TASK MANAGEMENT APP

Introduction to Task Management App

Project Overview:

The **Task Management App** is a platform designed to help users efficiently manage tasks by defining, assigning, and tracking them. The app enables seamless collaboration between users by allowing them to create, assign, and monitor tasks, track progress, and communicate updates in real-time via integrations like WhatsApp. The app supports both mobile and web interfaces, providing a consistent experience across devices.

Key Features:

1. **User Management**:
   - Users can be created, edited, and deleted by administrators.
   - User roles (e.g., admin, task manager) can be assigned to control permissions and access.
2. **Task Definition and Assignment**:
   - Users can define task types and statuses to categorize tasks.
   - Tasks can be created with detailed metadata like the task description, assigned users, and deadlines.
3. **Task Tracking and Reporting**:
   - Users can track the status of their tasks using filters and generate custom reports.
   - A daily task summary can be sent to users with an overview of assigned tasks.
4. **WhatsApp Integration**:
   - Real-time notifications and updates can be sent via WhatsApp to notify assignees about new tasks or updates.
5. **Task History**:
   - A detailed history is maintained for each task, capturing status changes, updates, and comments.
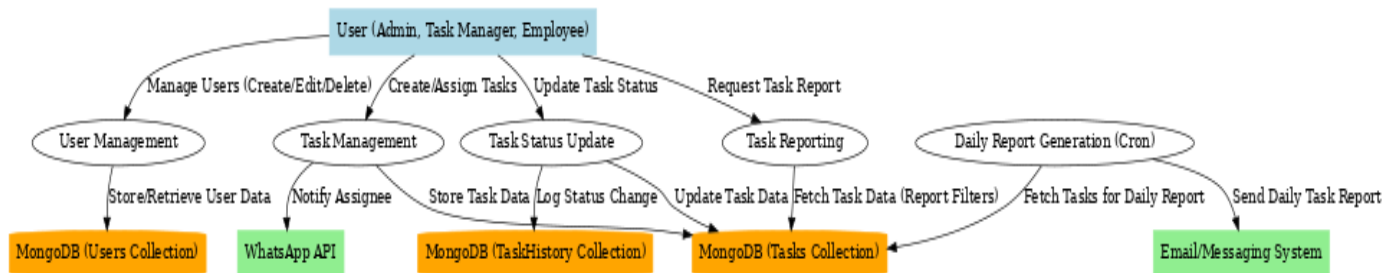
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Technology Stack:

- **Frontend (Mobile & Web)**: Built using **React Native** with the **Expo framework**, which allows cross-platform development for both Android, iOS, and the web.
- **Backend**: Developed using **Go** programming language, leveraging the **Fiber framework** for fast and lightweight RESTful API development.
- **Database**: **MongoDB**, a NoSQL document-based database, is used to store all data related to users, tasks, task types, statuses, and task histories.
- **Messaging**: The system integrates with **WhatsApp API** to deliver real-time task updates directly to the users' phones.

Functional Modules:

1. **User Management**: Handles user account creation, updates, and role assignments.
2. **Task Management**: Enables creation, assignment, and management of tasks with support for task types and statuses.
3. **Task Reporting**: Allows generating daily and filtered task reports.
4. **Notifications**: Integrates with messaging platforms like WhatsApp for real-time updates.
5. **Task History**: Stores all changes and updates related to tasks to maintain an audit trail.

Data Flow Diagram:

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1. User Management

- **Functionalities**: Add, Edit, Delete, Modify users.
- **Collection**: `users`
- **Schema**:

```
{
  "_id": ObjectId,
  "username": "string",
  "email": "string",
  "phone_number": "string",
  "role": "string",
  "created_at": "ISODate",
  "updated_at": "ISODate"
}
```

2. Task Type Definition

- **Functionalities**: Add, Edit, Delete, Modify task types.
- **Collection**: `task_types`
- **Schema**:

```
{
  "_id": ObjectId,
  "type_name": "string",
  "description": "string",
  "created_at": "ISODate",
  "updated_at": "ISODate"
}
```

3. Status Definition

- **Functionalities**: Add, Edit, Delete, Modify status.
- **Collection**: `statuses`
- **Schema**:

```
{
  "_id": ObjectId,
  "status_name": "string",
  "created_at": "ISODate",
  "updated_at": "ISODate"
}
```

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4. Task Management

- **Functionalities**: Creating and managing tasks.
- **Collection**: `tasks`
- **Schema**:

```
{
  "_id": ObjectId,
  "created_at": "ISODate",
  "from_user": ObjectId,
  "to_user": ObjectId,
  "status_id": ObjectId,
  "remarks": "string",
  "last_update": "ISODate",
  "task_type_id": ObjectId
}
```

5. Task History

- **Functionalities:** Track status changes and updates to tasks**.**
- **Collection:** `task_history`
- **Schema**:

```
{
  "_id": ObjectId,
  "task_id": ObjectId,
  "status_id": ObjectId,
  "changed_by": ObjectId,
  "change_timestamp": "ISODate",
  "remarks": "string"
}
```

6. Task Status Report

- **Functionalities**: Provide task reports based on filters.
- **Collection**: No new collection, this will be generated from the `tasks` collection.

```
db.tasks.aggregate([
  { $match: { "from_user": ObjectId("from_user_id"), "status_id":
ObjectId("status_id") } },
  { $group: { "_id": "$to_user", "tasks": { $push: "$$ROOT" } } }
]);
```

7. WhatsApp Messaging Integration

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- **Functionality**: Send instant messages when tasks are assigned or updated.
- **Technology**: Use WhatsApp API for integration.

8. Daily Task Status Report

- **Functionalities**: Send daily reports to `from_user` categorized by `to_user`.
- **Implementation**:
    - Use a scheduled job (cron job) to generate reports every day.
    - Summarize tasks grouped by `to_user` from the `tasks` collection.
    - Send a notification (email, WhatsApp) to `from_user`.