Lab: Angular CRUD Mastery with Template Forms and Services

**Objective**

To assess your ability to create a basic Angular application that performs CRUD operations using template forms, validations, services, local storage, and routes.

**Requirements**

1. **Environment Setup**
   * Create a new Angular project.
   * Set up routing in the application.
2. **Component Creation**
   * Create the following components:
     + HomeComponent: Displays a welcome message.
     + ItemListComponent: Displays a list of items.
     + ItemFormComponent: Displays a form to create or edit an item.
3. **Service Creation**
   * Create an ItemService to manage the CRUD operations. This service should use localStorage to store and retrieve items.
4. **Model Creation**
   * Create an Item model with the following properties:
     + id: number
     + name: string
     + description: string
     + quantity: number
5. **Routing Configuration**
   * Configure routes for the components:
     + /: HomeComponent
     + /items: ItemListComponent
     + /items/new: ItemFormComponent for creating a new item
     + /items/:id/edit: ItemFormComponent for editing an existing item
6. **Item List Component**
   * Display a list of items retrieved from the ItemService.
   * Provide buttons to edit and delete items.
   * Provide a button to navigate to the ItemFormComponent for creating a new item.
7. **Item Form Component**
   * Create a form using template-driven forms to add or edit an item.
   * Implement form validations:
     + name: required, minLength 3
     + description: required
     + quantity: required, must be a positive number
   * On form submission, save the item using the ItemService and navigate back to the item list.
8. **Item Service**
   * Implement CRUD operations:
     + getItems(): Retrieve all items from localStorage.
     + getItemById(id: number): Retrieve a specific item by ID from localStorage.
     + addItem(item: Item): Add a new item to localStorage.
     + updateItem(item: Item): Update an existing item in localStorage.
     + deleteItem(id: number): Delete an item from localStorage by ID.

**Instructions**

1. **Set up the Angular Project**
   * Create a new Angular project using the Angular CLI.

ng new angular-crud-assessment

cd angular-crud-assessment

ng serve

1. **Generate Components**
   * Generate the required components:

ng generate component Home

ng generate component ItemList

ng generate component ItemForm

1. **Generate Service and Model**
   * Generate the service:

ng generate service Item

* + Create the Item model in item.model.ts.

1. **Configure Routing**
   * Update the app-routing.module.ts file to configure routes.
2. **Implement the Item Service**
   * Implement the CRUD operations in item.service.ts.
3. **Develop Item List Component**
   * Display the list of items and implement the delete functionality.
4. **Develop Item Form Component**
   * Implement the form and handle create/edit operations.
5. **Add Form Validations**
   * Add the necessary form validations in the template.

**Submission**

* Ensure your application is free of errors and meets all the requirements.
* Submit the project files in a zip archive.

**Bonus Points**

* Implement sorting and filtering in the item list.
* Add more advanced form validations.
* Use Angular Material for a better UI.