**Data Discovery Studio**  
  
**Overview**  
  
Data Discovery Studio is an application that provides a user-friendly interface for managing and exploring data. The frontend is built using React, and the backend is powered by Node.js and Express. The application interacts with a Microsoft SQL Server database, which stores all the relevant data.  
  
**Tech Stack**

• **Frontend:** React, Tailwind CSS  
• **Backend:** Node.js, Express.js  
• **Database:** Microsoft SQL Server  
• **API Communication:** Axios  
• **Additional Libraries:** CORS, SQL String  
  
**Frontend**   
  
The frontend is designed to be intuitive, with several key features:  
• **Search and Filter:** Allows users to search and filter data based on parameters.  
• **Table Display:** Displays filtered results in a table format with clear column headers and sortable options.  
• **Modal for Excel Upload:** Includes a modal for uploading Excel files, which are processed on the backend and stored in the database.

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

**UploadExcelModal Component**

• A modal that facilitates the upload of Excel files to the server.  
• The uploaded data is processed on the backend and stored in appropriate database tables for further use.  
  
**Backend**  
  
The backend is powered by Node.js and Express and is responsible for handling API requests, serving data, and interacting with the SQL Server database.  
  
**1. Database Configuration**

• The backend is connected to a Microsoft SQL Server database using a connection pool for efficient management.  
  
**2. Error Handling & Logging**

• The backend gracefully handles errors, returning appropriate status codes and error messages.  
• Debug logs are written to the console for development purposes.

**3. SQL Queries**

• SQL queries are parameterized to prevent SQL injection attacks, and dynamically build based on user input.

A screenshot of a computer

Description automatically generated

A screenshot of a computer

Description automatically generated

**Features**  
  
**1. Upload Excel Files**

• Users can upload Excel files containing data, and the data from these files is processed on the backend and stored in the database.  
  
  
**2. Filtering**

• Users can filter the data based on parameters.  
  
**Running the Application**  
**Frontend Setup**

1. Install dependencies:  
  
npm install  
  
  
2. Start the development server:  
  
npm start  
  
  
**Backend Setup**

1. Install dependencies:  
  
npm install

2. Start the server:  
  
npm start  
  
**Environment Variables**  
  
Set the following environment variables for backend configuration:

• DB\_SERVER: The server name or IP address for the SQL Server.  
• DB\_DATABASE: The name of the database.  
• DB\_USER: The username for connecting to the database.  
• DB\_PASSWORD: The password for connecting to the database.  
  
Ensure that these environment variables are securely managed and not hardcoded in the codebase.  
  
**Conclusion**  
  
The Data Discovery Studio application provides a scalable and user-friendly solution for managing and exploring data. The frontend, powered by React, allows users to interact with data through filters, tables, and file uploads, while the backend, powered by Node.js and Express, ensures data is securely handled and retrieved from the SQL Server database.  
  
This architecture is designed for scalability and can be easily extended with new features in the future.