Cell Tech Inc

Coding Exam

Instructions:

- The completion window for this exam is 24 hours
- If at any point you have any questions, please email khurram@celltech-usa.com.

- Take a moment to review all questions / details of the exam before starting. Please also ensure to review the final notes section. Once you have reviewed all items, please conduct the tasks accordingly.

- No backend code is required. You can store complete data in CSV files or in Browser's Local Storage.

- If you're going to use a CSV file, then Use HTTP calls to communicate with CSV files.

- Make sure to create interfaces, using *any* data type is strongly discouraged. The aim is to analyze your skills towards projects using strict types.

- Try to explain your code snippets with comments, consider the scenarios where you've to leave comments for your fellow programmers to easily understand your code.

Project: Build a Google Form-like Application in TypeScript

Overview:

You are tasked with building a simplified version of a Google Form using TypeScript. The primary focus of this project is on replicating the core functionality of Google Forms, including form creation, form field customization, and storing both form data and user responses within the browser using local storage.

This exercise is designed to assess your proficiency in TypeScript, DOM manipulation, browser-based storage, and your ability to translate requirements into a functioning application.

Project Requirements:

1. Form Creation

- **Field Types:** The application should support multiple types of form fields, including but not limited to:
    - Text input fields
    - Multiple-choice (radio buttons)
    - Checkboxes

- **Dynamic Field Addition:** Users should be able to dynamically add fields of any supported type to the form, allowing them to create custom forms.

- **Field Labels:** Each field must have a customizable label that will serve as the question or prompt for the form.

2. Form Management

- **List of Forms:** Users should be able to view a list of already added forms & perform edit and delete operations.

- **Forms Details View:** Users should have a separate screen to view all elements of a form. Like a Form Preview screen to view how the form will look like after adding all the elements i.e. input fields, select boxes

- **Edit and Delete Fields:** Once a field is added, users should have the ability to edit the field label and delete the field if no longer needed.

- **Reorder Fields (Optional):** As an optional feature, provide the ability to reorder fields within the form.

3. Form Storage

- **Storing Form Structure:** The structure of the form (including the types of fields, labels, and options for radio/checkbox fields) must be stored in the browser's localStorage or CSV file. This ensures that if the user refreshes or closes the browser, the form can be restored exactly as it was.

- **Form Retrieval:** On subsequent visits or page reloads, the form should be automatically restored from storage.

4. Form Submission

- **User Responses:** Once the form is rendered, users should be able to fill out the form and submit their responses.

- **Storing Responses:** The submitted form data should also be stored in localStorage or CSV file. There should be a way to distinguish between multiple form submissions if needed (optional).

- **Reviewing Responses:** Provide a mechanism to view the stored form responses either within the app or by logging them to the console.

5. User Experience

- **Intuitive UI:** The user interface should be simple and user-friendly. The form builder should make it easy for users to add, edit, and delete fields.

- **Responsive Design:** The application should work across different screen sizes, including desktops, tablets, and mobile devices.

Additional Features (Optional):

The following features are optional, but implementing them would showcase advanced skills:

1. **Validation:** Implement basic form validation to ensure that required fields are not left empty upon submission.

2. **Field Options Customization:** Allow users to add, edit, or delete options for multiple-choice and checkbox fields.

3. **Export Functionality:** Provide an option to export the form data and responses as a JSON file.

4. **Form Analytics:** Display simple analytics such as the number of responses for each field or most selected options for multiple-choice fields.

5. **Reordering Fields:** Allow users to reorder fields once added to the form.

Expectations:

- **Clean and Modular Code:** Write clean, modular, and well-commented code using TypeScript.

- **Data Storage:** All form data and responses must be stored and retrieved from localStorage or CSV file. The application should work without any external backend.

- **No Frameworks:** This project should be built using TypeScript and plain HTML/CSS/JavaScript. Frameworks such as React, Angular, or Vue are not allowed.

Final Notes:

This exam is designed to assess your proficiency in TypeScript, particularly in areas involving object-oriented programming, browser storage handling, and building a robust frontend application. You will encounter tasks of varying complexity, from simple operations to more advanced concepts that test your logical reasoning and technical skills.

We understand that completing every requirement may not be feasible within the allotted time, and that's okay. The purpose of this exam is to evaluate how you approach and solve problems, rather than achieving perfection. Focus on quality over quantity, and ensure that the features you do complete are built thoughtfully and efficiently. Prioritize tasks that align with your expertise, but also challenge yourself where possible. Demonstrating smart decision-making and clear problem-solving will be valued more than attempting to solve everything superficially.

Use of Resources

Feel free to research as much as necessary throughout the exam. However, seeking direct help from another person or outside assistance is not allowed. The

goal of this assessment is to gauge your individual capabilities and problem-solving skills.

Questions

If you have any questions during the exam, please reach out to us at khurram@celltech-usa.com

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Good luck, and feel free to ask for clarification if needed!
