Slider.js Documentation

Overview

`Slider.js` is designed as a reusable library, making it easy to integrate across different projects. It provides a fully-featured, customizable image slider with various enhancements, ensuring smooth and optimized performance.

Features

1. General Features

- **Pagination**: Enable/disable navigation dots
- **Navigation Buttons**: Enable/disable next/prev buttons
- **Auto-Slide**: Enable/disable automatic slide transition
- **Lazy Load**: Load images only when needed
- **Loop Mode**: Infinite looping of slides
- **Thumbnail View**: Small image previews for quick navigation
- **Progress Bar**: Shows slide progress visually
- **Clone Slides**: Duplicate slides for seamless transition
- **Mouse Wheel Scroll**: Navigate using mouse wheel
- **Space Between Slides**: Define gap between slides
- **Keyboard Navigation**: Navigate with left/right arrow keys
- **Touchpad Swipe**: Enable smooth navigation via touchpad

2. Customizable Options

```
const slider = new Slider('custom-carousel', {

    images: ["image1.jpg", "image2.jpg", "image3.jpg"],

    slidesPerView: { mobile: 1, tablet: 1, desktop: 1 },

    pagination: true,  // Show pagination dots

    navigation: true,  // Show navigation buttons

    autoSlide: true,  // Enable auto-slide
```

```
    autoSlideInterval: 1300,  // Auto-slide speed in ms
    lazyLoad: true,  // Lazy load images
    progressBar: true,  // Show progress bar
    loop: true,  // Enable looping
    cloneSlides: true,  // Clone slides for seamless scrolling
    mouseWheelScroll: false,  // Enable mouse wheel navigation
    spaceBetween: 0,  // Space between slides in px
    initialSlide: 0  // Set the starting slide
});
```

Functionality

1. Initialization (`init()`)

- Creates the slider
- Updates slides per view
- Attaches event listeners
- Handles lazy loading

2. Slider Creation (`createSlider()`)

- Generates the slider structure
- Injects pagination, navigation buttons, progress bar

3. Pagination (`createPaginationDots()`, `updatePagination()`)

- Generates clickable pagination dots
- Highlights the active dot

4. Navigation Buttons (`updateNavigationButtons()`)

- Shows/hides next/prev buttons as needed

5. Auto-Slide (`startAutoSlide()`, `stopAutoSlide()`)

- Controls automatic slide transitions
- Stops on mouse hover, resumes on mouse leave

6. Thumbnail Handling (`getThumbnails()`, `updateActiveThumbnail()`, `addThumbnailListeners()`)

- Generates thumbnail previews
- Highlights the active thumbnail

7. Progress Bar (`updateProgressBar()`)

- Updates the progress bar width
- Stops progress if the last slide is reached

8. Slide Movement (`moveSlide()`)

- Handles slide transitions
- Applies smooth scrolling effects

9. Mouse & Keyboard Events (`handleMouseScroll()`, `handleTouchpadSwipe()`)

- Enables navigation via mouse wheel and keyboard
- Supports touchpad swiping

10. Smooth Auto-Scrolling (`enableSmoothAutoScroll()`)

- Enables continuous, jerk-free scrolling
- Disables `autoSlideInterval` when active

11. Initial Slide Configuration (`setInitialSlide()`)

- Loads the slider from a specified initial slide
- Configured from `main.js`

12. Media Support (`handleVideoSlides()`)

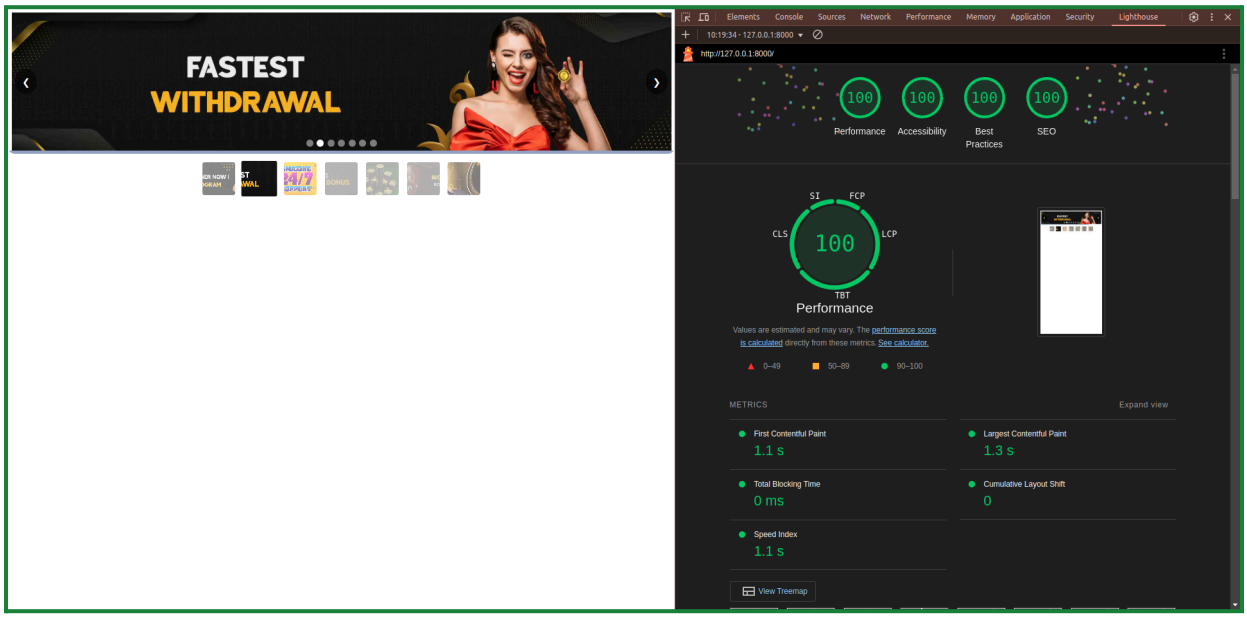
- Supports videos, GIFs, and animated SVGs within slides
- Syncs video duration with auto-slide interval

13. Real-Time Updates (`listenForConfigChanges()`)

- Monitors `main.js` for updates
- Applies configuration changes dynamically

Performance Optimization

`Slider.js` has been extensively optimized for high performance, achieving a **100% Lighthouse score** across all key metrics for both **Mobile and Desktop**:



Lighthouse Performance Report

- **Performance:** 100
- **Accessibility:** 100
- **Best Practices:** 100
- **SEO:** 100

Key Metrics

- **First Contentful Paint (FCP):** 1.1s
- **Largest Contentful Paint (LCP):** 1.3s
- **Total Blocking Time (TBT):** 0ms
- **Cumulative Layout Shift (CLS):** 0
- **Speed Index (SI):** 1.1s

Performance Improvements:

- Reduced blocking time to **0ms**
- Optimized lazy loading for faster rendering
- Efficient DOM updates for smooth animations
- Removed unnecessary reflows and repaints
- Implemented seamless transitions with GPU acceleration

Conclusion

`Slider.js` is a versatile and efficient image slider designed for seamless user interaction. Its modular structure and extensive customization options make it a robust solution for web applications requiring interactive image sliders. With top-tier performance and smooth animations, it provides an excellent user experience across all projects.