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DEPARTMENT: INFORMATION TECHNOLOGY

STUDENT NM-ID: 888AECAF73EAA1697AB4953CD4869F59

ROLL NO: 23IT104

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TECHNOLOGY PROJECT NAME: Job Application Tracker

SUBMITTED BY,

NAME: SRIDHARAN D

MOBILE NO: 9344102235

Phase 4 – Enhancements & Deployment

Tools: Node.js, Express, MongoDB

Goal: To create a secure, feature-rich, and user-friendly web application for tracking job applications.

Core Functionality:

- User submits job details via API.
- MongoDB stores key fields like **company**, **status**, **date applied**, and **notes**.
- User can **update or delete** existing entries.
- Entries can be **filtered by status**: Applied, Interview, Offered, Rejected, etc.
- An **Authentication system** is required to separate and secure individual users' data.

1. Additional Features

To make the Job Application Tracker more robust and user-friendly, the following features should be added:

- **Follow-up Reminders:** Allow users to set a follow-up date for an application.

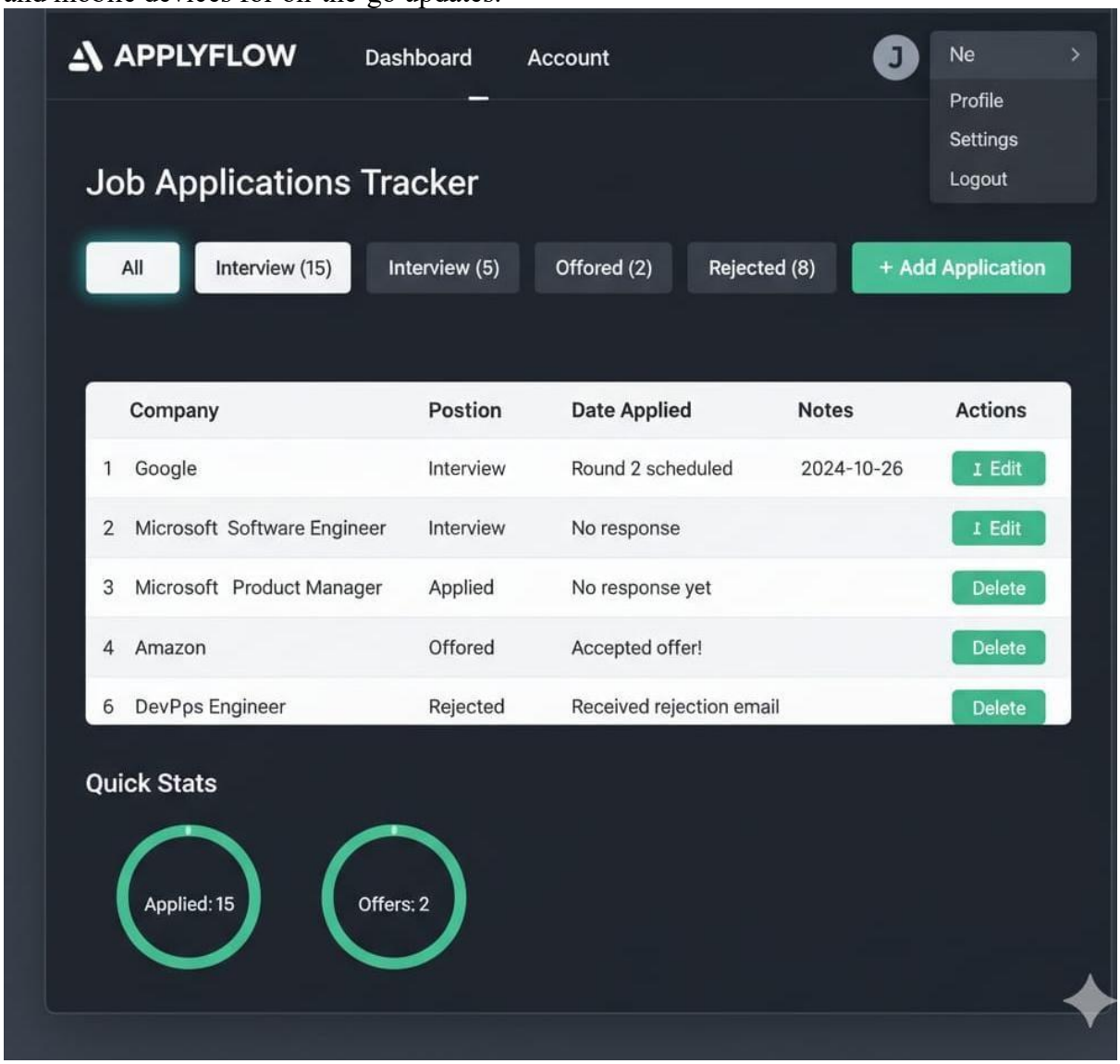
  This requires adding a `followUpDate` field to the MongoDB schema and a simple cron job to notify the user (e.g., via email alert) on that date.

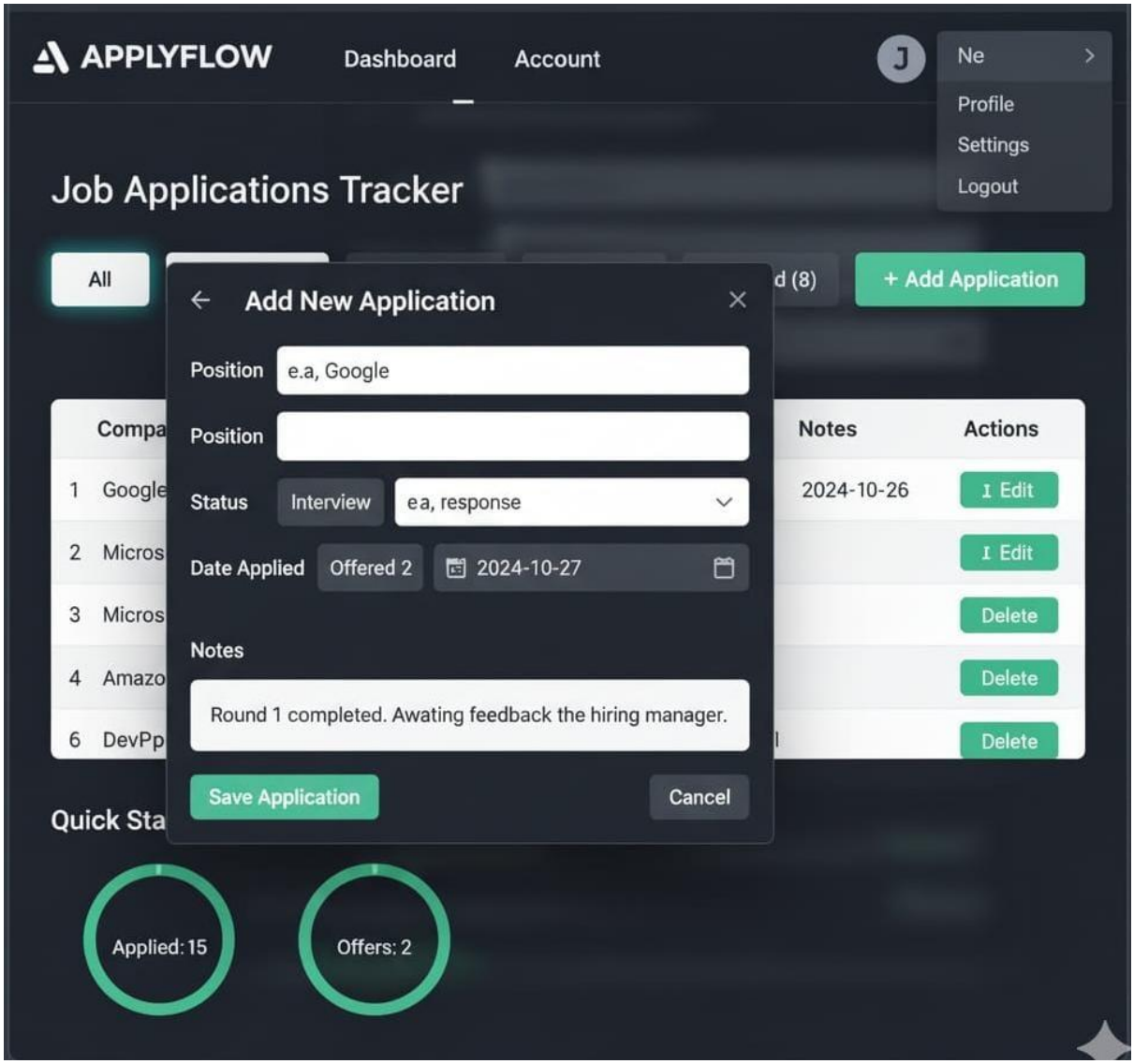
- **Job Link Storage:** Add a mandatory field for the **original job posting URL** to the MongoDB schema.
- **Archiving:** Implement an option for users to "archive" or "hide" applications that have a final status (e.g., Offered or Rejected) to keep the main view clean.This requires a `isArchive` boolean field and a corresponding filter.
- **Filtering by Date Range:** Allow users to filter applications based on the `dateApplied` within a specific range.

2. UI/UX Improvements

Focus on a clear, efficient interface to manage the job search:

- **Dashboard View:** Create a main dashboard showing a **summary of applications by status** (e.g., a count of 'Applied,' 'Interview,' and 'Offered').

- **Kanban/Card View:** Implement a view where applications are displayed as cards and can be dragged and dropped between status columns (e.g., Applied → Interview) for easy status updates.
- **Clear Feedback:** Provide immediate visual feedback, such as a **"Application updated successfully!"** toast notification.
- **Intuitive Forms:** Ensure the form for adding a new application is streamlined and easy to use.
- **Responsive Design:** Guarantee the user interface is fully functional on both desktop and mobile devices for on-the-go updates.
- 



3. API Enhancements

Refine the REST API for security and power:

Core API Endpoints

The API must be protected with a

JSON Web Token (JWT) to ensure users can only manage their own application data.

Functionality	HTTP Method	Endpoint Path	Description
Register User	POST	`/api/auth/register`	Creates a new user account.
Login User	POST	`/api/auth/login`	Authenticates and returns a JWT.
Create Application	POST	`/api/applications`	Creates a new job application entry.
Get All Applications	GET	`/api/applications`	Retrieves a list of applications for the authenticated user (supports filtering).
Update Application	PUT	`/api/applications/:id`	Modifies an existing application's details (e.g., status notes)
Delete Application	DELETE	`/api/applications/:id`	Removes a job application entry by its ID.

API Refinements

- **Input Validation:** Use a library like **Joi** or **express-validator** to ensure all incoming data is correct before processing.
- **Improved Error Handling:** Provide clear, specific JSON error messages, such as a `404 Not Found` if the application ID does not exist.
- **Pagination:** Enhance the `GET /api/applications` endpoint to support pagination (e.g., `?page=1&limit=20`) to handle large application lists efficiently.

4. Performance & Security Checks

Before deployment, the application must be fast and secure:

Performance

- **Database Indexing:** Add an index to the **`userId`** and **`status`** fields in the MongoDB collection to significantly speed up filtering and retrieval queries.
- **Load Testing:** Use a tool like **Artillery** or **JMeter** to simulate multiple users concurrently accessing their application lists and updating entries.

Security

- **Authentication (JWT):** Implement user authentication using **JSON Web Tokens (JWT)** to ensure **every request** to manage applications is authenticated and authorized.
- **Environment Variables:** Store all sensitive information in a **.env file** and **never** commit it to version control like Git.

- **Rate Limiting:** Use a package like `express-rate-limit` to prevent users from spamming the application creation or update endpoints.

5. Testing of Enhancements

Thorough testing is crucial to ensure reliability:

- **Unit Tests:** Write tests for individual functions, such as the logic for filtering applications by status or verifying the date format.
- **Integration Tests:** Test the interaction between different system parts. For example, test the flow from hitting the **"create application"** API endpoint to verifying a new document is saved in **MongoDB** with the correct **`userId`**.
- **End-to-End (E2E) Tests:** Simulate a real user scenario: log in, create a new application, update its status from 'Applied' to 'Interview', and then delete the entry.

6. Deployment

The application requires a continuously running server to manage the API and any potential follow-up reminder cron jobs.

- **Recommended Platforms: Heroku**, **Render**, **AWS Elastic Beanstalk**, or **Google Cloud App Engine** are suitable for a persistent Node.js server. (Netlify and Vercel are generally less suitable for this type of application) .
- **Externalize Database:** Use a cloud-based database service like **MongoDB Atlas** for production data storage.
- **Configuration:** Add all secret keys and the database URI to the chosen platform's **Environment Variable** settings.
- **Deployment Pipeline:** Connect the GitHub repository for automated deployment whenever new code is pushed.
- **Monitoring:** Set up logging and monitoring tools on the deployment platform to track application uptime and errors.