**Full Stack Development with MERN**

**API Development and Integration Report**

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| Date |  |
| Team ID | PNT2022TMIDxxxxxx |
| Project Name | Project - xxx |
| Maximum Marks |  |

**Project Title:** [Your Project Title]  
**Date:** [Date of Report]  
**Prepared by:** [Your Name or Team Name]

**Objective**  
The objective of this report is to document the API development progress and key aspects of the backend services implementation for the [Your Project Title] project.

**Technologies Used**

* **Backend Framework:** Node.js with Express.js
* **Database:** MongoDB
* **Authentication:** [e.g., JWT, OAuth]

**Project Structure**  
Provide a screenshot of the backend project structure with explanations for key directories and files.

**Key Directories and Files**

1. **/controllers**
   * Contains functions to handle requests and responses.
2. **/models**
   * Includes Mongoose schemas and models for MongoDB collections.
3. **/routes**
   * Defines the API endpoints and links them to controller functions.
4. **/middlewares**
   * Custom middleware functions for request processing.
5. **/config**
   * Configuration files for database connections, environment variables, etc.

**API Endpoints**  
A summary of the main API endpoints and their purposes:

**User Authentication**

* **POST /api/user/register** - Registers a new user.
* **POST /api/user/login** - Authenticates a user and returns a token.

**User Management**

* **GET /api/user/-** Retrieves user information by ID.
* **PUT /api/user/**- Updates user information by ID.

**Workout Plans**

* **GET /api/workoutplans** - Retrieves all workout plans.
* **POST /api/workoutplans** - Creates a new workout plan.

**Equipment**

* **GET /api/equipment** - Retrieves all equipment.
* **POST /api/equipment** - Adds new equipment.

**Monthly Plans**

* **GET /api/monthlyplans** - Retrieves all monthly plans.
* **POST /api/monthlyplans** - Creates a new monthly plan.

**Integration with Frontend**  
The backend communicates with the frontend via RESTful APIs. Key points of integration include:

* **User Authentication:** Tokens are passed between frontend and backend to handle authentication.
* **Data Fetching:** Frontend components make API calls to fetch necessary data for display and interaction.

**Error Handling and Validation**  
Describe the error handling strategy and validation mechanisms:

* **Error Handling:** Centralized error handling using middleware.
* **Validation:** Input validation using libraries like Joi or express-validator.

**Security Considerations**  
Outline the security measures implemented:

* **Authentication:** Secure token-based authentication.
* **Data Encryption:** Encrypt sensitive data at rest and in transit.