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AI BUDDY
ChatBot & Image Generation

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Router
routes : Array
defineRoutes()
navigateTo()

APIService
apiKey : String
baseUrl : String
fetchImages(prompt : String)
getChatResponse(userInput : String)

routes | routes | routes | calls | calls | serves | serves

User
userId : String
username : String
email : String
password : String
createdAt : Date
register()
login()
logout()
validatePassword()

ChatbotComponent
userMessage : String
botResponse : String
sendMessage()
displayResponse()

ImageGenerationComponent
imagePrompt : String
generatedImage : Image
handleImageRequest()
displayImage()

uses

AuthService
token : String
isAuthenticated : Boolean
generateJWT()
verifyJWT()
encryptPassword()
decryptPassword()

interacts

DatabaseService
dbConnection : Object
collectionName : String
connectDB()
saveUser()
fetchUser()
updateData()

User | MERN Application System | MongoDB | External APIs (Image & Chatbot)

Submit Credentials / Request
Read/Write User Data
Response
Request (Image Generation / Chatbot)
Response
Response + JWT (if Auth)

User | MERN Application System | MongoDB | External APIs (Image & Chatbot)

UML Use Case Diagram

Website System
- Login/SignUP
- Dashboard
- User Input
- API Gateway
- Chat bot & Image Generation
- Generated Image & Message
- Response

Website user

API Service

Admin

Activity Diagram

Start
Home page
Dashboard
Login/Signup Page
User Submits Credentials
Is User Registered?
No → Register User
Yes
Authenticate User
Is Authenticated?
No → Display Error Message
Yes → Redirect to Dashboard
Display Dashboard
Logout
User Input
Call API
Show Response

User — Credentials, Requests →
MERN Application System (Handles Auth, Image Generation, Chatbot)
← Response, JWT
Read/Write → MongoDB
Requests/Responses → External APIs (Image & Chatbot)

User - External Actor or Request → Authentication and User Management — JWT Auth Services → Frontend React UI and Routing — Validated Data → Backend Services NodeJS Express
— Process User Data → Database Integration MongoDB
— Database Operations →
— Process API Calls → External API Integration → API Calls and Responses → External APIs for Image and Chatbot

Authentication
Validate Input → Check Credentials
Success → Generate JWT
Failure → Auth Error

Frontend
User — Interacts → Render Forms → Capture Input → Send Auth Request — Sends Request →
Display Dashboard → Handle Requests — Sends Request →

Backend
Receive Frontend Request → Verify JWT
Calls API → Chatbot Request → External API Call
Calls API → Image Request → External API Call

External API
Requests → Send Image API Call → Receive Image
Requests → Send Chatbot API Call → Receive Response

MongoDB
Store Data → Retrieve Data
Store History → Retrieve History