MINI PROJECT REPORT

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CLASS: I B. Sc CS(DATA SCIENCE & ANALYTICS)

PROJECT TITLE: VIBE WAVE

COURSE CODE: 24DS207P

COURSE NAME: MINI PROJECT- I

1. INTRODUCTION

1.1 SYNOPSIS

Imagine this—you're a musician, a creator, or just someone who loves collecting music. You spend hours recording your own tracks, fine-tuning every beat, and building a collection that reflects your passion. But then, the struggle begins. Every time you switch devices, your files are scattered—some are on your phone, others are buried in old emails, and a few are lost in cloud storage you barely remember using. And the worst part? One accidental deletion or a device crash, and your hard work is gone forever.

It's frustrating, and it shouldn't be this hard to keep track of something so personal and important. That's why **Vibe Wave** was created—to take the stress out of managing your music. With Vibe Wave, your songs are always safe, organized, and just a click away, no matter where you are or what device you're using. Whether you're an artist recording your next masterpiece or a music lover curating your personal collection, Vibe Wave ensures that your music is always within reach—exactly how it should be.

2. FEASIBILITY STUDY

2.1 TECHNICAL FEASIBILITY

- **Frontend:** HTML, CSS, JavaScript (for UI and interactivity)
- **Backend:** Python, Node JS (for secure file handling and authentication)
- **Database:** MongoDB (for storing user data and music files)
- **Cloud Storage:** Can be integrated with AWS, Firebase, or other cloud services
- **Security Measures:** Encrypted storage, user authentication, and access control

2.2 FEASIBILITY FACTORS

- **Availability of Tools & Libraries** – All required technologies are open-source or have affordable cloud-based solutions.
- **Scalability** – The system can handle increasing users with proper server scaling.
- **Development Complexity** – Moderate; requires backend expertise for secure storage and streaming features.

2.3 ECONOMICAL FEASIBILITY

Vibe Wave follows a **subscription-based revenue model**, ensuring both affordability for users and financial sustainability for the platform. The service offers a **Free Plan** with **1GB of storage and basic features**, allowing users to explore the platform at no cost. For those needing more storage and an ad-free experience, the **Pro Plan** is available at **₹100 per month**, providing **10GB of storage, no advertisements, and priority access**. Users who require **unlimited storage and high-quality audio playback** can opt for the **Premium Plan**, priced at **₹250 per month**. This tiered pricing strategy ensures accessibility for all users while generating revenue through premium features. The model is designed to scale efficiently, covering operational costs while offering value to both casual listeners and professional musicians.

3. SYSTEM ANALYSIS

3.1 EXISTING SYSTEM :

Right now, most people use music streaming apps like **Spotify, Apple Music, and YouTube Music** to listen to songs. These apps let users stream music, create playlists, and download songs for offline listening. However, they don't allow users to **upload and store their own music**.

Some people store their music files on **Google Drive, OneDrive, or Dropbox**, but these cloud storage services are not made for music playback. They don't have features **playlists, easy streaming, recording**. Users have to manually open files to play them, which can be inconvenient.

3.2 DRAWBACKS :

- **No Personal Music Library:** Users can't upload and access their own songs in most streaming services.
- **Limited Control Over Uploaded Songs:** Some platforms **restrict downloads, copyright policies, or remove content**.
- **Expensive Subscription Fees:** Features like **offline downloads, ad-free playback, and high-quality audio** require paid subscriptions.
- **Cloud Storage is Not Optimized for Music:** Platforms like Google Drive lack **seamless music playback and organization**.
- **No Built-in Recording Feature for Artists:** Musicians have to **use third-party apps to record samples**, which makes the process less efficient.

3.3 PROPOSED SYSTEM :

Vibe Wave is a **music storage and streaming platform** that lets users **upload, manage, and listen to their own music** anytime. Unlike existing streaming services, it also provides **a built-in recording feature** for artists to **record samples, refine them, and save them for later use**.

Key Features:

- **User Login & Secure Accounts** to protect music files.
- **Upload & Store Songs** in a personal cloud library.
- **Stream & Download Songs** without restrictions.
- **Create Playlists** for better organization.
- **Built-in Recording Feature** to help artists record and refine their music directly within the platform.
- **Mobile & Web Friendly** so users can access their music anywhere.

3.4 ADVANTAGES OF THE PROPOSED SYSTEM :

- **Personal Music Collection:** Users can **store and access their own songs** without relying on streaming apps.
- **Full Control & No Restrictions:** Users **own their music** and can **download it anytime**.
- **Fast & Secure Access:** Cloud storage ensures **quick and safe music retrieval**.
- **Works on Any Device:** Users can listen from their **phone, tablet, or computer**.
- **Simple & User-Friendly:** The interface is **clean and easy to navigate**.
- **Built-in Recording for Artists:** Musicians can **record samples, refine their songs, and store their work efficiently** within the platform.

4. SYSTEM REQUIREMENTS

4.1 HARDWARE REQUIREMENTS

For **Users** (Listening & Uploading Music):

- ✓ **Device:** PC, Laptop, Tablet, or Smartphone
- ✓ **Processor:** Minimum Dual-Core (2 GHz), Quad-Core (2.5 GHz or higher)
- ✓ **RAM:** Minimum 4GB, Recommended 8GB or higher
- ✓ **Storage:** At least 2GB of free space (for caching and downloads)
- ✓ **Internet**: A stable internet connection(not needed for offline playback)
- ✓ **Audio Output:** Headphones or speakers

For **Server Hosting** & **Database Management**:

- ✓ **Processor:** Minimum AMD Ryzen 5, Recommended Intel i7 or AMD Ryzen 7
- ✓ **RAM:** Minimum 8GB, Recommended 16GB or higher
- ✓ **Storage:** SSD with at least 250GB (for storing user uploads and metadata)
- ✓ **Bandwidth:** High-speed internet connection with scalable bandwidth
- ✓ **Cloud Hosting (Optional):** AWS, Google Cloud, or DigitalOcean for better performance

4.2 SOFTWARE REQUIREMENTS

For Users (Accessing the Platform):

- ✓ **Operating System:** Windows 10/11, macOS, Linux, Android 10+, iOS 12+
- ✓ **Web Browser:** Chrome, Firefox, Edge, Safari (Latest Versions)
- ✓ **Media Codecs:** Support for MP3, WAV, FLAC, and AAC formats

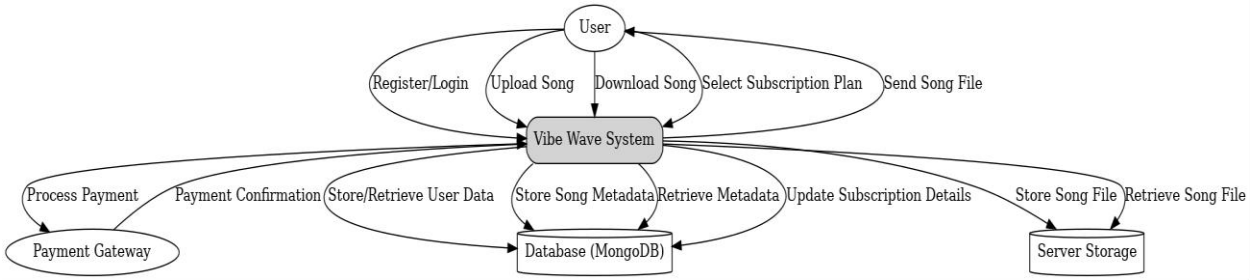
For **Development** & **Deployment** (Based on Your Current Tech Stack):

- ✓ **Frontend:** HTML, CSS, JavaScript (For UI design and interactivity), Tailwind CSS (For styling)
- ✓ **Backend:** Node JS, Python(if needed)
- ✓ **Database & Storage:** MongoDB (For storing user data and uploaded songs).

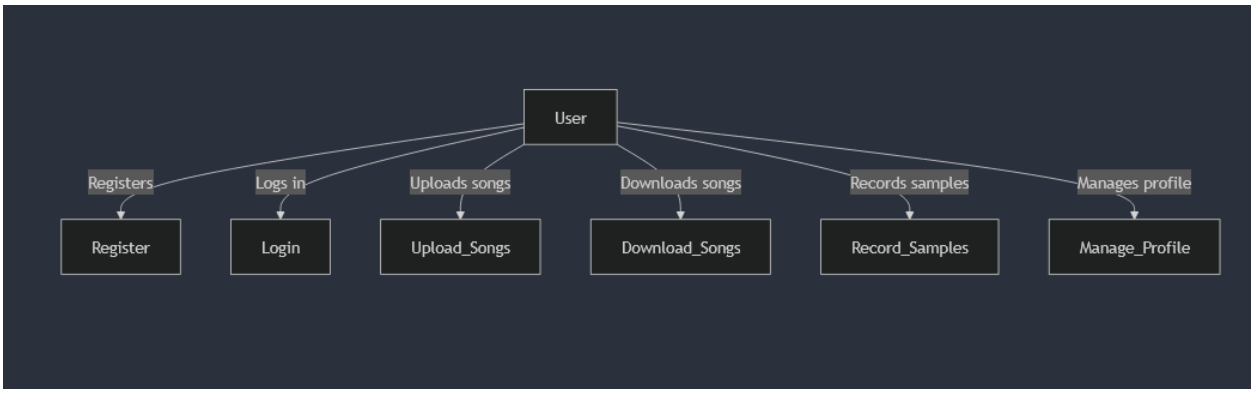
5. SYSTEM DESIGN

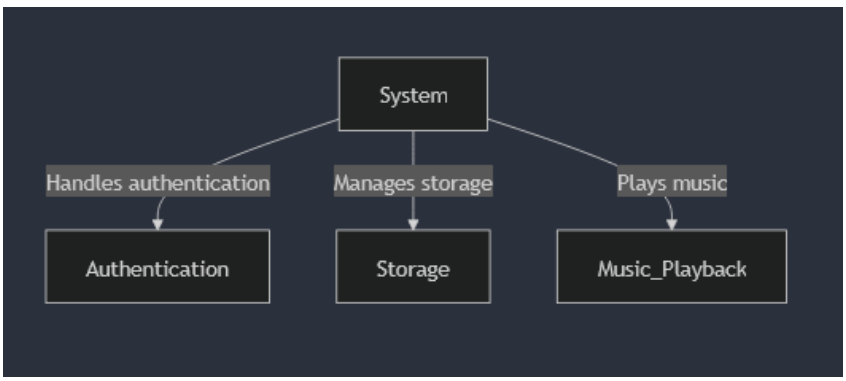
The **Vibe Wave** is designed to allow users to upload, store, and access their music seamlessly across devices. The platform ensures secure data management while offering different subscription plans to meet varying user needs. This section provides a detailed breakdown of how these features are implemented and how the system functions as a whole.

5.1 DATA FLOW DIAGRAM (DFD)

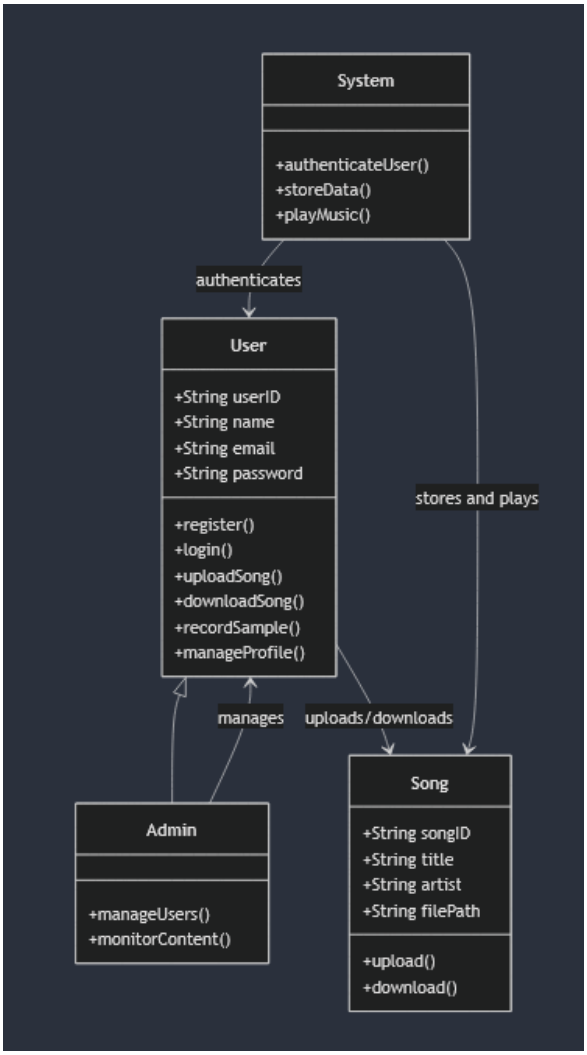


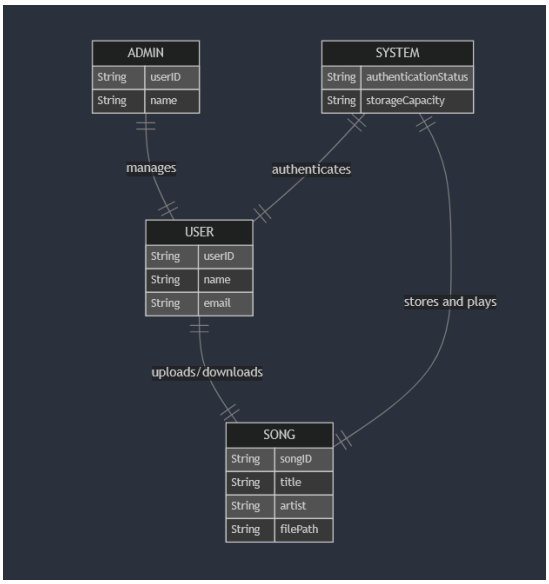
5.2 USECASE DIAGRAM





5.3 CLASS & OBJECT DIAGRAM





6. SOFTWARE DESCRIPTION

Vibe Wave is a **cloud-based music storage and streaming platform** designed for users to **upload, manage, and access their music collection from any device**. It provides a seamless experience for musicians, creators, and music enthusiasts who want to store their tracks securely and retrieve them whenever needed.

The software is built with a **robust architecture**, utilizing **HTML, CSS, and JavaScript** for the front-end, ensuring an intuitive and user-friendly interface. The backend is powered by **Python** for efficient file management and authentication, while **MongoDB** serves as the database for storing user data, uploaded songs, and login credentials.

Key features of Vibe Wave include:

- **User Profiles** – Secure account-based access with login credentials.
- **Cloud Storage** – Upload, store, and download songs from any device.
- **Cross-Device Accessibility** – Access music from smartphones, tablets, and desktops.
- **Subscription Plans** – Free and paid plans offering different storage capacities and premium features.
- **Secure Authentication** – Ensures data privacy and protection for user accounts.

Vibe Wave follows a **subscription-based model** with three pricing tiers:

- **Free Plan** – 1GB storage, basic features.
- **Pro Plan (₹100/month)** – 10GB storage, ad-free experience.
- **Premium Plan (₹250/month)** – Unlimited storage, high-quality audio playback.

By integrating **secure storage, smooth playback, and easy accessibility**, Vibe Wave offers a practical solution for independent artists and music lovers, making personal music management more convenient and reliable.

7. SYSTEM DESCRIPTION

Vibe Wave is a **cloud-based music management system** designed to provide a seamless platform for users to **store, access, and manage their personal music collections** across multiple devices. The system ensures **secure storage, fast retrieval, and smooth playback** while offering different subscription plans to cater to varying user needs.

7.1 SYSTEM ARCHITECTURE

Vibe Wave follows a **three-tier architecture** consisting of:

- **Front-End (Client-Side):** Developed using **HTML, CSS, and JavaScript**, providing an intuitive user interface for music upload, playback, and account management.
- **Back-End (Server-Side):** Built with **Python**, handling user authentication, file storage, and API requests efficiently.
- **Database Layer:** Uses **MongoDB** to store user data, uploaded songs, and login credentials securely.

7.2 CORE FUNCTIONALITIES

- **User Registration & Login** – Secure authentication system for account access.
- **Music Upload & Storage** – Users can upload and store their songs in the cloud.
- **Music Playback & Download** – Tracks can be played directly on the platform or downloaded to any logged-in device.
- **Subscription-Based Access** – Users can upgrade storage and features based on their plan.
- **Cross-Device Synchronization** – Ensures access to the same music collection across different devices.

7.3 DEPLOYMENT & HOSTING

The system is designed to be **hosted on cloud servers**, ensuring scalability and reliability. The front-end can be deployed on **web hosting services**, while the back-end and database will be managed using **cloud infrastructure** such as AWS, Google Cloud, or Firebase.

7.4 SECURITY MEASURES

- **Encrypted User Authentication** – Ensuring account safety.
- **Data Backup & Recovery** – Preventing accidental data loss.
- **Access Control Mechanisms** – Only authorized users can access their music files.

By integrating a **user-friendly interface, efficient backend processing, and secure cloud storage**, Vibe Wave provides a **reliable and scalable** solution for personal music management.