Below is the complete specification document for the plugin "PriceWise Hotels":

**PriceWise Hotels – Specification Document**

**1. Introduction**

**Project Name:**  
PriceWise Hotels

**Objective:**  
Develop a WordPress plugin that allows users to enter search parameters (destination, check-in/check-out dates, number of adults and children) and receive a comparison table of hotel prices from several booking websites (e.g., Booking, Agoda, Expedia). This is achieved by constructing static URLs and performing on-the-fly web scraping to extract pricing data.

**Target Audience:**  
General travelers – casual tourists, business travelers, families, and young adults.  
The plugin will be publicly accessible, primarily targeting users arriving via Facebook groups/pages and Google searches.

**2. Solution Overview**

**How It Works:**

1. **User Input:**
   * The user fills in a search form containing:
     + Destination (city/region)
     + Check-in and check-out dates
     + Number of adults and children
2. **URL Construction:**
   * Based on the provided parameters, the plugin builds static URLs for each booking site (e.g., Booking.com) by inserting variables such as dates, destination, and number of guests into a predefined URL structure.
3. **HTML Fetching:**
   * The plugin performs HTTP requests (using cURL or similar PHP methods) to retrieve the HTML content from each constructed URL.
4. **HTML Parsing:**
   * Using PHP tools such as DOMDocument or libraries like Simple HTML DOM, the plugin parses the HTML to extract key data:
     + Hotel name
     + Price
     + Image (if available)
     + Rating/reviews
     + Availability status (for the specified dates)
5. **Data Aggregation and Display:**
   * The extracted data from various sources are aggregated into a unified table.
   * Each row in the table represents a hotel, with columns displaying:
     + Hotel name and image
     + Price from each source (Booking, Agoda, Expedia, etc.)
     + Direct booking links for each source
6. **Advanced Filtering:**
   * Users can refine results with additional filters, such as:
     + Price range
     + Rating
     + Distance from the city center
     + Room type options (e.g., breakfast included, air conditioning, etc.)

**3. Product Scope**

**3.1. User Interface (UI/UX)**

* **Main Search Page:**
  + A visually appealing page featuring a header/banner image and a search form.
  + The form includes fields for destination (with autocomplete), check-in/check-out dates, and the number of adults and children.
  + A "Search" button initiates the process.
* **Results Page:**
  + Displays a table where each row contains:
    - Hotel image (if available)
    - Hotel name
    - Rating/reviews (if available)
    - Prices from Booking, Agoda, Expedia, etc.
    - Direct links for booking on each platform
  + Options for sorting and filtering the table (e.g., by price, rating, and additional criteria).

**3.2. Core Functionality**

* **Static URL Generation:**
  + Dynamically build URLs for each booking site using the user’s search parameters.
* **Real-Time HTML Fetching:**
  + Perform HTTP requests to fetch live HTML content from the generated URLs.
* **HTML Parsing:**
  + Extract necessary data from each page’s HTML structure.
* **Data Aggregation:**
  + Merge data from different sources into one coherent table for comparison.
* **Error Handling:**
  + Display user-friendly error messages if any request fails or if the data cannot be parsed correctly.
* **Logging:**
  + Maintain minimal logging for debugging HTTP requests and parsing errors.

**4. Technical Requirements**

**4.1. Technologies & Platforms**

* **Development Language:** PHP (as part of a WordPress plugin)
* **Libraries/Tools:**
  + cURL (or equivalent) for HTTP requests
  + DOMDocument or Simple HTML DOM for parsing HTML content
* **Platform:** WordPress (the plugin will be integrated into a WordPress site and managed via the WordPress admin dashboard)

**4.2. Integration with External Sites**

* **URL Construction:**
  + Each supported site will have a predefined URL format that is populated with the user’s parameters.
* **Data Fetching:**
  + Real-time HTTP requests to external sites when the user initiates a search.
  + Implement rate limiting and delays to avoid IP blocking or CAPTCHA challenges.

**4.3. Performance & Load Management**

* **User Traffic:**
  + Designed for low to moderate traffic (around 10-20 concurrent searches).
* **Caching:**
  + Since pricing data is highly dynamic, caching will not be extensively used; however, basic logging and error-handling should be in place to optimize performance.

**4.4. Security and Compliance**

* **Data Handling:**
  + No storage of sensitive payment data as users are redirected to affiliate sites for booking.
* **Compliance:**
  + Ensure the plugin adheres to GDPR and other local data privacy regulations, even if minimal personal data is collected.
* **Rate Limiting:**
  + Implement safeguards to prevent abuse (e.g., excessive automated requests).

**4.5. Maintenance & Updates**

* **External Site Changes:**
  + Regular monitoring and updates to the parsing logic, as external websites (like Booking.com) may change their HTML structure.
* **Documentation:**
  + Comprehensive code documentation to ease future updates and feature additions.
* **Logging:**
  + Implement a logging mechanism to track errors and performance issues for prompt resolution.

**5. Workflow**

1. **User Data Collection:**
   * The user fills out the search form on the website.
2. **URL Generation:**
   * The plugin generates static URLs for each booking website based on the provided search parameters.
3. **HTTP Requests:**
   * The plugin sends out HTTP requests to fetch the HTML pages from each constructed URL.
4. **HTML Parsing:**
   * The fetched HTML is parsed to extract hotel details such as name, price, image, and rating.
5. **Data Aggregation:**
   * Extracted data from various sources is combined into a single comparison table.
6. **Result Display:**
   * The aggregated table is presented to the user, including sorting and filtering options.
   * Each hotel entry includes direct booking links.
7. **Monitoring and Updates:**
   * The system logs errors and monitors for changes in external site structures, prompting updates to the parsing logic as needed.

**6. Challenges & Considerations**

* **HTML Structure Changes:**
  + External websites may update their layout or URL formats, necessitating ongoing updates to the parsing code.
* **Legal Considerations:**
  + Verify compliance with the terms of service of each booking site regarding web scraping.
  + Consider obtaining legal advice to mitigate risks related to data extraction.
* **Rate Limiting and Blocking:**
  + Implement strategies (e.g., delays, proxy rotation) to minimize the risk of being blocked by external websites.
* **Data Accuracy:**
  + Ensure that the extracted data is accurate and up-to-date to maintain a good user experience.

**7. Proposed Timeline**

* **Specification & Planning:** 1–2 days
* **Prototype Development (MVP):** 2–3 weeks
  + Develop search module, URL generation, HTTP request handling, HTML parsing, and table display.
* **Testing & QA:** 1–2 weeks
  + Conduct both manual and automated testing, and refine based on feedback.
* **WordPress Integration & Launch:** 1 week
* **Total Estimated Time:** Approximately 4–6 weeks for an initial launch, with additional time allocated for future enhancements (such as advanced filtering, AI integration, etc.).

**8. Summary**

PriceWise Hotels offers a creative and cost-effective solution for comparing hotel prices by leveraging static URL generation and on-the-fly web scraping. This WordPress plugin will display a clear, tabular comparison of prices from multiple booking sites, redirecting users to complete their booking on affiliate sites. While challenges like HTML structure changes and legal considerations exist, careful planning and ongoing maintenance can mitigate these issues. The initial version focuses on simplicity and cost efficiency, with room for future expansion into more advanced features such as AI-based natural language search.