Documentation starts from here

Smart Knowledge Base (SKB) Documentation

Overview

Smart Knowledge Base (SKB) is a **document storage and retrieval system** built with **Streamlit**, **MongoDB GridFS**, and **Redis**. It supports **role-based access control (RBAC)** and provides features such as **user authentication, document management, and search capabilities**.

Features

- **User Authentication** (Login, Registration, JWT-based sessions)
- **Role-Based Access Control (RBAC)** (Admin, Contributor, Viewer)
- **Document Upload & Storage** (Using MongoDB GridFS)
- **Metadata Management**
- **Full-Text Search & Filtering** (Powered by Redis and MongoDB)
- **Document Viewing & Downloading**

Technologies Used

- **Frontend:** Streamlit
- **Backend:** Python
- **Database:** MongoDB (GridFS)
- **Caching & Search:** Redis
- **Security:** JWT, bcrypt for password hashing

Installation & Setup

1. Prerequisites

Ensure you have the following installed:

- **Python (>=3.8)**
- **MongoDB** (Configured with GridFS)
- **Redis** (For caching and search indexing)

- **Streamlit** (For frontend UI)

2. Clone the Repository

```
git clone https://github.com/your-repo/skb.git

cd skb
```

3. Install Dependencies

```
pip install -r requirements.txt
```

4. Configure Environment Variables

Create a .env file in the **backend/** directory with:

```
MONGO_URI=mongodb://localhost:27017/skb_db

REDIS_HOST=localhost

REDIS_PORT=6379

SECRET_KEY=your_secret_key
```

5. Start MongoDB & Redis

Ensure MongoDB and Redis are running:

```
# Start MongoDB

mongod --dbpath /path/to/db


# Start Redis

redis-server
```

6. Run the Application

Start the Streamlit application:

```
streamlit run frontend/app.py
```

Folder Structure

```
SKB Project/

|— backend/

|    ├— __init__.py
|   ├── auth.py  # User authentication
|   ├── config.py  # Configurations & Secrets
|   ├── db.py  # MongoDB connection
|   ├── document_management.py  # Document CRUD operations
|   ├── rbac.py  # Role-based access control
|   ├── search.py  # Search & filtering
|
|── frontend/
|   ├── __init__.py
|   ├── app.py  # Streamlit main app
|   ├── pages/
|   |   ├── __init__.py
|   |   ├── login.py
|   |   ├── register.py
|   |   ├── dashboard.py
|   |   ├── upload.py
|   |   ├── search.py
|   |   ├── viewer.py  # File viewing & download
|
|── requirements.txt  # Python dependencies
|── README.md  # Project documentation
```

User Roles & Permissions

Role	Permissions
Admin	Manage users, upload/download files, delete files

Role	Permissions
Contributor	Upload files, search files
Viewer	View & download files

How to Use

1. **Register/Login:** Create an account and log in.
2. **Upload Documents:** Contributors can upload files.
3. **Search & Filter:** Users can search by file name or metadata.
4. **View & Download:** Viewers can access and download permitted documents.
5. **Manage Users & Roles:** Admins can assign roles and manage users.

Troubleshooting

1. MongoDB Connection Issues

- Ensure MongoDB is running: mongod
- Check connection URI in config.py

2. Redis Not Running

- Start Redis: redis-server

3. Module Import Errors

- Ensure sys.path includes the project directory.
- Verify __init__.py is present in all folders.

Future Enhancements

- **AI-powered document tagging**
- **Email notifications for updates**
- **Improved UI with Streamlit components**

License

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