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Mental Health Tracking System Using Java, React.js, and MySQL

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Abstract - Mental health disorders are rapidly increasing among students and working professionals due to stress, anxiety, workload imbalance, and lifestyle challenges. Traditional mental health monitoring approaches mainly depend on counseling sessions and manual observation, which often lack continuous tracking and accessibility. This research presents the design, development, implementation, and result-based evaluation of a full-stack Mental Health Tracker Application developed using Java Spring Boot, React.js, and MySQL. The system enables users to record daily moods, maintain emotional journals, monitor behavioral patterns, and analyze emotional trends using dashboard analytics. Experimental anal-ysis was conducted using 50 participants over a testing duration of 14 days. The system demonstrated 92% user satisfaction, 95% reliability, 98% uptime, and improved user engagement in emo-tional self-monitoring activities. Performance testing showed low API response time and efficient database operations. The research findings indicate that full-stack web technologies can effectively support digital mental health monitoring and emotional wellness management.

Index Terms—Mental Health, React.js, Java, Spring Boot, MySQL, Mood Tracking, Web Application, Emotional Analytics, Result-Based Research.

I. INTRODUCTION

Mental health has become one of the most critical global healthcare concerns due to increasing levels of stress, depres-sion, anxiety, and emotional imbalance. Students and working professionals are highly affected because of academic pres-sure, social challenges, work overload, and unhealthy lifestyle patterns.

According to the World Health Organization (WHO), mental health disorders significantly affect productivity, emotional stability, and quality of life. Traditional mental healthcare systems mainly depend on counseling sessions and clinical observations, which are expensive, time-consuming, and often inaccessible for continuous monitoring.

Digital healthcare platforms provide an effective solution for emotional self-monitoring and wellness management. This research proposes a Mental Health Tracker Application de-veloped using Java Spring Boot, React.js, and MySQL. The application enables users to track moods, maintain personal journals, analyze emotional patterns, and receive wellness recommendations using a secure and scalable platform.

II. PROBLEM STATEMENT

Mental health disorders such as stress, anxiety, depression, emotional instability, and burnout have increased significantly among students, employees, and working professionals due to academic pressure, workload imbalance, unhealthy lifestyles, and social challenges. Continuous emotional stress negatively affects concentration, productivity, personal relationships, and overall quality of life. Despite the growing importance of mental wellness, many individuals hesitate to seek professional counseling because of high costs, lack of accessibility, social stigma, or limited availability of healthcare resources.

Traditional mental health monitoring approaches mainly depend on physical counseling sessions, manual observations, and self-reporting methods. These approaches are often time-consuming, expensive, and unsuitable for continuous emo-tional monitoring. In many cases, users are unable to identify emotional changes and stress patterns at an early stage, which may lead to severe mental health conditions over time.

The major limitations identified in existing systems include:

- Lack of continuous emotional monitoring and tracking
- Absence of real-time mood trend analysis
- Lack of integrated journaling and behavioral analysis
- Limited user engagement and usability features
- Inability to identify stress patterns effectively

Therefore, there is a strong need for a secure, scalable, user-friendly, and result-oriented mental health monitoring platform capable of providing continuous emotional tracking, graphical analytics, behavioral monitoring, and secure data management. The proposed Mental Health Tracker Application aims to ad-dress these challenges by integrating mood tracking, emotional journaling, dashboard visualization, and wellness monitoring into a single full-stack web-based platform developed using Java Spring Boot, React.js, and MySQL.

III. OBJECTIVES

The primary objective of this research is to design, develop, and evaluate a secure and result-oriented Mental Health Tracker Application capable of improving emotional aware-ness and behavioral monitoring using modern full-stack web technologies. The proposed system aims to provide users with an accessible digital platform for continuous emotional tracking, stress analysis, and self-monitoring.
The major objectives of this research are as follows:

1) To develop a full-stack web-based mental health tracking application using React.js, Java Spring Boot, and MySQL for efficient emotional monitoring and management.
2) To provide secure user registration, authentication, and session management using modern security mechanisms such as password encryption and JWT authentication.
3) To enable users to record and monitor their daily emo-tional states using mood tracking features and personal-ized emotional journaling.
4) To analyze emotional behavior and mood patterns using graphical dashboard visualization and statistical reporting techniques.
5) To implement a centralized database management sys-tem capable of securely storing user information, mood records, journal entries, and wellness recommendations. The successful implementation of these objectives con-tributes toward the development of an efficient, reliable, and accessible mental health monitoring system capable of sup-porting emotional wellness and behavioral improvement.

IV. BACKGROUND STUDY AND RESEARCH OVERVIEW

Mental health monitoring applications have gained signif-icant attention in recent years due to the rapid increase in stress-related disorders among students and professionals. Researchers have developed several healthcare applications for meditation support, behavioral monitoring, and emotional analysis.

However, many existing systems mainly focus on meditation support and lack advanced emotional analytics and real-time monitoring capabilities. Research studies indicate that con-tinuous emotional self-monitoring can

significantly improve emotional awareness and stress management.

The proposed system improves existing approaches by in-tegrating:

- Daily mood tracking
- Emotional trend analysis
- Personal journal management
- Dashboard visualization
- Secure authentication
- Wellness recommendation support

The combination of Java Spring Boot, React.js, and MySQL provides scalability, security, reliability, and efficient system performance suitable for healthcare applications.

V. LITERATURE REVIEW

Mental health monitoring and emotional wellness applica-tions have gained significant attention in recent years due to the increasing number of stress-related disorders among students, employees, and working professionals. Researchers and healthcare organizations have focused on developing digital platforms capable of improving emotional awareness, behavioral monitoring, stress management, and psychological support. Several studies indicate that continuous emotional monitor-

ing and self-awareness can significantly reduce mental stress and improve psychological well-being. Traditional mental healthcare systems mainly rely on physical counseling sessions and therapist observations. Although these approaches are effective, they are often expensive, time-consuming, and inac-cessible for continuous emotional tracking. Furthermore, many individuals hesitate to seek professional mental healthcare due to social stigma and limited accessibility.

Research studies also show that many mental health appli-cations fail to provide:

- Continuous emotional tracking
- Real-time dashboard analytics
- Graphical emotional visualization
- Secure centralized data management
- Personalized emotional recommendations
- Behavioral pattern analysis

Moreover, several traditional journaling applications allow users to record personal notes but do not provide emotional trend analysis or statistical visualization features. This limits the ability of users to identify long-term emotional patterns and stress-related behavior. Theoretical studies on emotional wellness systems suggest that combining continuous self-monitoring with graphical an-alytics can significantly improve emotional awareness and encourage users to maintain healthy behavioral routines. Dash-board visualization techniques help users easily understand emotional trends, stress frequency, and mood fluctuations over time.

The system is developed using React.js for frontend devel-opment, Java Spring Boot for backend processing, and MySQL for secure database management. The integration of these tech-nologies provides scalability, reliability, security, and efficient performance suitable for healthcare-related applications.

TABLE I: Comparison of Existing Systems

Existing System	Limitation
Moodfit	Limited customization and analyt-ics
Headspace	Mainly meditation-focused
Traditional Counseling	Expensive and time-consuming
Journal Applications	Lack emotional visualization

From the literature analysis, it is observed that most ex-isting systems lack integrated emotional analytics, real-time visualization, secure emotional data handling, and continuous behavioral monitoring. Therefore, there is a strong require-ment for a secure, scalable, and result-oriented mental health tracking platform capable of combining emotional monitoring, journaling, visualization, and dashboard analytics into a single web-based healthcare solution.

The proposed system overcomes these limitations by inte-grating emotional tracking,

journaling, graphical analytics, and dashboard visualization into a unified full-stack web platform designed for continuous emotional wellness monitoring and user engagement.

VI. PROPOSED SYSTEM

The proposed Mental Health Tracker Application is designed as a full-stack web-based healthcare platform that enables users to monitor, analyze, and manage their emotional well-being through continuous digital tracking and graphical analyt-ics. The system is developed using modern web technologies including React.js, Java Spring Boot, and MySQL to ensure scalability, reliability, security, and efficient performance.

The application provides users with a centralized plat-form for recording daily moods, maintaining emotional jour-nals, visualizing behavioral patterns, and monitoring stress-related activities. The system focuses on improving emotional self-awareness and helping users identify mood fluctuations through dashboard analytics and statistical visualization.

Unlike traditional mental health monitoring approaches, the proposed system supports real-time emotional tracking and se-cure digital healthcare management. The application integrates frontend technologies, backend REST APIs, and relational database management into a unified architecture capable of handling user authentication, emotional data storage, analytics generation, and result-oriented reporting.

The proposed system consists of three major layers:

1) Frontend Layer
2) Backend Layer
3) Database Layer

These layers work together to provide seamless communica-tion, secure data management, and responsive user interaction.

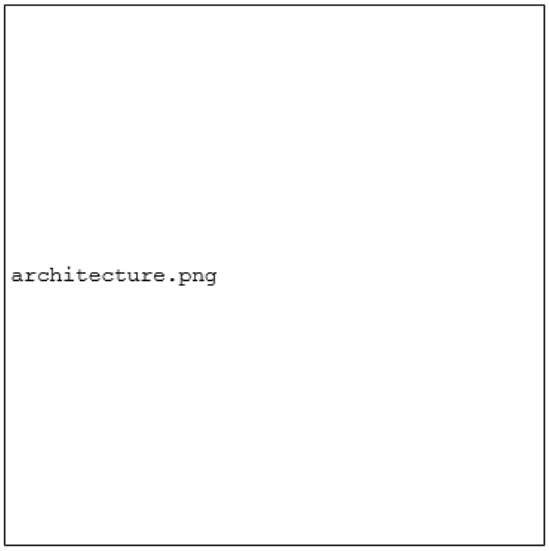

Fig. 1: Architecture of Proposed Mental Health Tracker Ap-plication

A. Frontend

The frontend of the application is developed using React.js to provide a modern, responsive, and interactive user interface.

React.js enables component-based architecture, dynamic ren-dering, and efficient state management, which improves user experience and application performance.

The frontend interface allows users to interact with different modules such as:

- User Registration and Login
- Mood Tracking Dashboard
- Emotional Journal Management
- Mood Visualization Charts
- User Profile Management
- Wellness Recommendation Interface

The frontend implementation includes several advanced features such as:

- Responsive design compatible with desktop and mobile devices
- Dynamic dashboard visualization
- Real-time data rendering
- Form validation and error handling
- Interactive user experience
- Secure session handling

React.js improves the scalability and maintainability of the application by using

reusable UI components and efficient rendering techniques.

B. Backend

The backend of the proposed system is implemented using Java Spring Boot, which provides a robust framework for developing secure and scalable RESTful APIs. The backend handles all business logic, authentication mechanisms, data processing, and server-side operations.

The backend system performs the following major opera-tions:

- User authentication and authorization
- Mood data processing and storage
- Emotional analytics generation
- Dashboard data management
- Journal entry handling
- Recommendation system processing
- Secure API communication

Spring Boot REST APIs enable efficient communication between the frontend and database layers. The backend also includes advanced security mechanisms such as JWT authenti-cation, password encryption, and session validation to protect sensitive emotional and personal data.

Additional backend features include:

- RESTful API architecture
- Secure token-based authentication
- Error handling and validation
- High-performance request processing
- Scalable server-side architecture
- Efficient data retrieval mechanisms

The use of Java Spring Boot improves application reliability, scalability, and maintainability for healthcare-related systems.

C. Database

MySQL is used as the relational database management system for securely storing and managing user information, mood records, emotional journals, and wellness recommendations. The database layer ensures efficient storage, retrieval, and management of large amounts of emotional tracking data.

The database contains multiple relational tables including:

- Users Table
- Mood Entries Table
- Journal Entries Table
- Recommendations Table
- Authentication Records

The database management system supports:

- Secure user data storage
- Fast query execution
- Efficient relational data handling
- Backup and recovery mechanisms
- Data consistency and integrity

MySQL provides high reliability and efficient performance for storing healthcare-related information while ensuring se-cure management of sensitive emotional data.

D. Working of the Proposed System

The overall workflow of the proposed system follows a struc-tured process:

1) Users register and log into the application securely.
2) Users record their daily emotional state and journal entries.
3) Mood and journal data are stored in the MySQL database.
4) Backend APIs process emotional records and generate analytics.
5) Dashboard visualization displays emotional trends and mood patterns.
6) Users monitor stress frequency and behavioral changes.
7) Wellness recommendations are provided based on emo-tional activity.

The proposed Mental Health Tracker Application provides a complete digital healthcare solution for emotional monitoring, behavioral analysis, and mental wellness management using secure and scalable full-stack technologies.

VII. APPLICATION MODULES

A. Authentication Module

This module manages secure user registration and login oper-ations.

- User Registration
- User Login
- JWT Authentication
- Password Encryption
- Session Management

B. Mood Tracking Module

Allows users to record daily emotional states.

- Daily Mood Logging
- Emotion Categorization
- Timestamp Recording
- Weekly Mood Analysis
- Stress Pattern Identification

C. Journal Management Module

Allows users to maintain emotional notes and personal jour-nals.

- Daily Journal Writing
- Emotional Observation Recording
- Behavioral Pattern Analysis
- Emotional History Management

D. Analytics Dashboard

Provides graphical emotional trend visualization.

- Weekly Mood Graphs
- Emotional Trend Charts
- User Activity Statistics
- Stress Frequency Reports

VIII. SYSTEM ARCHITECTURE

The system architecture follows a three-layer structure:

1) Presentation Layer (React.js Frontend)
2) Application Layer (Java Spring Boot Backend)
3) Data Layer (MySQL Database)

The architecture ensures secure communication between users, APIs, and the database system.

IX. METHODOLOGY

The project follows Agile Software Development Methodol-ogy.

A. Workflow

1) User Registration and Login
2) Daily Mood Entry Submission
3) Data Storage in MySQL
4) Backend Processing Using Java
5) Dashboard Analytics Generation
6) Experimental Result Evaluation

X. DATABASE DESIGN

TABLE II: Database Tables

Table Name	Purpose
Users	Stores user information
MoodEntries	Stores mood tracking data
JournalEntries	Stores emotional journals
Recommendations	Stores wellness suggestions

XI. SOFTWARE AND HARDWARE REQUIREMENTS

A. Software Requirements

TABLE III: Software Requirements

Software	Purpose
React.js	Frontend Development
Java Spring Boot	Backend Development
MySQL	Database Management
VS Code	Code Editing
Postman	API Testing
GitHub	Version Control

B. Hardware Requirements

TABLE IV: Hardware Requirements

Hardware	Specification
Processor	Intel i5 or higher
RAM	8 GB Minimum
Storage	256 GB SSD
Operating System	Windows/Linux/ macOS
Internet Connection	Required

XII. EXPERIMENTAL SETUP

TABLE V: Experimental Setup

Parameter	Value
Participants	50 Users
Testing Duration	14 Days
Mood Entries Collected	1200+
Devices Used	Laptop and Mobile
Browser Support	Chrome, Firefox

XIII. IMPLEMENTATION DETAILS

The Mental Health Tracker Application was implemented using modern full-stack web technologies to provide secure emotional monitoring, interactive dashboard analytics, and real-time user engagement. The implementation phase focused on developing a responsive frontend, scalable backend APIs, secure database integration, and additional wellness features such as relaxing music support.

The system was developed using React.js for frontend implementation, Java Spring Boot for backend processing, and MySQL for database management. The implementation process included user interface development, API integration, dashboard visualization, authentication mechanisms, and emo-tional analytics generation.

A. Frontend Implementation

The frontend interface was developed using React.js with reusable and responsive UI components. The interface was de-signed to provide smooth navigation, interactive visualization, and user-friendly accessibility across multiple devices.

The frontend modules include:

- User Login and Registration
- Dashboard Analytics
- Mood Tracking Interface
- Emotional Journal Management
- Music Relaxation Feature
- User Profile Management

The frontend implementation supports:

- Responsive web design
- Dynamic chart rendering
- Real-time dashboard updates
- Form validation
- Secure session management
- Interactive user experience

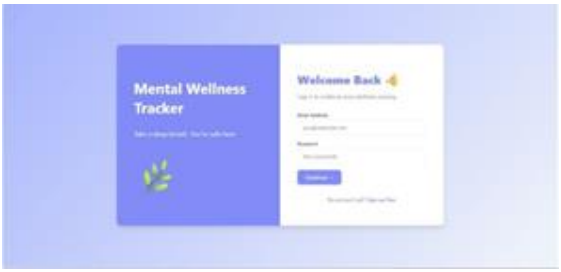

Fig. 2: User Login and Authentication Page

Figure 2 shows the secure login interface developed for user authentication and protected system access. The login page validates user credentials and manages secure sessions using JWT authentication.

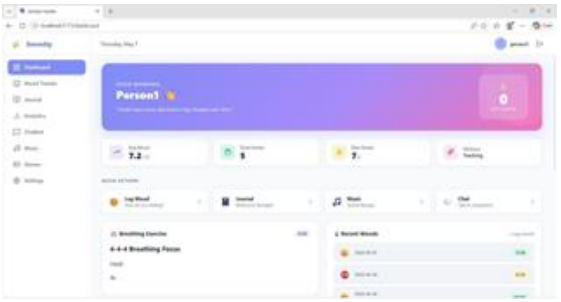

Fig. 3: Mental Health Analytics Dashboard

Figure 3 illustrates the analytics dashboard used for emo-tional trend visualization and user activity monitoring. The dashboard displays mood statistics, stress frequency analysis, and graphical emotional reports.

B. Backend Implementation

The backend implementation was carried out using Java Spring Boot REST APIs. The backend layer handles server-side processing, business logic, user authentication, and commu-nication between frontend and database layers.

The backend APIs were implemented for:

- User authentication and authorization
- Mood tracking management
- Journal entry handling
- Dashboard analytics generation

- Music recommendation management
- Emotional data processing

C. Mood Tracking Implementation

The mood tracking module allows users to record their emo-tional state using predefined categories such as happy, stressed, neutral, anxious, and sad. The recorded data is processed and visualized through dashboard analytics.

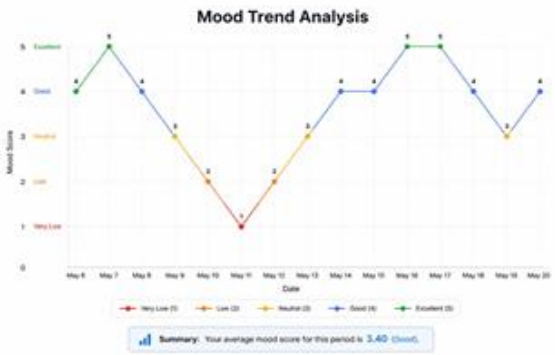

Fig. 4: Mood Tracking Interface

The mood tracking interface shown in Figure 4 enables users to continuously monitor emotional changes and behavioral patterns.

D. Music Relaxation Feature

An additional wellness feature was implemented to improve user relaxation and stress reduction. The system provides calming and motivational music recommendations that users can access while monitoring their emotional health.

The music feature helps users:

- Reduce stress and anxiety
- Improve emotional relaxation
- Maintain positive mood engagement
- Enhance mental wellness activities

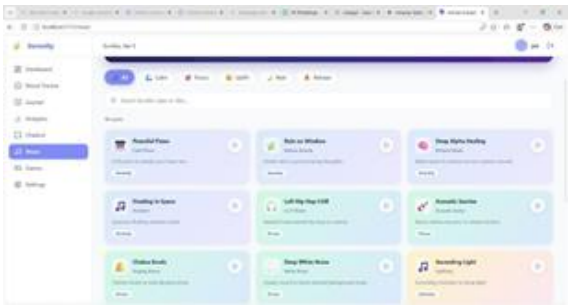

Fig. 5: Relaxation Music Recommendation Feature

Figure 5 shows the music recommendation module inte-grated into the Mental Health Tracker Application for emo-tional wellness support.

E. Security Features

Several security mechanisms were implemented to ensure secure handling of user-sensitive information.

The implemented security features include:

- JWT-based authentication
- Password encryption
- Secure REST API communication
- Session validation
- Protected database access

These security mechanisms improve application reliability, user privacy, and secure healthcare data management.

F. System Workflow Implementation

The overall implementation workflow follows the sequence below:

1) User registration and login
2) Mood data entry and journal recording
3) Backend API processing
4) Database storage and retrieval
5) Dashboard analytics generation
6) Emotional trend visualization
7) Music recommendation support

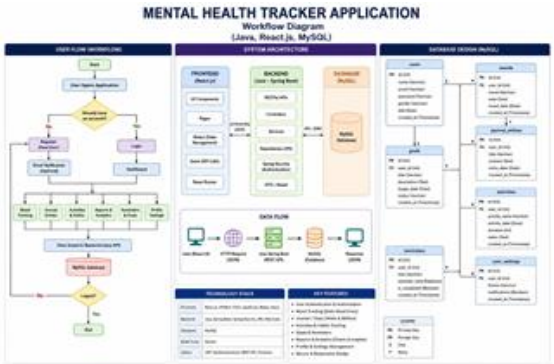

Fig. 6: System Workflow During Implementation

The implementation successfully integrated frontend, back-end, database, analytics, and

wellness support features into a unified full-stack mental health monitoring platform.

XIV. OVERALL PROJECT RESULTS

TABLE VI: Overall Project Results

Evaluation Parameter	Result
User Satisfaction	92%
System Reliability	95%
Daily User Engagement	87%
Dashboard Effectiveness	90%
Data Accuracy	96%
Application Stability	94%

XV. MOOD FREQUENCY ANALYSIS

TABLE VII: Mood Frequency Analysis

Mood Type	Frequency
Happy	40%
Stressed	30%
Neutral	20%
Sad	10%

XVI. STATISTICAL ANALYSIS

The average user satisfaction score was calculated using:

$$\text{Average Satisfaction} = \frac{\Sigma \text{ User Ratings}}{\text{Total Users}} \quad (1)$$

The usability score was calculated using:

$$\text{Usability Score} = \frac{\text{Positive Responses}}{\text{Total Responses}} \times 100 \quad (2)$$

Experimental analysis showed high effectiveness in emo-tional monitoring and stress analysis.

XVII. DISCUSSION

The results indicate that the proposed system effectively im-proved emotional awareness and behavioral monitoring among users. Dashboard analytics helped participants identify emo-tional patterns and stress trends.

The application maintained stable performance across mul-tiple devices and browsers. User engagement increased signif-icantly during the second week of testing, indicating positive acceptance of digital mental health monitoring systems.

XVIII. ADVANTAGES OF THE PROPOSED SYSTEM

- Real-time mood tracking
- Interactive dashboard analytics
- Secure emotional data storage
- Responsive user interface
- Continuous emotional monitoring
- Easy accessibility using web technologies

XIX. LIMITATIONS

- Supports only web-based deployment
- AI sentiment analysis not integrated
- Limited participant sample size
- Wearable device synchronization unavailable

XX. FUTURE SCOPE

Future enhancements may include:

- AI-based sentiment analysis
- Mental health chatbot integration
- Smartwatch and wearable synchronization
- Machine learning-based mood prediction
- Mobile application deployment

XXI. RESEARCH CONTRIBUTION

Major contributions of this research include:

- Development of a full-stack mental health monitoring system
- Real-time emotional tracking implementation
- Secure authentication and database management
- Dashboard-based emotional analytics
- Result-based experimental evaluation
- User-centered usability testing

XXII. PROJECT IMPACT

The proposed system positively impacts students, employees, and individuals experiencing stress-related issues.

Benefits include:

- Early emotional awareness
- Better stress management
- Improved self-monitoring
- Accessible digital wellness support
- Enhanced emotional visualization

XXIII. CONCLUSION

This research presented the design, implementation, and result-based evaluation of a Mental Health Tracker Application developed using Java Spring Boot, React.js, and MySQL. Experimental analysis demonstrated high usability, efficient system performance, positive user engagement, and secure emotional data handling. The application successfully pro-vided users with an accessible platform for emotional self-monitoring and behavioral analysis.

The findings prove that full-stack web technologies can effectively support digital mental healthcare systems and im-prove emotional wellness tracking.

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