**Title: Palindrome Checker**

**Tool Details:**

* **Backend:** Node.js with Express.js
* **Frontend:** Web Components (vanilla JavaScript, no frameworks)
* **Database:** Not required
* **AI Integration:** Dynamically check if a word or phrase is a palindrome

**Goal:** Candidates will learn how to build an Express.js backend and integrate it with a WebComponent-based frontend. They will practice API request handling, string manipulation, and dynamically updating the UI based on API responses.

**Assignment Description:** Candidates will create a Palindrome Checker where users can input a word or phrase, and the system will determine if it is a palindrome. The frontend form collects the input and sends it to the backend via an API request. The backend processes the request, checks if the input is a palindrome, and returns the result to the frontend. The frontend then displays whether the input is a palindrome or not.

**Tasks & Steps:**

1. **Backend Development:**
   * Set up an Express.js server.
   * Create an API endpoint to accept user input (word or phrase).
   * Process the input to check if it is a palindrome (ignoring case, spaces, and special characters).
   * Return the result (true/false) to the frontend.
2. **Frontend Development:**
   * Create a Web Component for the input form (text field for user input and a check button).
   * Send the user input to the backend via a fetch API request.
   * Receive the response and update the UI dynamically by displaying whether the input is a palindrome.
3. **Result Display:**
   * Show a message indicating whether the input is a palindrome.
   * Provide an option to reset the form.

**Mathematical Calculation/Steps:**

* Convert input to lowercase.
* Remove non-alphanumeric characters.
* Reverse the string and compare it with the original processed input.

**Third-Party Packages (if required):**

* express (for backend server)
* cors (to allow frontend-backend communication)
* body-parser (to handle JSON requests)

**Acceptance Criteria:**

* The backend should correctly check if an input is a palindrome.
* The frontend should capture user input and dynamically update the UI.
* The API should return the correct palindrome validation.
* The Web Component should encapsulate form logic and interaction.
* The check should ignore case, spaces, and special characters.

**Submission Guidelines:**

1. Fork the provided repository.
2. Create a folder with your name inside the repo.
3. Implement both backend and frontend in the designated folder.
4. Push the completed code to your forked repo.
5. Submit a pull request for review.

The assignment is complete when the backend correctly processes input and returns valid palindrome results, and the frontend successfully updates the UI based on API responses.