TEAM ECHO — PROJECT DOCUMENTATION (Option B Style, With SQL Queries)

1. Project Overview

Team Echo is an AI-powered anonymous employee feedback platform. Employees securely log in, submit feedback anonymously, and HR views insights through sentiment analysis, keyword clouds, heatmaps, and dashboards.

2. Goals

- Provide a safe, anonymous feedback system.
- Use AI to understand employee sentiment.
- Convert raw text into actionable insights.
- Improve organizational decision-making.

3. Use Cases

Employee:

- Login
- Submit anonymous feedback
- Select category
- View submission confirmation

HR/Admin:

- Login
- View dashboard analytics
- Filter/search feedback
- Mark feedback as resolved
- Generate reports
- View sentiment heatmap & keyword cloud

4. System Workflow

Employee Flow:

1. Employee logs in.
2. Employee submits feedback anonymously.
3. System processes sentiment & keywords.
4. Data stored without identity.
5. HR dashboard updates.

HR Flow:

1. HR logs in.

2. HR views dashboards.
3. HR filters & resolves feedback.
4. Reports generated.

5. Database Schema (Required Tables)

- employee
- management_user
- feedback
- category
- keyword
- sentiment_summary
- heatmap_data
- report_history

6. SQL Table Definitions with Queries

--- employee ---

```
CREATE TABLE employee (
employee_id INT AUTO_INCREMENT PRIMARY KEY,
name VARCHAR(150) NOT NULL,
email VARCHAR(150) NOT NULL UNIQUE,
password_hash VARCHAR(255) NOT NULL,
department VARCHAR(150),
position VARCHAR(150),
created_at DATETIME DEFAULT CURRENT_TIMESTAMP
);
```

--- management_user ---

```
CREATE TABLE management_user (
user_id INT AUTO_INCREMENT PRIMARY KEY,
name VARCHAR(150) NOT NULL,
email VARCHAR(150) NOT NULL UNIQUE,
password_hash VARCHAR(255) NOT NULL,
role ENUM('admin','hr','manager') NOT NULL DEFAULT 'hr',
created_at DATETIME DEFAULT CURRENT_TIMESTAMP,
last_login DATETIME NULL
);
```

```
--- category ---
CREATE TABLE category (
category_id INT AUTO_INCREMENT PRIMARY KEY,
category_name VARCHAR(150) NOT NULL,
created_at DATETIME DEFAULT CURRENT_TIMESTAMP
);

--- feedback ---
CREATE TABLE feedback (
feedback_id INT AUTO_INCREMENT PRIMARY KEY,
category_id INT NOT NULL,
feedback_text TEXT NOT NULL,
is_anonymous BOOLEAN DEFAULT TRUE,
submitted_at DATETIME DEFAULT CURRENT_TIMESTAMP,
sentiment_score FLOAT NULL,
sentiment_label VARCHAR(20) NULL,
is_resolved BOOLEAN DEFAULT FALSE,
resolved_by INT NULL,
resolved_at DATETIME NULL,

FOREIGN KEY (category_id) REFERENCES category(category_id)
ON DELETE CASCADE,

FOREIGN KEY (resolved_by) REFERENCES management_user(user_id)
ON DELETE SET NULL
);

--- keyword ---
CREATE TABLE keyword (
keyword_id INT AUTO_INCREMENT PRIMARY KEY,
feedback_id INT NOT NULL,
keyword_text VARCHAR(100) NOT NULL,
frequency INT DEFAULT 1,

FOREIGN KEY (feedback_id) REFERENCES feedback(feedback_id)
ON DELETE CASCADE
);

--- sentiment_summary ---
CREATE TABLE sentiment_summary (
summary_id INT AUTO_INCREMENT PRIMARY KEY,
category_id INT NOT NULL,
positive_count INT DEFAULT 0,
neutral_count INT DEFAULT 0,
negative_count INT DEFAULT 0,
last_updated DATETIME DEFAULT CURRENT_TIMESTAMP ON UPDATE CURRENT_TIMESTAMP,

FOREIGN KEY (category_id) REFERENCES category(category_id)
ON DELETE CASCADE
);

--- heatmap_data ---
CREATE TABLE heatmap_data (
heatmap_id INT AUTO_INCREMENT PRIMARY KEY,
category_id INT NOT NULL,
heat_intensity FLOAT NOT NULL,
generated_at DATETIME DEFAULT CURRENT_TIMESTAMP,

FOREIGN KEY (category_id) REFERENCES category(category_id)
ON DELETE CASCADE
);

--- report_history ---
CREATE TABLE report_history (
report_id INT AUTO_INCREMENT PRIMARY KEY,
user_id INT NOT NULL,
report_type VARCHAR(100) NOT NULL,
report_path VARCHAR(255),
generated_at DATETIME DEFAULT CURRENT_TIMESTAMP,

FOREIGN KEY (user_id) REFERENCES management_user(user_id)
ON DELETE CASCADE
);
```

7. Architecture Summary

Frontend: React

Backend: Node/Laravel

Database: MySQL

AI Layer: Sentiment + Keyword Extraction