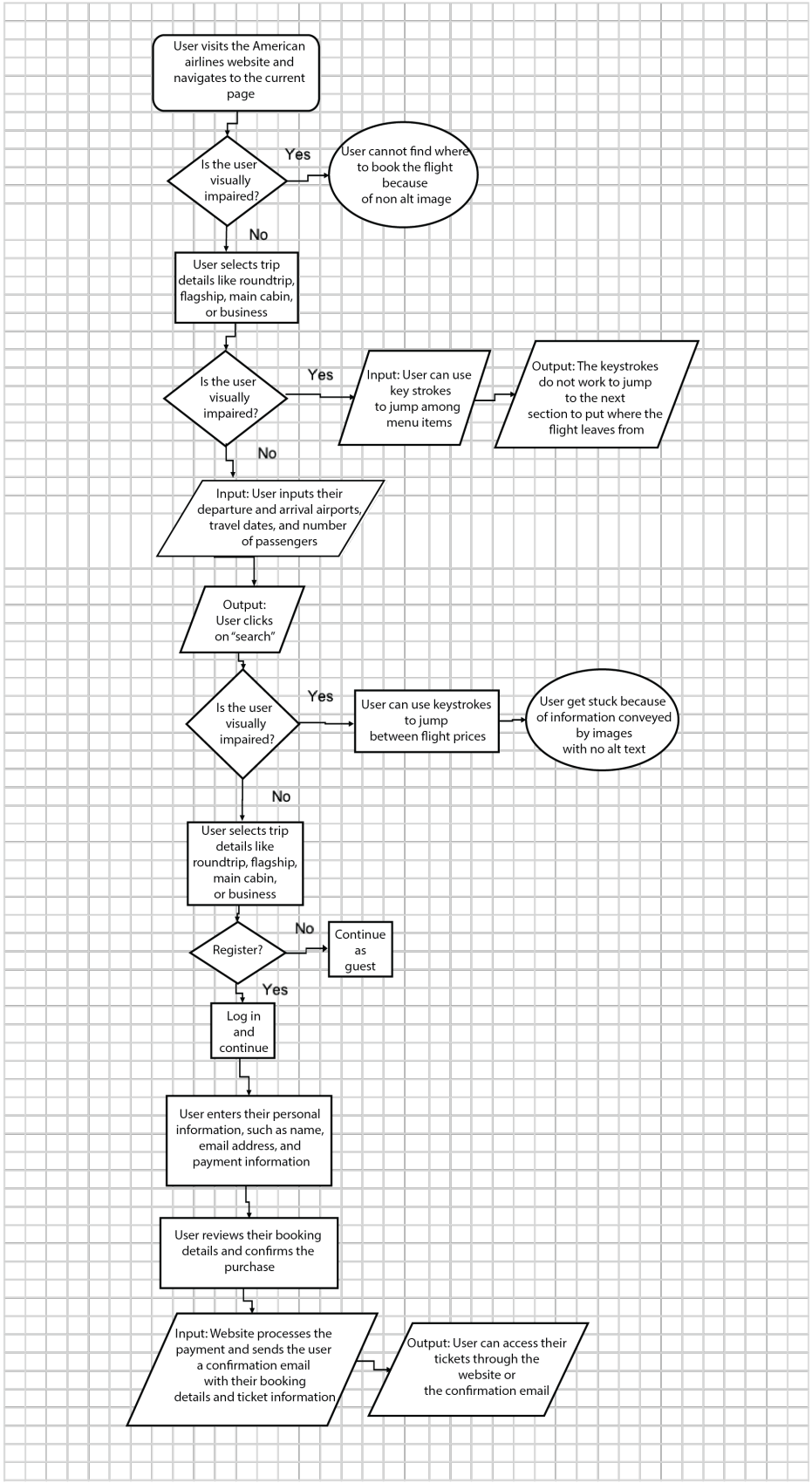
In its current state, the American Airlines website (<https://www.aa.com/homePage.do>) has an inconsistent use of HTML and ARIA attributes. Hypertext Markup Language relies on features such as keyboard accessibility, screen reader compatibility, high contrast colour schemes, and descriptive link text to ensure accessibility in universal design. The website uses an influx of images without providing alt text. Hence, while some parts of the website are accessible with keystrokes, the limited inclusion of alternative links in images with added information can add complexity to the website's navigation and hinder screen reader-website compatibility. In part with that, there is a poor structure of headings and subheadings, making it difficult for screen reader users to understand the page hierarchy. In the page commands, the links include vague and generic text like "click here," which provide little to no context for users who want to book flights by using links.

The American Airlines webpage demonstrates an inconsistent use of Accessible Rich Internet Applications (ARIA) attributes, which modify incomplete or incorrect HTML code to augment parts of the web accessibility tree, and consequently create a better user experience. attributes provide additional information to assistive technologies. Moreover, "the use ARIA attributes to provide additional context for screen reader users, such as indicating when a button opens a modal or when an element is expandable" (ChatGTP, 2023).

The appropriate use of HTML and the consistent use of ARIA attribute contribute to restructuring and simplifying the website content, for users with especial needs to navigate it

with the use of assistive technologies. According to the markup validation service W3C, “programmatically accessible semantics is essential for assistive technologies,” since an application programming interface (API) defines perceivable objects in a user interface as accessible objects for assistive technologies.

In this sense, the combination between no HTML universal design practices, incomplete link navigation for keyboard, and inconsistent attributes will make the website difficult to navigate for users of screen readers.



Improvement Iterations

The main changes made to improve upon the current flow chart include using ARIA attributes and HTML best practices, installing an artificial technology feature onto the webpage that uses machine learning algorithms that synch with the keystrokes and screen readers, using haptic technology to provide additional sensory feedback, and combining the existing features of the American Airlines website with those of the British Airways website, one recognized for its accessible interactions.

The ARIA attributes include *roles*, *states* and *properties*. Roles provide semantic meaning to content, describing objects without an intuitive function or full browser support. States refer to how an object might change depending on user's actions, representing with the data associated with the interaction possibilities. States act as dynamic properties. Properties, meanwhile, encompass attributes essential to an object's nature of data value.

The first flow chart iteration for a revised website interaction includes a combination between a screen reader software and specific keyboard commands, designed for consistency with ARIA attributes and HTML best practices, mainly, meaningful links and headers which enable keyboard shortcuts, so that visually impaired users can navigate the website without having to use mouse. This way, the screen reader will synch with the keyboard and become accessible from the webpage's back end.

A second flow chart iteration uses haptics, meaning sensory input that alerts the users in the changes of a perceived environment. By replicating the senses of touch and motion within a virtual technological interaction, visually impaired users construct a spatial mental map of an interface, via sonic, voice, vibratory and pressure-based feedback. As two of Don Norman's design principles, feedback conveys information of a task undertaken by users (), while mapping

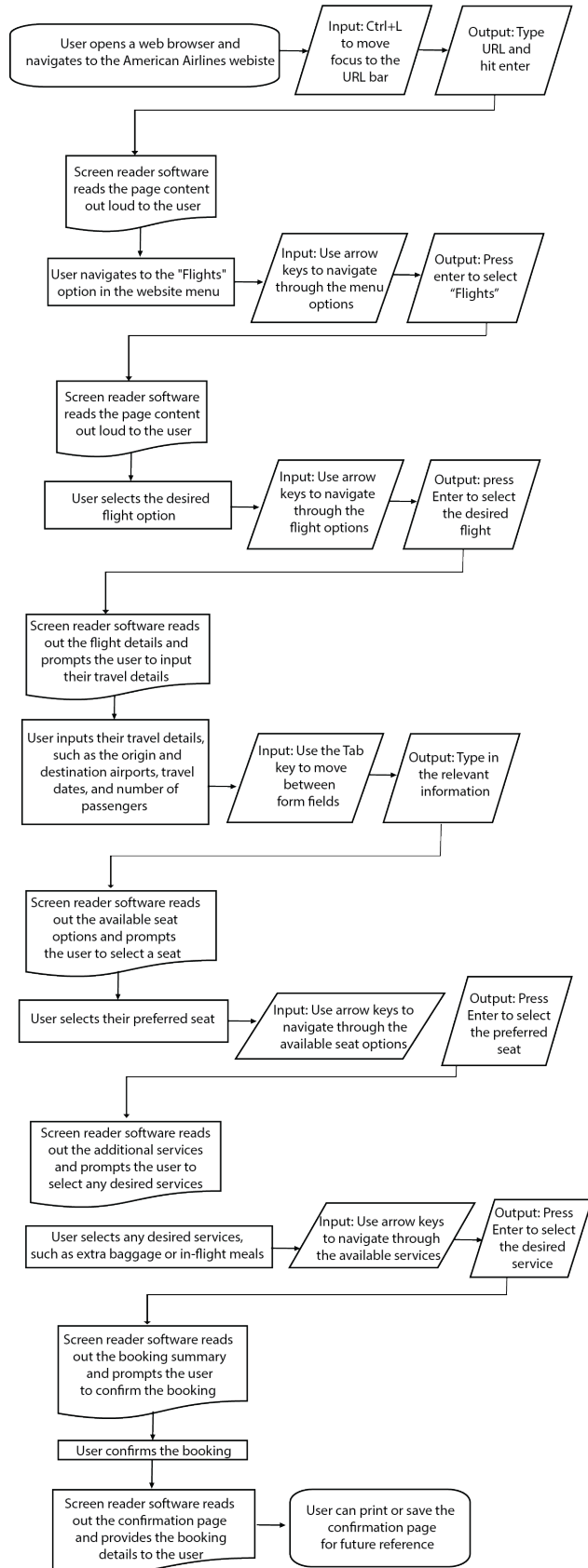
refers to “the relationship between controls and their effects in the world” (Rogers & Sharp, 2022).

The third flow chart iteration involves machine learning. In this case scenario, the visually impaired user interacts with an AI powered webpage through a screen reader, to select the flight the options. While AI would help simplify the interactive component and the issues with page hierarchy, an automated AI language model may have trouble keeping up with dynamic websites powered through interactive code like Java Script. Moreover, a flight booking website based on a search bar, and AI component and a screen reader might rely too heavily on audio and—without tactile elements, captions and other multimedia somatosensory feedback—might greatly increase the cognitive load and exclude users with auditory issues

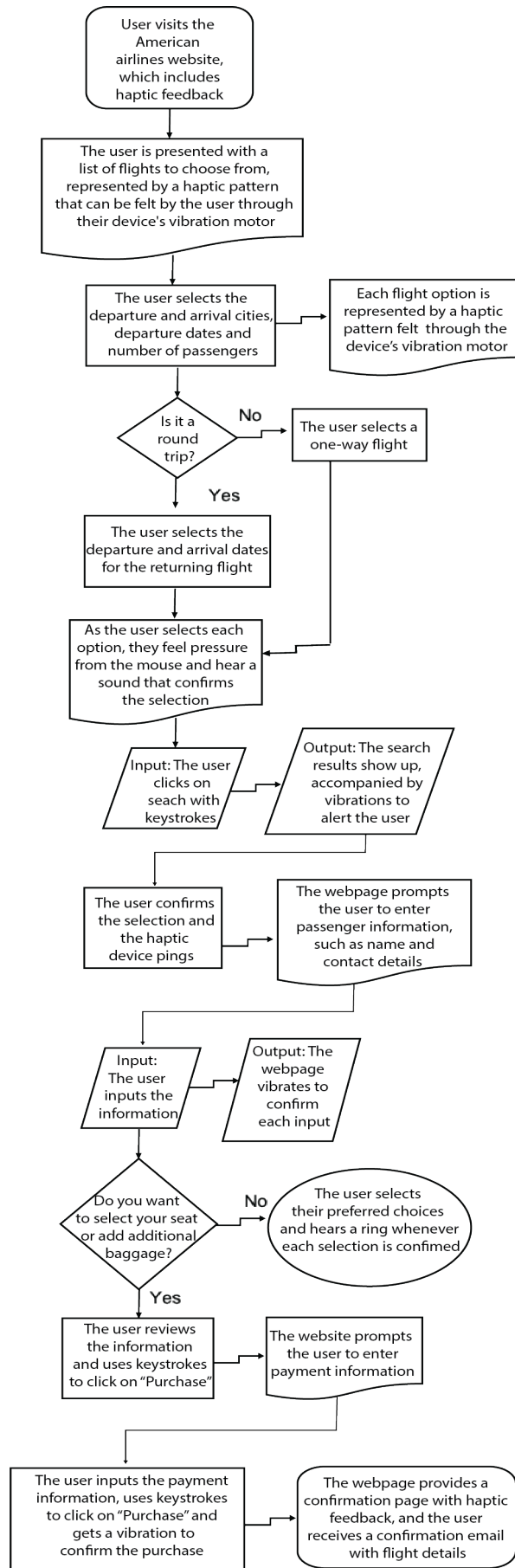
The fourth iteration of the website combines the page hierarchy, commands and web flow of the American Airlines website with that of the British Airways, which according to Chat GTP, is one of the most accessible flight booking websites on the internet, due to consistent ARIA attributes plus meaningful HTML links and headers. In conjunction with its minimalist style, high contrast, text resizing, skipping links and language support.

The most interesting and feasible website iterations include the Flow Chart II, which allows visually impaired users to map interaction without overtly relying in auditory input and memory, and Flow Chart III, which outlines a user interaction using keyboard-only navigation through consistent ARIA attributes and meaningful HTML hierarchy and links.

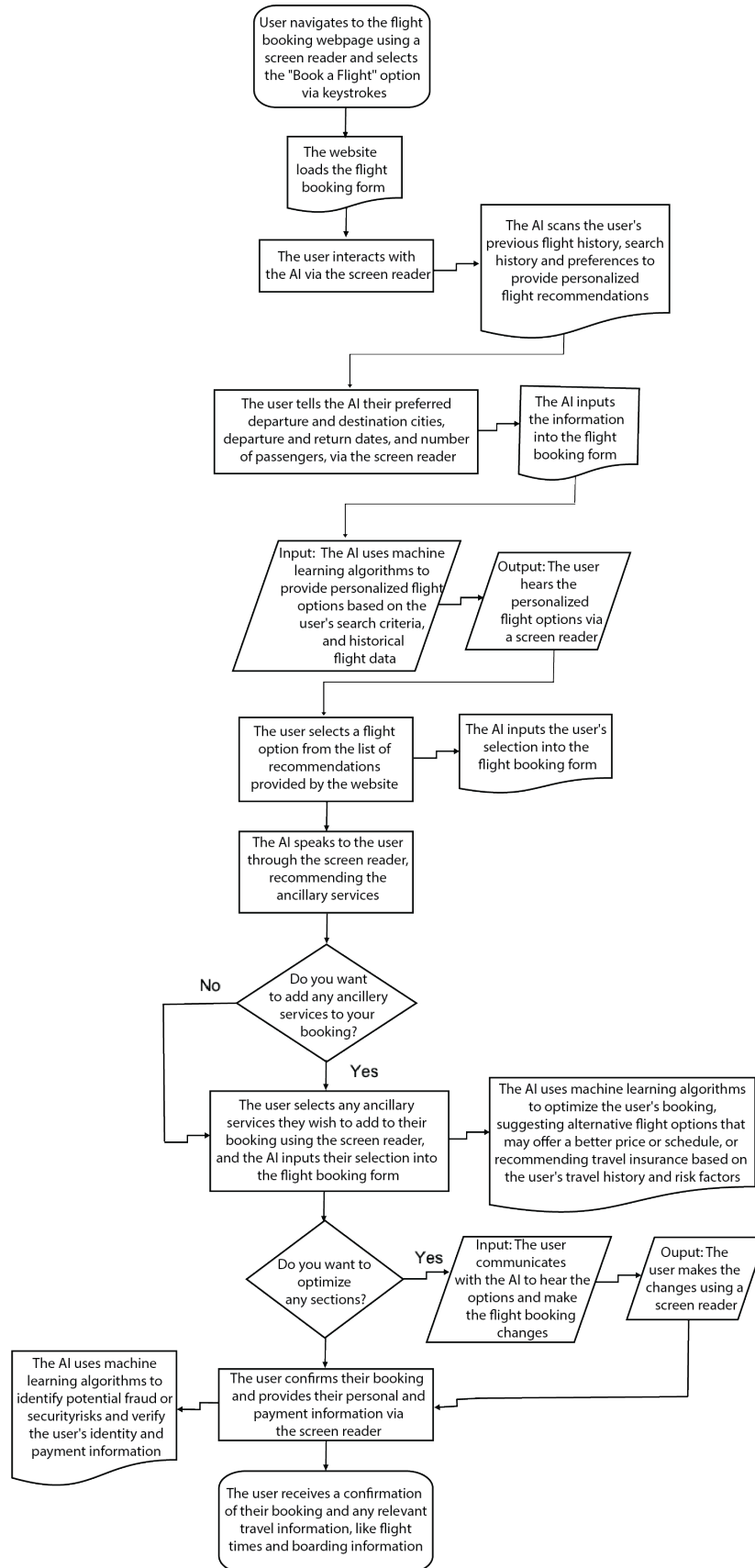
Flow Chart I: Assistive technology and keystrokes



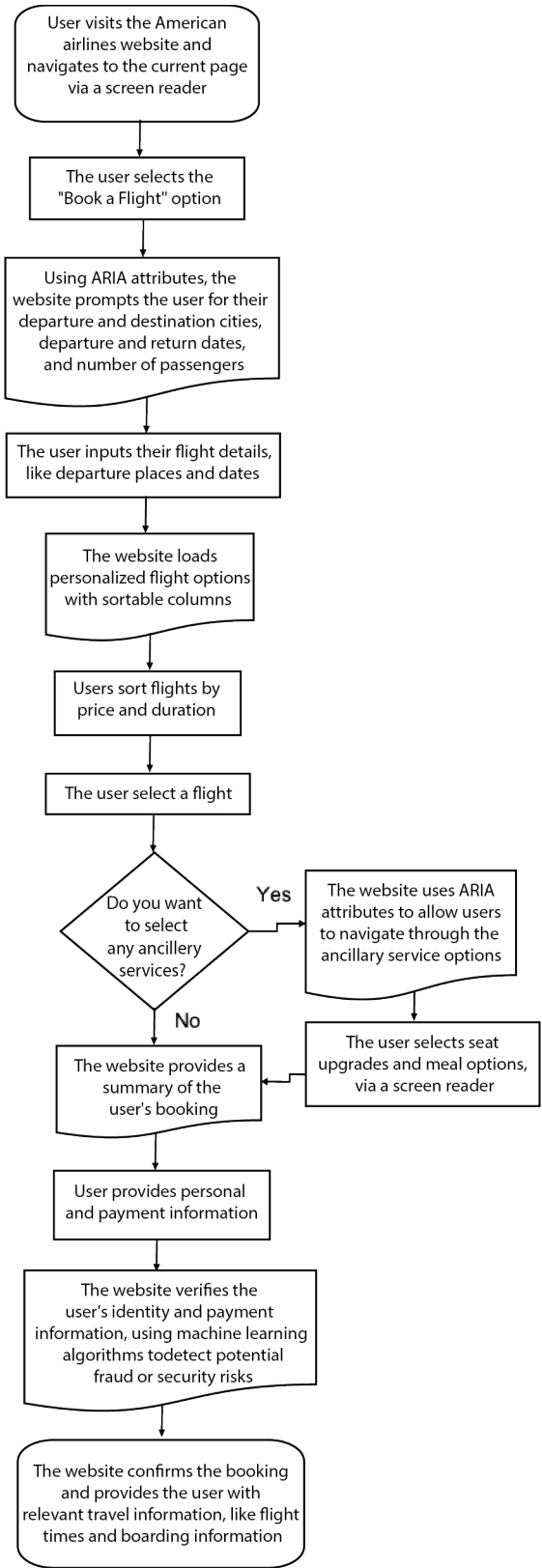
Flow Chart II: Haptic Feedback



Flow Chart III: Machine Learning



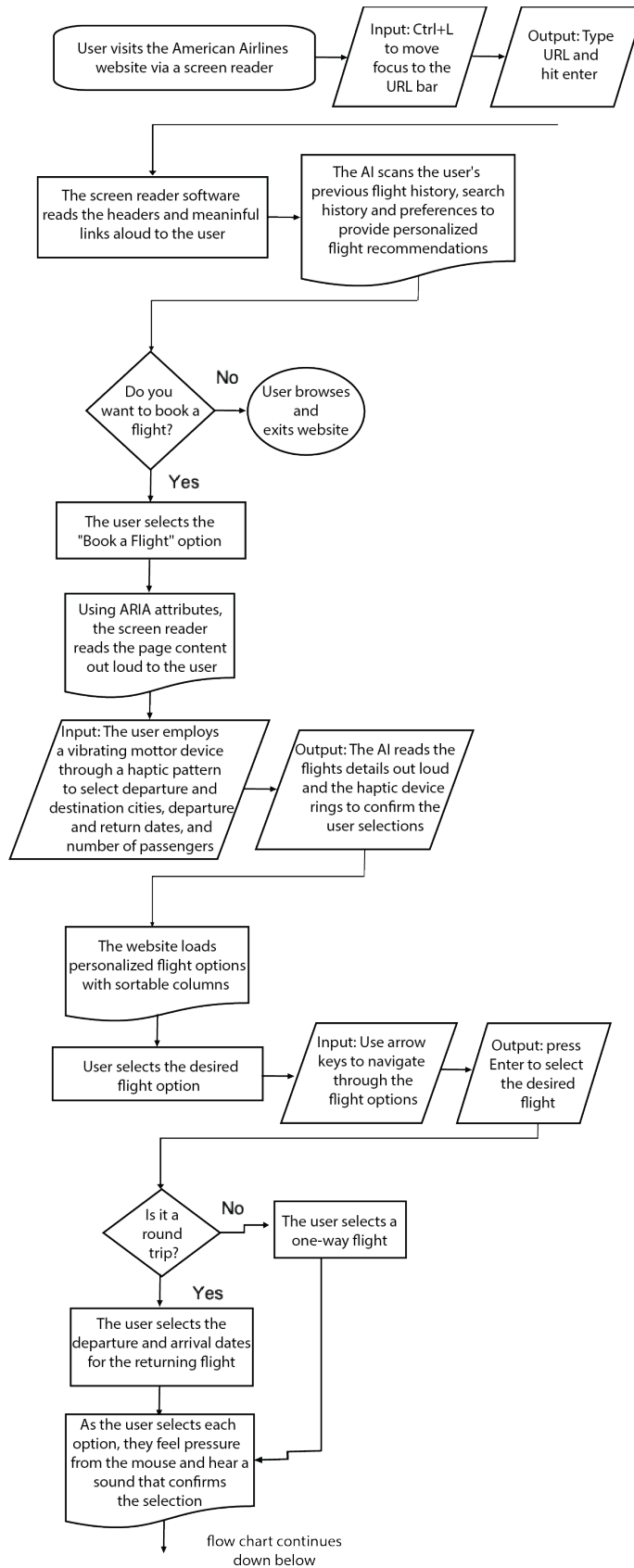
Flowchart IV: British Airways and American Airlines

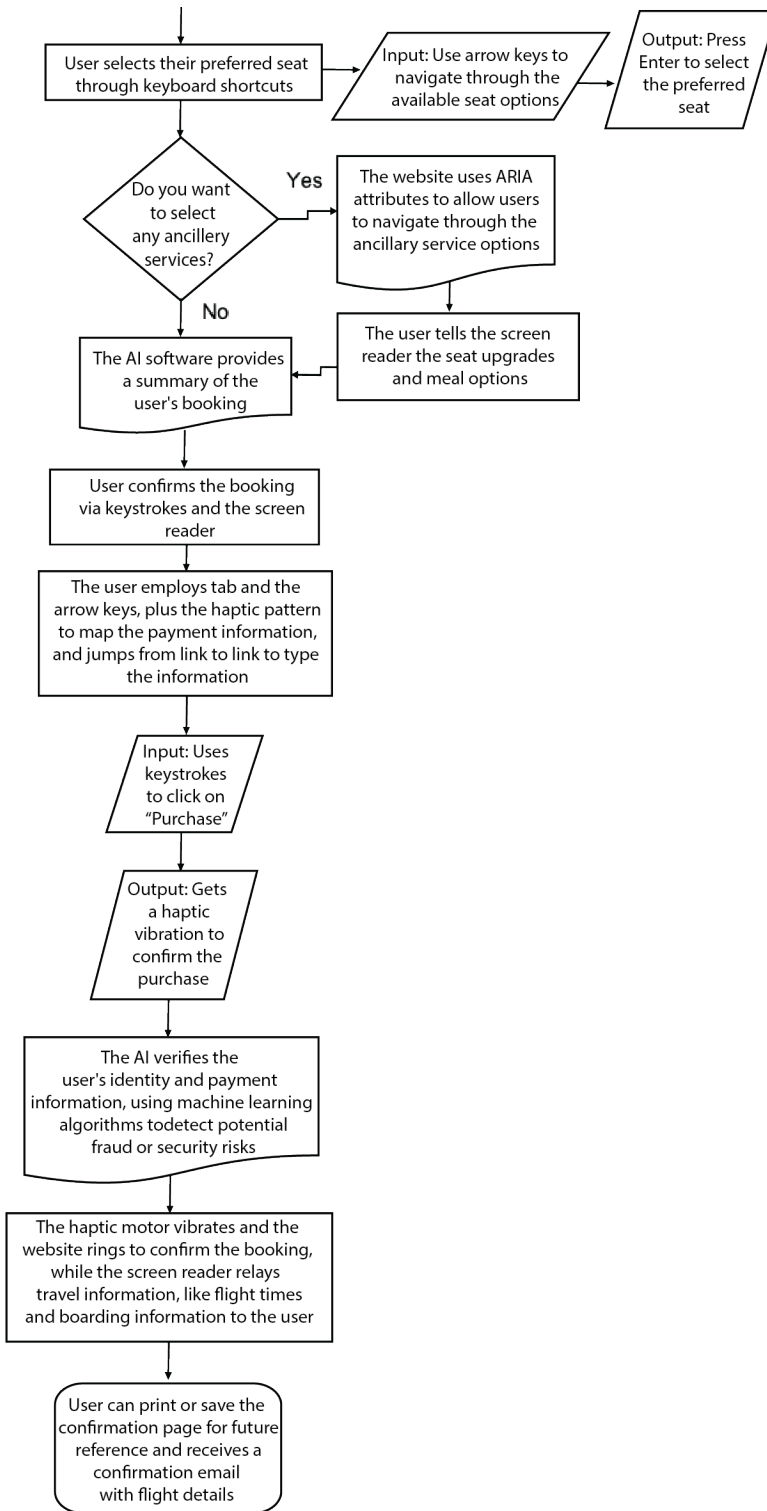


Future State

The proposed final iteration combines consistent ARIA attributes, best HTML information architecture hierarchy practices—including keystroke-based navigation, alternative text, and clearly labeled website forms and instructions, a machine-learning powered software, haptic feedback, text resizing, high contrast modalities, language support, a skipping links options, multimedia modalities, audio captions, and accessibility documentations.

Since “complex web applications become inaccessible when assistive technologies cannot determine the semantics behind portions of a document or when the user is unable to effectively navigate to all parts of it in a usable way” (W3C, X), the website will mimic the minimalist design of the British Airways website, prioritizing texts, links, colour contrast and meaningful command. Moreover, the website will combine a text and audio based artificial intelligence software, with haptic feedback like braille keyboard pressure, and with other visual input to make the machine learning universally accessible. That way, the website will ensure multimodal interactions when booking a flight, diminish cognitive load, and ensure visually impaired users receive voice over, sonic, tactile and vibratory. For instance, the AI will answer over text, which a script reader will transcript into audio in par to keyboard braille pressure. To provide haptic feedback, the device will vibrate and ring to confirm successful interactions.





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Links

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<https://www.ssa.gov/>

https://www.britishairways.com/travel/home/public/en_ca?&Brand=Y&DM1_Channel=PPC&DM1_Mkt=US&DM1_Campaign=AMER_CA_EN_FLIGHTS_MASTERBRAND_V2&SEO=N&DM1_Keyword=british%20airways&gclid=CjwKCAjwrdmhBhBBEiwA4Hx5g2o5-OQTzgFGWqvxblYM06JITZZws0B3QqPW8NzdPtIZYmiTWwOXxoCbKAQAvD_BwE&gclsrc=aw.ds/

<https://www.aircanada.com/ca/en/aco/home.html>

<https://www.alaskaair.com/>

Appendix A: Chat Assisted Ideas

Picture I. *The idea to incorporate haptic feedback into the website*

J

And give me an example of a website accessible for screen readers and one that is not



Sure, here are two examples of a website, one that is accessible for screen readers and one that is not:



1. Accessible website: The U.S. Social Security Administration (SSA) website (<https://www.ssa.gov/>) is an example of a website that is designed with accessibility in mind. The website is fully accessible for screen readers, and includes features such as:
 - Clear and concise headings and subheadings that provide a logical structure to the page.
 - Descriptive link text that provides context for users who navigate using links.
 - Alternative text for images that describes the content of the image.
 - ARIA attributes that provide additional information about the purpose and function of elements on the page.
 - Keyboard navigation that allows users to navigate through the site without a mouse.

Picture II. *The idea to incorporate haptic feedback into the website*



I think those are all great, but the issue is I need an specific example to do a prototype about



I see. In that case, here are some specific examples of accessible interactions that you could potentially prototype:



1. A voice-activated smart home system that can be easily controlled using voice commands, making it more accessible for individuals with physical disabilities.
2. An online shopping platform that includes alternative text descriptions for all product images, making it more accessible for individuals with visual impairments.
3. A mobile app that uses haptic feedback to provide real-time guidance and feedback for individuals with cognitive or developmental disabilities.
4. A digital learning platform that incorporates closed captioning and sign language interpretation for video-based lessons, making it more accessible for individuals with hearing impairments.
5. A virtual reality training program that simulates real-life scenarios and uses accessible controls and cues to help individuals with physical disabilities practice and improve their skills.

These are just a few examples, but you could also think about specific industries or contexts where accessible interactions are particularly important, such as healthcare, transportation, or finance. I hope this gives you some inspiration for your prototype!

Picture III. *The idea to analyze the American Airlines Website*

2. Inaccessible website: The American Airlines website (<https://www.aa.com/>) is an example of a website that has accessibility issues and is not fully accessible for screen readers. Some of the accessibility issues include:

- Poorly structured headings and subheadings that make it difficult for screen reader users to understand the page hierarchy.
- Links with vague or generic text, such as "Click here," that do not provide context for users who navigate using links.
- Missing alternative text for images, which makes it difficult for screen reader users to understand the content of the image.
- Inconsistent use of ARIA attributes, which can confuse users who rely on these attributes to understand the purpose and function of elements on the page.

These are just a few examples of the differences between an accessible and inaccessible website for screen reader users. It's important for web designers and developers to follow accessibility guidelines and best practices to ensure that their websites are accessible to all users, including those who rely on screen readers.

Picture IV. *The idea to focus on HTML best practices*



Can you do a prototype of the American Airlines website, on a version that is accessible to screen readers?



As an AI language model, I don't have the capability to create a fully functional accessible prototype of a website. However, I can give you some general tips on how the American Airlines website could be made more accessible to screen reader users:







1. Use clear and concise headings and subheadings: Headings and subheadings provide a logical structure to the page and make it easier for screen reader users to understand the content. It's important to use headings and subheadings that accurately reflect the content of the page and follow a hierarchical structure.
2. Provide descriptive link text: Link text should be descriptive and provide context for users who navigate using links. Avoid using vague or generic link text such as "click here" or "read more."

3. Include alternative text for images: Alternative text for images should describe the content of the image in text format. This allows screen reader users to understand the content of the image even if they cannot see it.
4. Use ARIA attributes: ARIA attributes provide additional information about the purpose and function of elements on the page. Use ARIA attributes to provide additional context for screen reader users, such as indicating when a button opens a modal or when an element is expandable.
5. Ensure keyboard navigation is possible: Keyboard navigation allows users to navigate through the site without a mouse. Make sure all interactive elements on the page, such as links and form fields, can be accessed and activated using the keyboard.

By following these guidelines and best practices, the American Airlines website could be made more accessible to screen reader users. However, creating a fully accessible prototype would require more detailed design and development work.

Picture V: *The idea incorporate features from the British Airways website into the revised chart*

 J Can you do a website iteration?

 As an AI language model, I'm not able to create a fully functional website iteration with code. However, I can provide some guidance on how the American Airlines website could be iterated to make it more accessible for screen reader users:  

1. Use semantic HTML: Semantic HTML helps provide context to screen readers and other assistive technologies. Use appropriate HTML elements, such as `<header>`, `<nav>`, `<main>`, `<article>`, `<section>`, and `<footer>`, to structure the page and give meaning to the content.
2. Provide alternative text for non-text content: Use the `alt` attribute to provide alternative text for non-text content such as images, videos, and audio. The alternative text should be descriptive and convey the same information as the non-text content.
3. Use ARIA attributes: ARIA (Accessible Rich Internet Applications) attributes provide additional information to assistive technologies. Use ARIA attributes to provide additional context for screen reader users, such as indicating when a button opens a modal or when an element is expandable.

4. Make the website keyboard accessible: Ensure that all interactive elements can be accessed and activated using the keyboard alone. This includes links, buttons, form controls, and other interactive elements.
5. Provide descriptive link text: Use descriptive link text that provides information about the destination of the link. Avoid using generic link text such as "click here".
6. Provide clear and concise headings: Use clear and concise headings to help screen reader users understand the structure of the page and locate information quickly.
7. Test with screen readers: It's important to test the website with screen readers to ensure that it's accessible and usable. Use screen reader software such as NVDA, JAWS, or VoiceOver to test the website.

By implementing these guidelines and best practices, the American Airlines website could be iterated to make it more accessible for screen reader users. However, creating a fully accessible website requires a detailed design and development process, including testing with real users who rely on assistive technologies.

Picture VI: *The idea to research ARIA Attributes*



How does British Airways offer accessibility features on its website?



British Airways offers several accessibility features on its website to make it easier for passengers with disabilities to use the site. Here are some of the ways British Airways makes its website accessible:







1. Keyboard Navigation: The website can be navigated using the keyboard, allowing users who cannot use a mouse to access all areas of the site.
2. Alternative Text: Images on the website have alternative text descriptions that can be read by screen readers, making the site more accessible to visually impaired users.
3. Text Resizing: Users can adjust the text size on the website to make it easier to read.
4. High Contrast: The website has a high-contrast mode that can be activated for users with visual impairments.

5. Language Support: The website is available in multiple languages, making it accessible to users who speak languages other than English.
6. Accessible Forms: The website's forms are designed to be accessible, with clear labels and instructions.
7. Skip Links: Skip links are available on the website, allowing users to skip directly to the main content without having to navigate through menus and other sections.
8. Accessibility Statement: British Airways has an accessibility statement that provides information on the website's accessibility features and instructions on how to use them.

These are just a few examples of the accessibility features available on the British Airways website. The website is designed to be compatible with assistive technologies, and the airline is committed to ensuring that all passengers have access to their services.

Picture VII: *Guidance for current flow chart*

 J I was wondering if you could help me create a webflow to book a flight for the American Airlines website

 As an AI language model, I can provide guidance on how to use Webflow to design a website or interface, but I cannot directly interact with the American Airlines website or book a flight for you. However, I can give you some general guidelines on how to create a booking system using Webflow.  

1. Create a landing page for your booking system. This page should contain a clear and prominent call-to-action button that takes the user to the booking process.
2. Create a form that allows users to input their flight details, such as departure and arrival airports, date of travel, and number of passengers.
3. Integrate a payment gateway so that users can pay for their flights. You can use services like Stripe or PayPal to handle the payment processing.
4. Once the user has completed the booking process, create a confirmation page that displays their booking details and provides instructions on how to access their ticket.
5. Set up an email confirmation system that sends users a confirmation email with their booking details and a link to their ticket.
6. Test your booking system thoroughly to ensure that it works correctly and that users can complete the booking process without encountering any errors.

Remember to comply with American Airlines' terms and conditions and any relevant regulations when designing your booking system. Good luck!

Picture VIII: *Idea for haptic pattern*

J

Hi, can you give me a flow chart of a visibly impaired user booking a flight using haptics, without a haptic device?



Sure, here's a possible flow chart for a visually impaired user booking a flight using haptics without a haptic device:



1. User opens a web browser on their computer or mobile device and navigates to a website that offers an accessible booking interface.
2. The website detects that the user has a visual impairment and automatically enables the haptic mode.
3. The user is presented with a list of flights to choose from. Each flight option is represented by a haptic pattern that can be felt by the user through their device's vibration motor.
4. The user selects a flight by feeling the haptic pattern associated with it.
5. The user is then presented with the flight details and asked to confirm their selection by feeling a different haptic pattern.
6. If the user needs to enter any information, such as their personal details or payment information, they can do so using a haptic keyboard or a series of haptic buttons that are presented in a sequential order for ease of navigation.
7. Once all necessary information has been entered and confirmed, the user is presented with a final haptic pattern indicating that their booking has been successful.

Note: It's important to keep in mind that this is just one possible approach and there may be other ways to implement haptic feedback for visually impaired users booking a flight. It's important to prioritize accessibility and user testing when designing such interfaces.

Picture IX: *Idea for specific keyboard commands*



Can you do a flow chart that uses assistive technologies and keystrokes to book a flight in the American Airlines website?



Sure, here's a flow chart that uses assistive technologies and keystrokes to book a flight in the American Airlines website:



1. User opens a web browser and navigates to the American Airlines website (Ctrl+L to move focus to the URL bar, then type in the URL and hit Enter).
2. Screen reader software reads the page content out loud to the user.
3. User navigates to the "Flights" option in the website menu (Use arrow keys to navigate through the menu options and press Enter to select "Flights").
4. Screen reader software reads out the available flight options.
5. User selects the desired flight option (Use arrow keys to navigate through the flight options and press Enter to select the desired flight).
6. Screen reader software reads out the flight details and prompts the user to input their travel details.
7. User inputs their travel details, such as the origin and destination airports, travel dates, and number of passengers (Use the Tab key to move between form fields and type in the relevant information).
8. Screen reader software reads out the available seat options and prompts the user to select a seat.
9. User selects their preferred seat (Use arrow keys to navigate through the available seat options and press Enter to select the preferred seat).
10. Screen reader software reads out the additional services and prompts the user to select any desired services.
11. User selects any desired services, such as extra baggage or in-flight meals (Use arrow keys to navigate through the available services and press Enter to select the desired service).
12. Screen reader software reads out the booking summary and prompts the user to confirm the booking.

13. User confirms the booking (Use the Tab key to move to the "Confirm" button and press Enter).
14. Screen reader software reads out the confirmation page and provides the booking details to the user.
15. User can print or save the confirmation page for future reference (Use the Tab key to navigate to the "Print" or "Save" button and press Enter).

Note that this is just an example of a possible flow chart and may vary depending on the assistive technology used by the user and the specific features offered by the American Airlines website.

Picture X: *Ideas for haptic pattern and screen reader compatibility*



There are several assistive technologies that can make websites more accessible for visually impaired users. Here are a few examples:



1. Screen readers: These are software applications that read out the content of a webpage aloud, allowing visually impaired users to access and navigate the content using keyboard shortcuts or other input devices.
2. Braille displays: These are hardware devices that use refreshable Braille cells to display text from a computer screen, allowing visually impaired users to read web content using Braille.
3. Screen magnifiers: These are software applications that enlarge the content on a computer screen, making it easier for visually impaired users to read.
4. Voice recognition software: This software allows visually impaired users to interact with a website using voice commands, making it easier to navigate and access web content.



5. High-contrast displays: Some visually impaired users may have difficulty distinguishing between different colors on a webpage. High-contrast displays can help by using bold text and high-contrast colors to make the content easier to read.
6. Text-to-speech software: This software can read out text on a webpage using a synthetic voice, allowing visually impaired users to access and navigate web content without having to rely on Braille or screen readers.
7. Keyboard shortcuts: Websites can be designed to include keyboard shortcuts that allow visually impaired users to navigate and access web content without having to use a mouse.

These are just a few examples of the assistive technologies that can make websites more accessible for visually impaired users. The most effective approach will depend on the specific needs and preferences of the user, and may involve a combination of different assistive technologies.



What are some changes a website would need to make to make it compatible for screen readers?



There are several changes a website would need to make to make it compatible for screen readers. Here are a few examples:  

1. Use proper HTML structure: Websites should be properly structured using HTML headings (h1, h2, h3, etc.), paragraphs, lists, and other semantic HTML elements. This makes it easier for screen readers to navigate and understand the content of the website.
2. Provide alternative text for images: All images on the website should include alternative text (alt text) that describes the content of the image. Screen readers can then read out the alt text to visually impaired users.
3. Use descriptive link text: Links should use descriptive text that accurately describes the content of the linked page. This makes it easier for screen readers to understand where the link will take the user.
4. Use meaningful page titles: Each page on the website should have a unique and meaningful page title that accurately describes the content of the page. This makes it easier for screen readers to identify and navigate between different pages on the website.

5. Provide captions and transcripts for multimedia content: Video and audio content on the website should be accompanied by captions or transcripts that accurately describe the content. This makes it easier for screen readers to understand the content of the multimedia content.
6. Avoid using tables for layout: Tables should be used for tabular data only, not for layout purposes. Screen readers can have difficulty interpreting tables used for layout and can make the content confusing for visually impaired users.
7. Provide skip links: Skip links are links that allow users to skip over repetitive content and navigation menus and go directly to the main content of the page. This makes it easier for screen reader users to quickly navigate through the website.

These are just a few examples of the changes a website would need to make to make it compatible for screen readers. By following these guidelines, websites can ensure that visually impaired users can access and understand their content using screen readers.



Can you give me a flow chart of booking a flight in the American Airlines website, which includes these changes?



Certainly, here is a flow chart of booking a flight on the American Airlines website, which includes changes to make the website compatible for screen readers:



1. Navigate to the American Airlines website using a screen reader.
2. Use the keyboard to navigate to the "Book" tab and select "Flights".
3. Use the keyboard to input the departure and arrival cities, departure and return dates, and number of passengers.
4. Use the keyboard to select "Search".
5. Navigate through the search results using the keyboard and select the desired flight.
6. Verify that the selected flight information is correct, including the departure and arrival times, flight number, and price.
7. Use the keyboard to select "Continue".

8. Enter passenger information, including name, birthdate, and contact information.
9. Select any additional options, such as seat selection or baggage fees.
10. Verify that all information is correct on the review page.
11. Use the keyboard to select "Purchase".
12. Enter payment information, including credit card number and billing address.
13. Verify that all information is correct on the confirmation page.
14. Receive confirmation email with flight details and save the email for future reference.

To make the American Airlines website compatible for screen readers, the website should follow the guidelines outlined in my previous answer, including using proper HTML structure, providing alternative text for images, using descriptive link text, providing meaningful page titles, providing captions and transcripts for multimedia content, avoiding using tables for layout, and providing skip links.

J is the american airlines website compatible for a braille display?



The American Airlines website does not have specific support for braille displays, but it is still possible for someone using a braille display to navigate the website. However, it may be more difficult to navigate the website using a braille display than using a screen reader.



To make the website more compatible for braille displays, the website should follow the same accessibility guidelines as for screen readers, such as using proper HTML structure, providing alternative text for images, using descriptive link text, and providing skip links. These changes can help make the website more compatible for braille displays, as well as for screen readers and other assistive technologies.

Overall, it's important for websites to prioritize accessibility for all users, including those using braille displays. By making these changes, websites can help ensure that everyone can access and use their content, regardless of their abilities.



can you do a flow chart of a webpage using haptics to book a flight?



Certainly, here is a flow chart of a webpage using haptics to book a flight:



1. User navigates to the flight booking webpage that includes haptic feedback.
2. User connects the haptic device to the computer or mobile device.
3. The webpage prompts the user to select the departure and arrival cities, departure and return dates, and number of passengers.
4. As the user selects each option, the haptic device provides feedback, such as vibrations or varying levels of pressure, to confirm the selection.
5. Once all options are selected, the user can select "Search" using the haptic device.
6. The webpage displays the search results, with each option accompanied by a haptic response.
7. The user can scroll through the options using the haptic device and select the desired flight.
8. As the user confirms their selection, the haptic device provides feedback to confirm the selection.
9. The webpage prompts the user to enter passenger information, such as name and contact details.
10. The user inputs the information using the haptic device, and the webpage provides haptic feedback to confirm each input.
11. The webpage prompts the user to select any additional options, such as seat selection or baggage fees, with haptic feedback provided for each selection.
12. The user can review their selection, and the haptic device provides feedback to confirm the review.

13. The user can then select "Purchase" using the haptic device, and the webpage prompts the user to enter payment information.
14. The user inputs the payment information using the haptic device, and the webpage provides haptic feedback to confirm each input.
15. The user can review their purchase, and the haptic device provides feedback to confirm the purchase.
16. The webpage provides a confirmation page with haptic feedback, and the user receives a confirmation email with flight details.

This flow chart outlines how haptic feedback can be used to make the flight booking process more accessible for users who may have difficulty navigating a webpage using a mouse or touch screen, such as those with mobility impairments. By providing haptic feedback for each input, selection, and confirmation, users can receive clear and accessible feedback as they navigate the booking process.



Can you do a flowchart which uses ARIA attributes to book a flight?



Sure, here's a flowchart showing how ARIA attributes could be used to book a flight on a website:



1. User navigates to the flight booking webpage and selects the "Book a Flight" option.
2. The website loads the flight booking form, which includes ARIA landmarks to help users navigate the page:
 - ARIA `role="navigation"` is used to define the main navigation bar at the top of the page, which includes links to different sections of the form.
 - ARIA `role="main"` is used to define the main content of the page, which includes the flight booking form itself.
 - ARIA `role="form"` is used to define the flight booking form as a whole.
3. The user enters their departure and destination cities, departure and return dates, and number of passengers using the form fields, which include ARIA attributes to help users understand how to interact with them:
 - ARIA `role="textbox"` is used to define the text input fields for the departure and destination cities and the dates.
 - ARIA `role="spinbutton"` is used to define the number input field for the number of passengers.
 - ARIA `label` attributes are used to provide labels for each form field, such as "Departure City", "Return Date", and "Number of Passengers".
 - ARIA `autocomplete` attributes are used to suggest valid input options for each form field.

4. The user selects the "Search" button to search for available flights, which includes ARIA attributes to help users understand what the button does:
 - ARIA `role="button"` is used to define the search button as a button element.
 - ARIA `label` attributes are used to provide a label for the search button, such as "Search Flights".
 - ARIA `describedby` attributes are used to provide additional information about the search button, such as "Search for flights departing on the selected date and arriving at the selected destination".
5. The website loads the search results page, which includes ARIA landmarks to help users navigate the page:
 - ARIA `role="navigation"` is used to define the main navigation bar at the top of the page, which includes links to different sections of the search results.
 - ARIA `role="main"` is used to define the main content of the page, which includes the search results themselves.
6. The user selects a flight from the search results, which includes ARIA attributes to help users understand how to interact with the options:
 - ARIA `role="radio"` is used to define the radio buttons for each flight option.
 - ARIA `label` attributes are used to provide a label for each flight option, such as "Flight 1234 - Economy Class - Departure: 9:00AM - Arrival: 11:00AM".
7. The user selects the "Continue" button to proceed to the passenger information page, which includes ARIA attributes to help users understand what the button does:
 - ARIA `role="button"` is used to define the continue button as a button element.
 - ARIA `label` attributes are used to provide a label for the continue button, such as "Continue to Passenger Information".
 - ARIA `describedby` attributes are used to provide additional information about the continue button, such as "Proceed to the next page to enter passenger information".
8. The website loads the passenger information page, which includes ARIA landmarks to help users navigate the page:
 - ARIA `role="navigation"` is used to define the main navigation bar at the top of the page, which includes links to different sections of the passenger information form.
 - ARIA

Picture XI: *Combining features from the American Airlines and British Airways Website*

J

Can you do a flow chart that combines the features of the American Airlines website with that of the British Airways?



Sure, here's a flow chart that combines features of the American Airlines and British Airways websites to book a flight:



1. The user navigates to the flight booking webpage using a screen reader.
2. The website loads and the user selects the "Book a Flight" option.
3. The website prompts the user for their departure and destination cities, departure and return dates, and number of passengers using ARIA attributes to enhance accessibility.
4. The user inputs their flight details and the website loads personalized flight options using machine learning algorithms.
5. The website displays flight options with sortable columns to allow users to sort flights by price, duration, and other factors.
6. The user selects a flight and the website prompts them to choose any additional services or amenities they wish to add to their booking, such as seat upgrades or meal options.
7. The website uses ARIA attributes to allow users to easily navigate through the various ancillary service options and select the ones they want using the screen reader.
8. The website provides a summary of the user's booking, including the selected flights and any added ancillary services, and prompts the user to provide their personal and payment information.
9. The website uses ARIA attributes to enhance accessibility during the checkout process, allowing users to easily navigate through the form fields using the screen reader.
10. The website verifies the user's identity and payment information, using machine learning algorithms to detect potential fraud or security risks.
11. The website confirms the booking and provides the user with relevant travel information, such as flight times and boarding information, using ARIA attributes to ensure accessibility for screen reader users.



Can you outline which features in this chart are from each website?



Sure, here's an outline of which features in the flow chart are from each website:



American Airlines:

- Prompting the user for their flight details (departure and destination cities, departure and return dates, and number of passengers).
- Displaying personalized flight options using machine learning algorithms.
- Providing users with additional services or amenities to add to their booking.
- Providing a summary of the user's booking and prompting them for personal and payment information.
- Using machine learning algorithms to verify the user's identity and payment information.

British Airways:

- Sorting flight options by price, duration, and other factors using sortable columns.
- Providing relevant travel information, such as flight times and boarding information, during the confirmation process.

Both:

- Enhancing accessibility for users with disabilities by using ARIA attributes throughout the booking process to allow screen reader users to easily navigate through form fields and options.

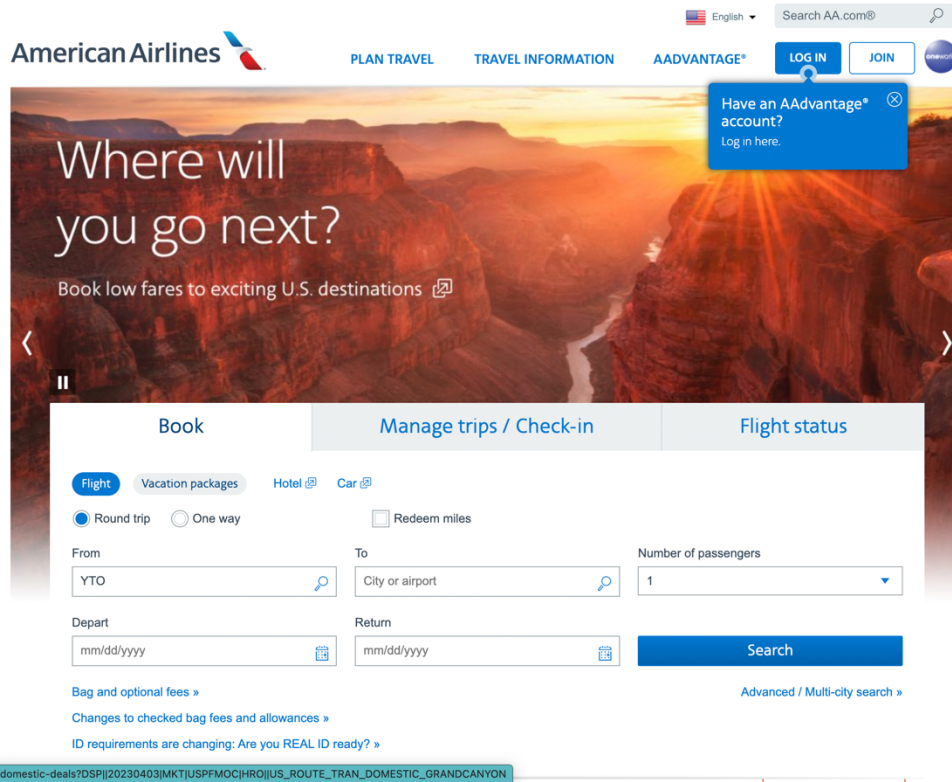
Regenerate response

Appendix B: Referenced Technology

Picture I: *Screen Reader*



Picture II: Steps Followed for Current Flow Chart of American Airlines Website



Passenger details

Enter names as printed on each passenger's government-issued photo ID. [TSA Secure Flight rules](#)

We collect your personal data in accordance with applicable laws and regulations, including certain data related to COVID-19 and your health status during the pandemic. Read how we use and protect your personal information. [American Airlines privacy policy](#)

Passenger 1

(* Required)

First name *	Middle name	Last name *
Loyalty program AAdvantage	Loyalty number	

Date of birth *

Month ▼	Day ▼	Year ▼	Gender * Select your gender ▼	Country / region of residence * Select a country / region ▼
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As listed on your photo ID

[+ Add Known Traveler number](#)

[+ Add redress number](#)

[+ Add special assistance](#)

Trip contact

(• Required)

Primary email •

Confirm primary email •

Primary phone •

Primary phone type
Mobile

+1

Number

Promo codes and accounts

Promotion code



Business Extra® / On Business

Use caution when packing

Some everyday products, like electronic cigarettes and aerosol spray starch, can be dangerous when transported on the aircraft in carry-on and/or checked baggage. Changes in temperature or pressure can cause some items to leak, generate toxic fumes or start a fire. Carriage of prohibited items may result in fines or in certain cases imprisonment. Please ensure there are no forbidden hazardous materials in your baggage like:

