**CHAPTER 3: REQUIREMENTS, ANALYSIS, AND DESIGN**

**3.1 OVERVIEW**

This chapter presents the systematic approach employed to gather, analyse, and transform user requirements into a comprehensive system design for the Hajj Guide System. The requirements engineering process followed established software development methodologies whilst incorporating specific considerations for Islamic educational technology and Nigerian user contexts. The chapter documents the complete journey from initial requirement identification through final system architecture specification.

The requirements analysis phase involved extensive stakeholder consultation including Islamic scholars, previous Hajj pilgrims, technology users, and educational technology experts. This multi-stakeholder approach ensured comprehensive understanding of both religious authenticity requirements and practical usability needs. The methodology combined traditional software engineering techniques with culturally appropriate research methods suitable for Islamic educational contexts.

The system design process translated identified requirements into technical specifications that support the four primary project objectives: sequential learning implementation, interactive multimedia integration, functional utility development, and religious authenticity preservation. Each design component received careful consideration to ensure alignment with both technological capabilities and Islamic educational principles.

The proposed web-based system architecture leverages modern Next.js framework capabilities to deliver comprehensive Hajj guidance through progressive learning modules, interactive demonstrations, and practical utility components. The design prioritizes user experience whilst maintaining strict adherence to Islamic pedagogical traditions and scholarly validation requirements.

**3.2 PROPOSED MODEL**

The Hajj Guide System employs a Sequential Progressive Learning Model specifically designed for complex multi-day religious ceremonies requiring precise chronological understanding and practical application skills. This model combines traditional Islamic teaching methods with modern web-based learning tools to make a single platform that helps with all aspects of Hajj preparation and guidance.

The main model structure is based on the real Hajj timeline, which runs from the 8th to the 13th days of Dhul-Hijjah. Each day is a separate learning module with its own rituals, educational content, and hands-on activities. Users must show that they understand each module before they can move on to the next one. This makes sure that knowledge is built up in a systematic way and that users don't get too much information at once.

Each learning module contains four important parts that are in line with Islamic educational traditions. The instructional component presents ritual procedures through multimedia demonstrations and scholarly explanations. The practice component provides interactive simulations and utility tools for ritual rehearsal. The assessment component evaluates understanding through contextually appropriate questioning techniques. The reflection component encourages spiritual contemplation and personal preparation for actual pilgrimage performance.

The proposed model addresses identified deficiencies in current Hajj guidance applications by employing genuine sequential progression instead of random-access information retrieval. This method is in line with traditional Islamic teaching methods, but it also uses modern web technologies to make learning more accessible and interesting.   
The system architecture supports both synchronous and asynchronous learning styles, which means it can work with different user schedules and learning styles. Users can move through modules at their own pace while getting regular help and feedback along the way.

.

**3.3 METHODOLOGY**

To guarantee a thorough grasp of user requirements and system design requirements, the research methodology integrated qualitative and quantitative approaches. While upholding strict academic standards, the methodology included culturally relevant research methods appropriate for Islamic educational contexts.   
Understanding current Hajj preparation methods, recognizing technological opportunities and obstacles, and compiling particular needs for efficient digital guidance systems were the main goals of primary data collection. Best practices in Islamic educational technology development, current application offerings, and existing literature were all analyzed using secondary data.  
While collecting methodical technical requirements, the methodology placed a high priority on genuine stakeholder engagement through courteous consultation procedures that respected Islamic consultation traditions. This method made sure that actual community needs, not presumptions about user requirements, were reflected in the final system design.

**3.3.1 Method 1: Semi-Structured Interviews**

The interview methodology employed culturally sensitive approaches designed to elicit comprehensive information about Hajj preparation experiences and digital guidance needs. Interview participants included 15 individuals representing diverse stakeholder categories: five previous Hajj pilgrims with varying experience levels, three Islamic scholars specializing in Hajj jurisprudence, four technology users representing different demographic groups, and three educational technology professionals.

Interview questions explored current preparation methods, challenges encountered during actual pilgrimage performance, preferences for digital guidance features, and cultural considerations affecting technology acceptance. The semi-structured format allowed for flexible questioning that accommodated cultural communication styles whilst ensuring systematic data collection.

Interviews were conducted in participants' preferred languages (English, Fulani, or Hausa) to ensure clear communication and authentic responses. Each interview lasted between 25-30 minutes, with audio recording permission requested respectfully and transcription completed within 48 hours to maintain accuracy.

The interview process revealed significant insights regarding sequential learning preferences, multimedia content requirements, utility component priorities, and religious authenticity expectations. Participants consistently emphasized the importance of scholarly validation and cultural appropriateness in digital Islamic educational platforms.

Data analysis employed thematic coding techniques to identify recurring patterns and requirements across different participant categories. The analysis revealed convergent themes regarding sequential progression needs, interactive engagement preferences, and practical utility requirements that informed subsequent system design decisions.

**3.3.2 Method 2: Systematic Observation**

The observation methodology examined current digital Hajj guidance usage patterns and identified usability challenges in existing applications. Observation sessions involved 12 participants using three popular Hajj guidance applications whilst completing specific preparation tasks under controlled conditions.

Observation protocols documented user interaction patterns, navigation difficulties, content comprehension challenges, and feature utilisation rates. Sessions were conducted in natural learning environments to ensure authentic usage behaviour whilst maintaining systematic data collection standards.

Participants represented diverse technological literacy levels and demographic backgrounds to ensure comprehensive understanding of usability requirements across the target user population. Each observation session lasted 60 minutes, with detailed behaviour logging and post-session debriefing interviews.

The observation process revealed critical usability issues in existing applications including navigation confusion, content accessibility problems, and insufficient interactive guidance. Participants frequently expressed frustration with non-sequential information organization and lack of comprehensive utility integration.

Quantitative metrics collected during observation included task completion rates, error frequencies, navigation path analyses, and feature engagement levels. These metrics provided objective evidence supporting qualitative findings regarding user experience improvements needed in digital Hajj guidance systems.

**3.4 TOOLS AND TECHNIQUES**

The system development process employed contemporary web development tools optimized for educational platform creation and Islamic content presentation. The primary development framework utilised Next.js 14.0 for its integrated full-stack capabilities, server-side rendering optimisation, and comprehensive routing mechanisms.

Database management employed MongoDB for flexible document storage supporting diverse content types including multilingual text, authentic references, user progress tracking, and assessment results. The NoSQL approach accommodated varied data structures required for Islamic educational content whilst ensuring scalable performance.

Frontend development utilised React components with Tailwind CSS for responsive design implementation and Islamic-appropriate aesthetic styling. The component-based architecture supported modular development approaches whilst ensuring consistent user experience across different device categories.

Interactive multimedia integration employed HTML5 video components, Web Audio APIs for Arabic recitation playback, and CSS animations for ritual demonstrations. These technologies provided comprehensive multimedia capabilities whilst maintaining broad browser compatibility and accessibility standards.

Version control management utilised Git with GitHub repositories for collaborative development coordination and systematic change tracking. The distributed version control approach supported multiple developer contributions whilst maintaining code integrity and project timeline management.

Testing frameworks included Jest for unit testing, Cypress for end-to-end functionality verification, and manual testing protocols for cultural appropriateness validation. The comprehensive testing approach ensured both technical functionality and religious content accuracy.

Deployment infrastructure utilised Vercel platform for optimized Next.js hosting with global content delivery network capabilities. This approach ensured reliable performance across diverse geographical locations whilst supporting scalable user access patterns.

**3.5 ETHICAL CONSIDERATIONS**

The project development process incorporated comprehensive ethical frameworks addressing both technological development standards and Islamic ethical principles. Ethical considerations encompassed participant welfare, religious sensitivity, cultural appropriateness, and scholarly responsibility throughout all project phases.

Participant consent procedures followed university research ethics guidelines whilst incorporating Islamic consultation traditions. All interview and observation participants received detailed information about project purposes, data usage intentions, and confidentiality protections. Consent forms were provided in participants' preferred languages with clear withdrawal options.

Religious content accuracy represented a critical ethical responsibility requiring systematic scholarly consultation and validation processes. All ritual guidance content received verification from qualified Islamic scholars before implementation, with ongoing review mechanisms for content accuracy maintenance.

Cultural sensitivity protocols ensured respectful presentation of Islamic practices and beliefs throughout the system design process. Design decisions prioritised authentic representation over technological novelty, avoiding approaches that might trivialise or misrepresent sacred religious practices.

Data privacy protection employed industry-standard security measures for user information storage and transmission. The system design minimized personal data collection requirements whilst providing necessary functionality for progress tracking and personalized guidance.

Accessibility considerations ensured inclusive design approaches that accommodated diverse user capabilities and technological access levels. The ethical framework recognized technology access as an equity issue requiring systematic attention to inclusive design principles.

Intellectual property considerations respected Islamic scholarly traditions whilst acknowledging contemporary copyright requirements. All Islamic texts and scholarly quotations received appropriate attribution with permission obtained for copyrighted materials where required.

**3.6 REQUIREMENT ANALYSIS**

The requirement analysis process synthesized information gathered through interviews, observations, and literature review to identify comprehensive system requirements addressing all stakeholder needs. The analysis distinguished between essential requirements that must be implemented for system success and desirable features that enhance user experience without compromising core functionality.

User requirement analysis revealed four primary categories of needs: educational content requirements, interactive functionality requirements, utility component requirements, and cultural appropriateness requirements. Each category contained specific requirements with measurable success criteria and implementation priorities.

Educational content requirements emphasized sequential organization corresponding to actual Hajj chronology, multimedia demonstration integration, scholarly validation for religious accuracy, and multilingual support focusing on English and Arabic languages. These requirements directly supported the project's primary educational objectives.

Interactive functionality requirements included progress tracking mechanisms, assessment systems with culturally appropriate questioning approaches, personalization features accommodating diverse learning preferences.

Utility component requirements focused on practical tools supporting actual pilgrimage performance including Tawaf counting mechanisms, Jamarat stoning trackers and prayer time calculators. These requirements addressed the practical application aspects of Hajj preparation.

Cultural appropriateness requirements encompassed Islamic aesthetic design principles, gender-sensitive content presentation, scholarly endorsement mechanisms, and culturally appropriate interaction paradigms. These requirements ensured system acceptance within the target community.

Technical requirement analysis identified platform performance standards, browser compatibility requirements, security specifications, and scalability considerations. The analysis balanced technological sophistication with accessibility needs across diverse user environments.

Stakeholder requirement analysis revealed different priority emphases among user groups whilst identifying convergent needs across all categories. Islamic scholars prioritized content accuracy and religious appropriateness. Previous pilgrims emphasized practical utility and sequential guidance. Technology users focused on usability and interactive engagement.

**3.7 REQUIREMENTS SPECIFICATIONS**

**3.7.1 Functional Requirement Specifications**

The functional requirements define specific behaviours and capabilities that the Hajj Guide System must demonstrate to achieve project objectives successfully. These requirements specify measurable functionality that users can observe and interact with directly.

**Table 3.1: Functional Requirement**

|  |  |  |
| --- | --- | --- |
| Requirement No. | Description | Type |
| FR-01 | The system shall allow users to sign up for an account. | Functional |
| FR-02 | The system shall allow users to log in with valid credentials | Functional |
| FR-03 | The system shall allow users to access study materials in sequential order. | Functional |
| FR-04 | The system shall administer quizzes after each module to measure user progress. | Functional |
| FR-05 | The system shall track and store user progress persistently across sessions. | Functional |
| FR-06 | The system shall detect user sessions and serve resources accordingly. | Functional |
| FR-07 | The system shall provide feedback assessment immediately after quiz completion | Functional |
| FR-08 | The system shall provide role-based access, allowing different permissions for pilgrims, scholars, and admins. | Functional |
| FR-09 | The system shall provide a Tawaf counter, Jamarat tracker, and prayer time calculator. | Functional |
| FR-10 | The system shall provide assessment feedback immediately after quiz completion. | Functional |

**3.7.2 Non-Functional Requirement Specifications**

Non-functional requirements establish quality attributes and performance standards that the system must maintain whilst delivering functional capabilities. These requirements ensure system usability, reliability, and appropriateness for the target user environment.

**Table 3.2: Non-Functional Requirement**

|  |  |  |
| --- | --- | --- |
| Requirement No. | Description | Type |
| NFR-01 | The system shall be available 24/7 except during scheduled maintenance | Availability |
| NFR-02 | The system shall maintain at least 99.5% uptime during Hajj season. | Reliability |
| NFR-03 | The system shall load standard content in under 3 seconds. | Performance |
| NFR-04 | The system shall load multimedia-rich content in under 8 seconds. | Performance |
| NFR-05 | The system shall support at least 1000 concurrent users without performance degradation. | Scalability |
| NFR-06 | The system shall be compatible with major browsers (Chrome, Firefox, Safari, Edge) released within the last 3 years. | Compatibility |
| NFR-07 | The system shall be responsive and function across devices with screen sizes from 320px to 1920px. | Usability |
| NFR-08 | The system shall encrypt all user interactions and store personal data securely. | Security |
| NFR-09 | The system shall provide clear visual feedback for user actions and system errors. | Usability |
| NFR-10 | The system shall comply with Islamic design principles and present content respectfully. | Cultural Appropriateness |

**3.8 SYSTEM DESIGN**

**3.8.1 Application Architecture**

The Hajj Guide System employs a modern three-tier web application architecture optimized for educational content delivery and interactive user engagement. The architecture separates presentation logic, business logic, and data management into distinct layers supporting maintainable development and scalable deployment.

The presentation tier utilizes Next.js React components providing dynamic user interfaces with server-side rendering capabilities for improved performance and search engine optimisation. Component-based architecture supports modular development with reusable interface elements maintaining design consistency across all system modules.

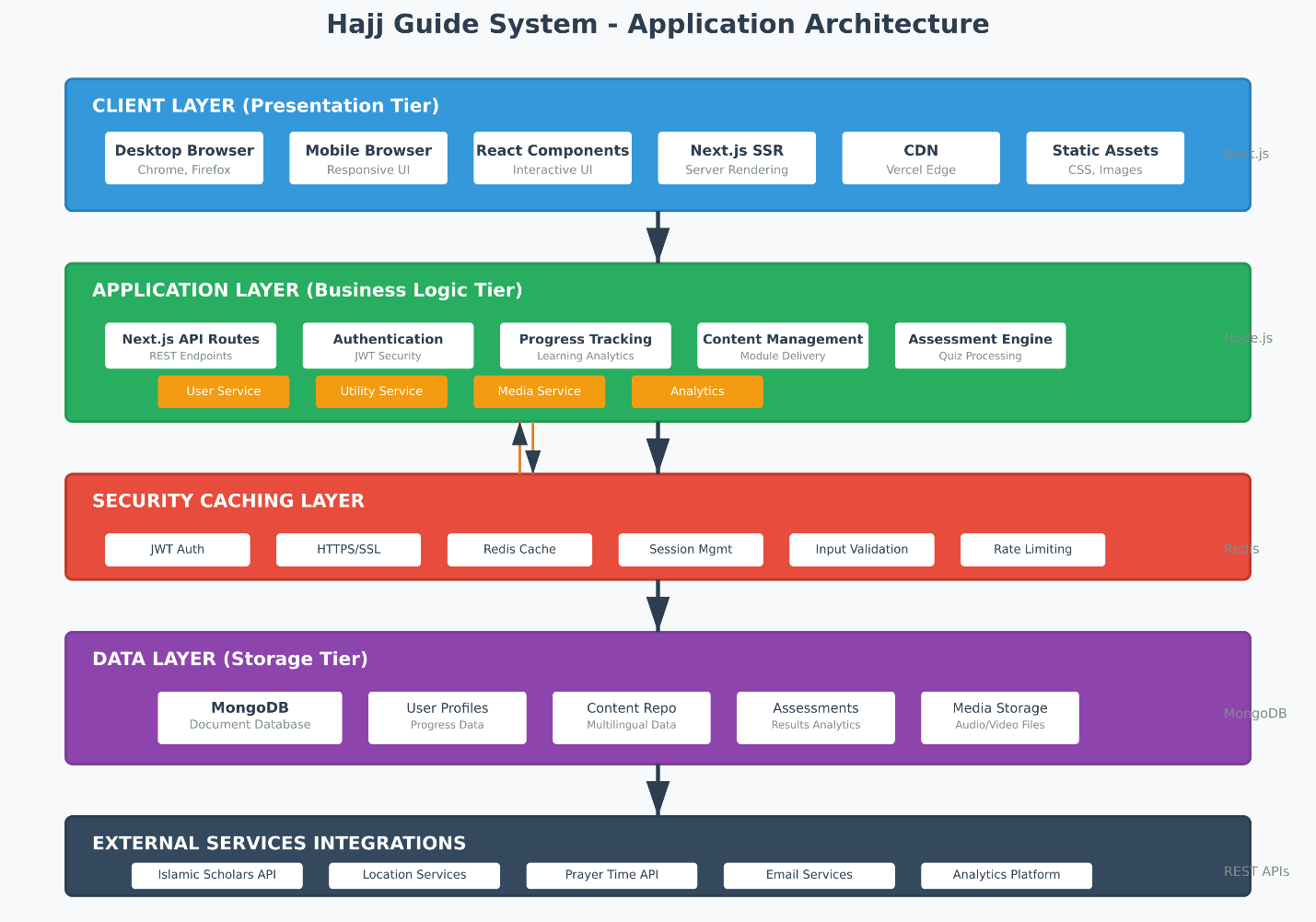
The application tier implements Next.js API routes handling business logic processing, user authentication, progress tracking, and content management operations. This tier coordinates between user interface requests and database operations whilst implementing security measures and performance optimisation.

The data tier employs MongoDB for flexible document storage supporting diverse content types including multilingual text, multimedia references, user progress records, and assessment results. The NoSQL database approach accommodates varying data structures required for Islamic educational content whilst ensuring efficient query performance.

Caching mechanisms implement Redis for session management and frequently accessed content storage, reducing database load and improving response times for common operations. Static content delivery utilizes Content Delivery Network integration for optimized multimedia performance across geographical locations.

Security architecture implements JSON Web Token authentication for user session management, HTTPS encryption for all data transmission, input validation for preventing injection attacks, and role-based access control for administrative functionality.

The microservices approach separates content management, user progress tracking, assessment systems, and utility components into independent services supporting independent development and deployment whilst maintaining system integration through well-defined API interfaces.



*Figure 3.1: Application Architecture*

**3.8.2 Use Case Analysis**

The use case analysis identifies primary interaction patterns between different user types and system functionality, ensuring comprehensive coverage of requirements through scenario-based design validation. The analysis covers three primary actor categories: pilgrims preparing for Hajj, Islamic scholars validating content, and system administrators managing platform operations.

Primary pilgrim use cases include account registration and profile creation, sequential progression through Hajj learning modules, interactive engagement with multimedia demonstrations, completion of module assessments, utilisation of practical utility tools

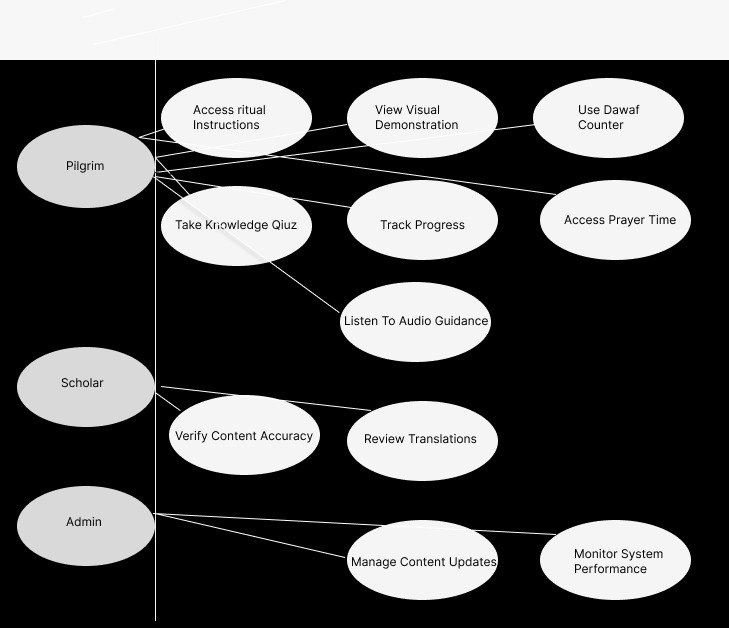
The learning progression use case represents the core system interaction where users navigate through chronologically organized content modules. This use case includes authentication verification, progress checking, content presentation, interactive engagement, assessment completion, and advancement to subsequent modules based on competency demonstration.

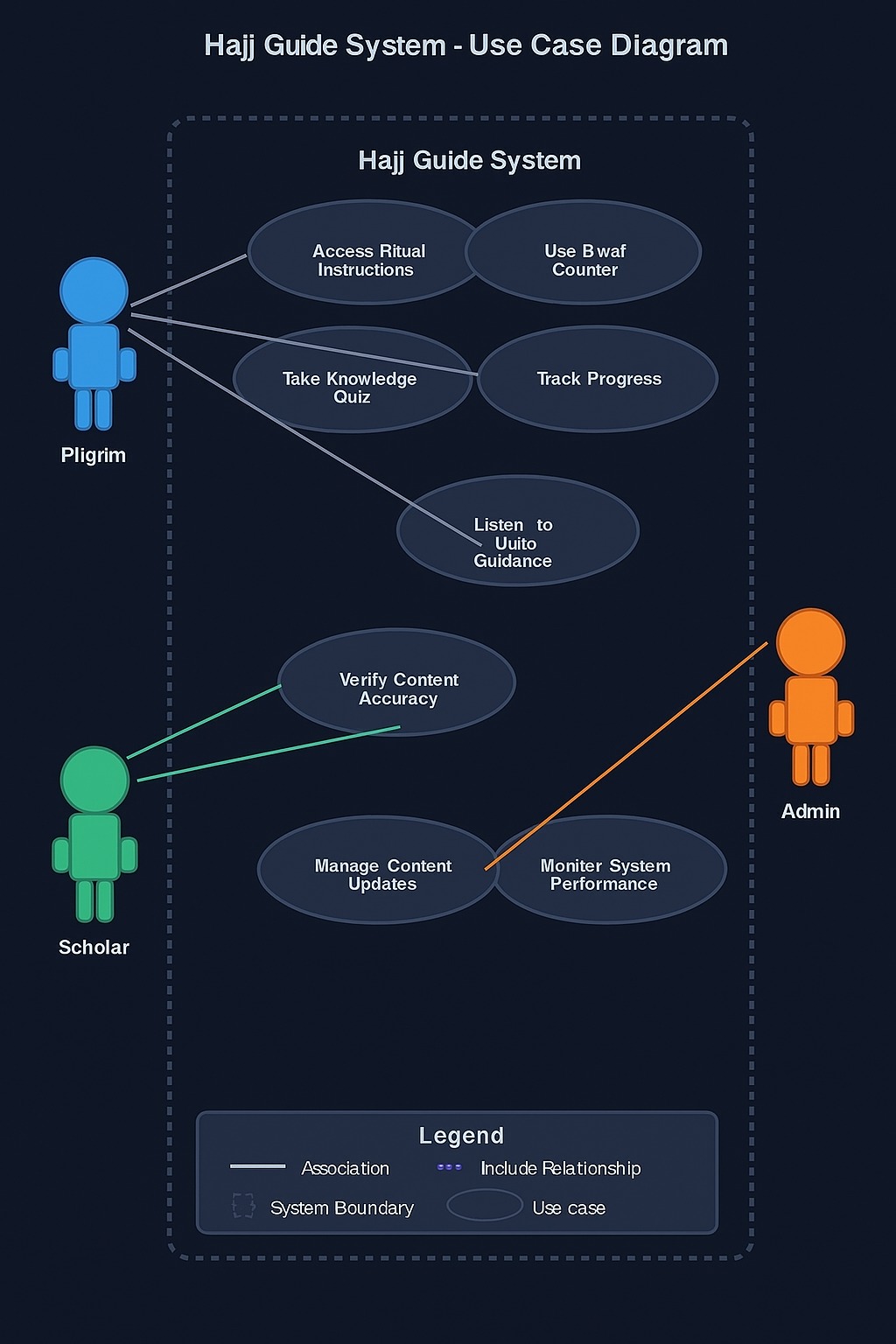
Assessment completion use cases define user interaction patterns for knowledge evaluation including question presentation, response collection, immediate feedback provision, and progress recording. The assessment system accommodates different question types appropriate for Islamic educational contexts whilst maintaining objective evaluation standards.

Utility interaction use cases cover practical tool usage including Tawaf counting during ritual simulation, Jamarat stoning tracking across multiple days, prayer time calculation based on geographical location.

Scholar validation use cases cover administrative functionality for content review, accuracy verification, cultural appropriateness assessment, and approval mechanisms ensuring religious authenticity throughout system content.

Administrative use cases include user management, content update procedures, system monitoring, performance analysis, and security maintenance ensuring reliable platform operation and continuous improvement based on usage patterns.





*Figure 3.2: Use Case Diagram*

**3.8.3 Data Design**

The data design establishes comprehensive information architecture supporting educational content organization, user progress tracking, assessment management, and utility functionality whilst ensuring efficient storage and retrieval performance.

Content data structures organize Hajj educational materials through hierarchical relationships linking daily modules, ritual procedures, multimedia demonstrations, and scholarly explanations. Each content item includes multilingual text fields, multimedia references, cultural context information, and scholarly validation status.

User data structures maintain account information, learning progress records, assessment results, personal preferences, and utility usage tracking whilst minimizing personal data collection consistent with privacy requirements. Progress tracking employs granular measurement supporting detailed analytics whilst respecting user privacy.

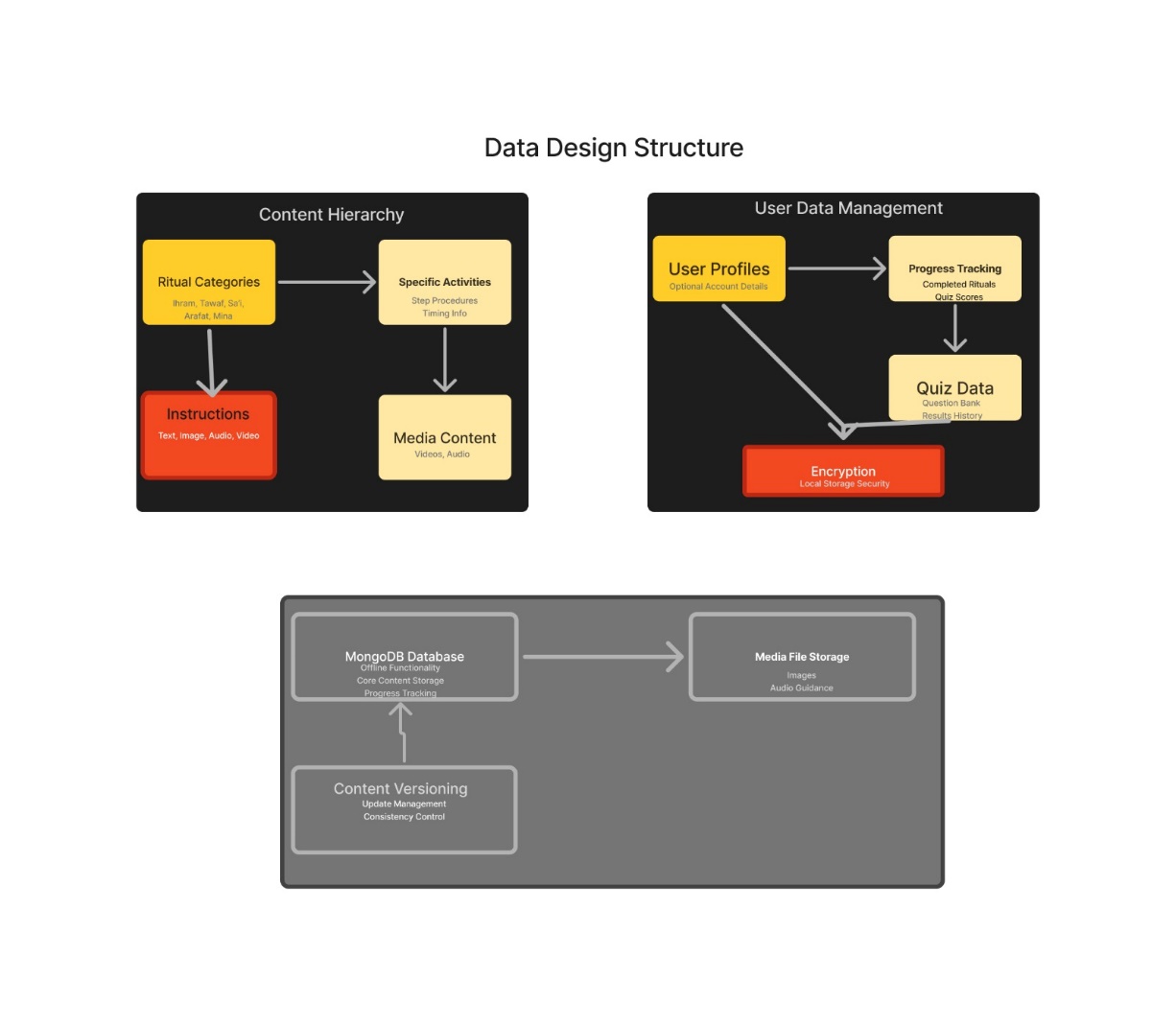
Assessment data structures store question banks with culturally appropriate content, user response records, scoring algorithms adapted for Islamic educational contexts, and feedback mechanisms supporting personalized learning guidance.

Module progression data maintains completion status, competency demonstrations, time tracking, and prerequisite relationships ensuring sequential learning enforcement. The structure accommodates different learning paths whilst maintaining chronological integrity.

Multimedia data organization includes video demonstrations, audio recordings of Arabic supplications, written text for ritual procedures. Metadata structures support efficient retrieval and appropriate cultural presentation.

Utility data structures support Tawaf counting sessions, Jamarat tracking across multiple days, prayer time calculations.

The database schema implements MongoDB document collections optimized for educational content relationships whilst supporting efficient querying and scalable performance. Indexing strategies prioritize common access patterns including sequential content retrieval and user progress tracking.



*Figure 3.3: Data Design Structure*

**3.8.4 Activity Diagrams**

Activity diagrams model the sequential flow of actions within major system processes, ensuring comprehensive understanding of user interaction patterns and system response behaviours. The diagrams cover core processes including user registration, module progression, assessment completion, and utility usage.

The user registration activity flow begins with account creation request processing, continues through email verification procedures, includes profile setup with cultural preferences, and concludes with initial system orientation presentation. Decision points address validation requirements and error handling procedures.

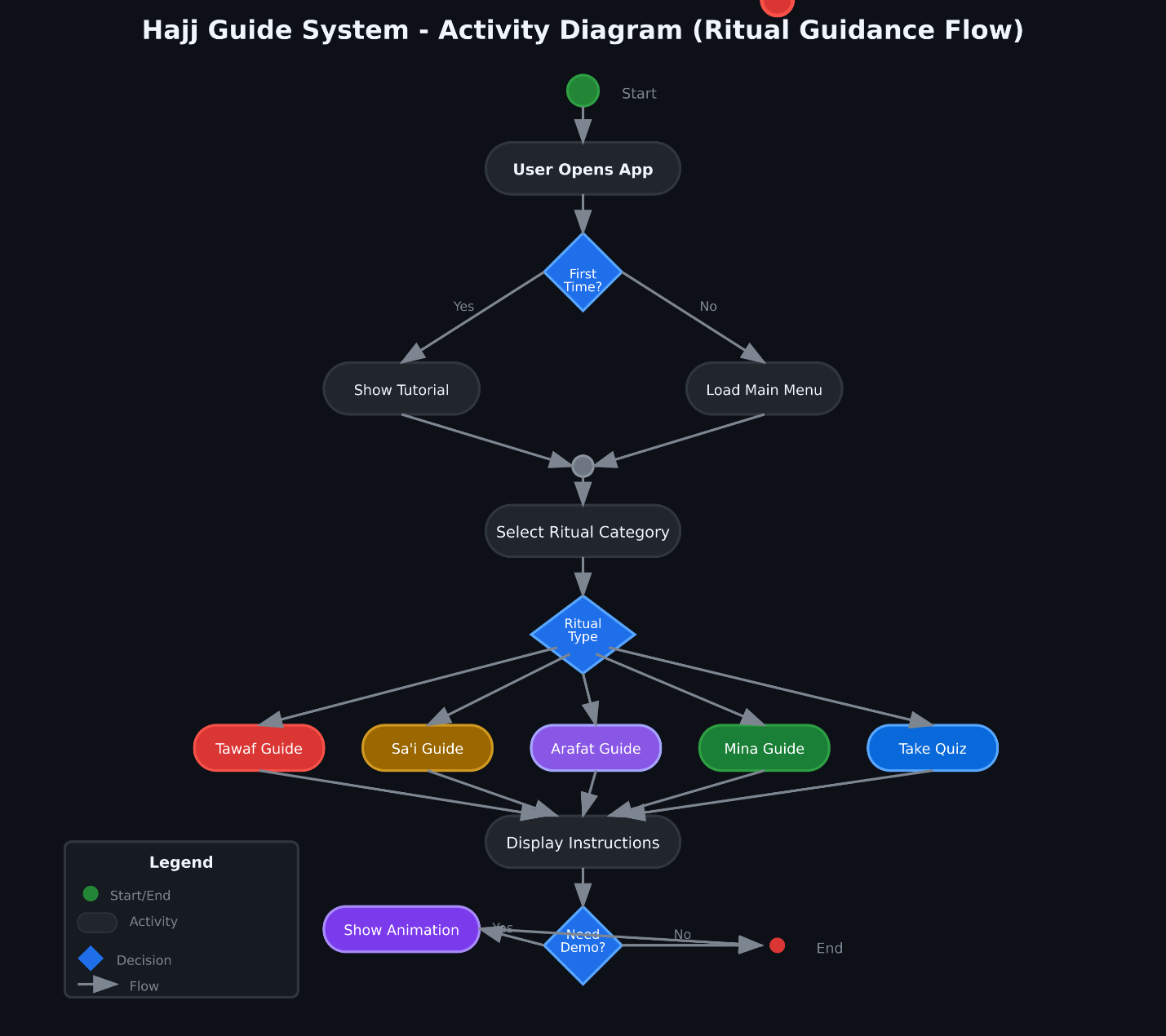
Module progression activity diagrams illustrate the sequential learning process from module access request through content presentation, interactive engagement, comprehension assessment, and advancement decision making. The flow includes prerequisite checking, progress recording, and feedback generation.

Assessment completion activities model question presentation, response collection, evaluation processing, feedback generation, and progress update procedures. The flow accommodates different question types whilst maintaining consistent evaluation standards and cultural appropriateness.

Utility usage activities diagram practical tool interaction patterns including counter initialization, increment processing, session management, and result storage. Each utility component maintains separate activity flows whilst sharing common session management procedures.

Content search activities model information retrieval processes including query processing, multilingual searching, result ranking, and presentation formatting. The flow supports both structured navigation and free-form searching across educational content.

Administrative activities diagram content management processes including scholarly review procedures, approval workflows, publication mechanisms, and update propagation ensuring content accuracy and cultural appropriateness throughout the system.



*Figure 3.4: Activity Diagram*

**3.8.5 Dataflow Diagram**

The dataflow diagram illustrates information movement throughout the Hajj Guide System, documenting data sources, processing components, storage mechanisms, and output destinations. The diagram ensures comprehensive understanding of data handling procedures and identifies potential optimisation opportunities.

Level 0 dataflow presents the system as a single process receiving user inputs and producing educational guidance outputs whilst interfacing with external scholarly validation sources and multimedia content repositories. The high-level view establishes system boundaries and major data flows.

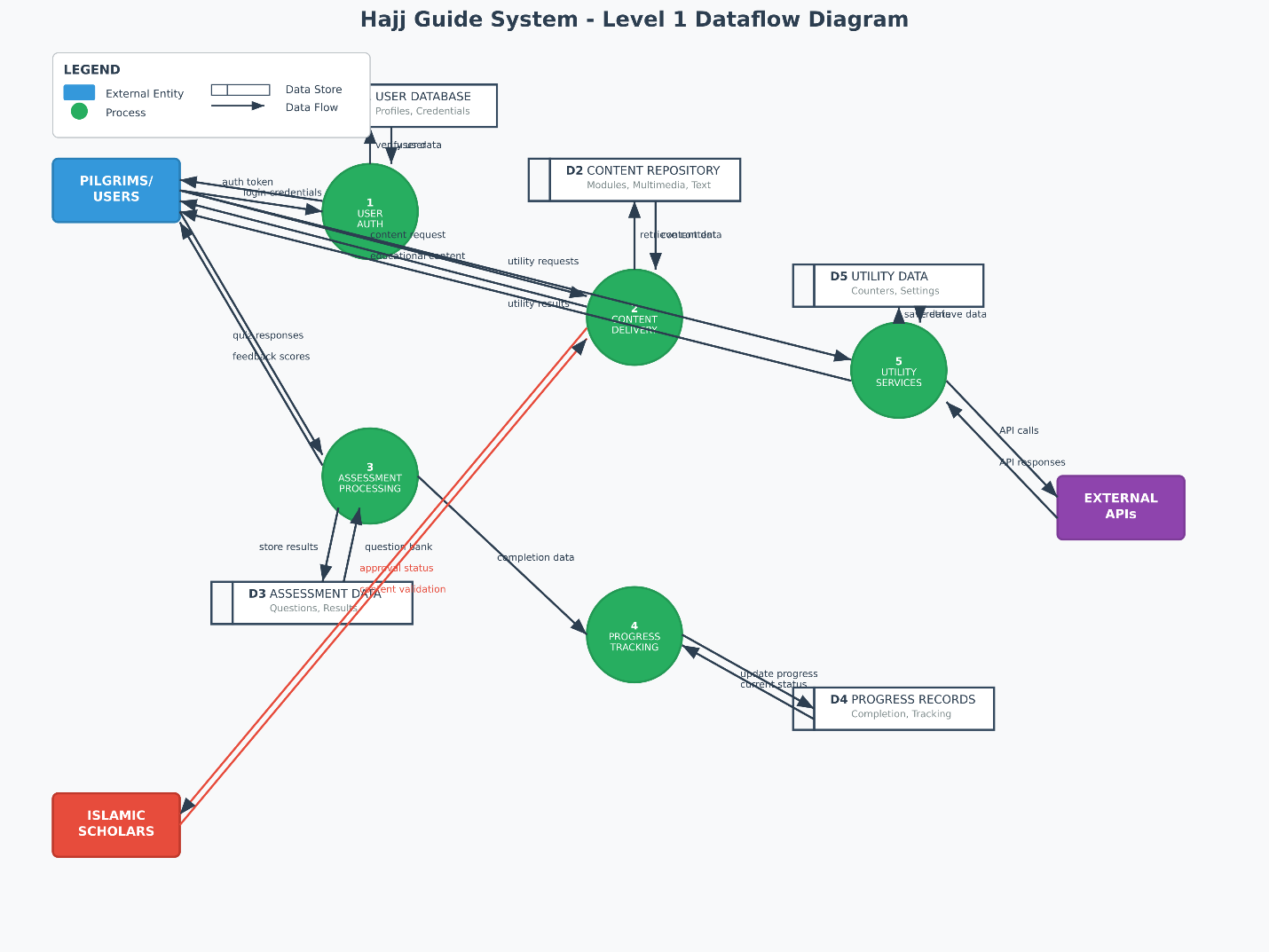
Level 1 dataflow decomposes the system into major functional processes including user management, content delivery, assessment processing, and utility services. Data flows between processes illustrate information sharing requirements and processing dependencies.

User authentication dataflows model credential verification, session establishment, progress retrieval, and personalization loading. The flow ensures secure access whilst minimizing authentication friction for legitimate users.

Content delivery dataflows trace educational material requests from user interface through content management systems to multimedia repositories and back to presentation components. The flow optimizes performance through caching mechanisms and efficient retrieval strategies.

Assessment dataflows model question generation from content-linked question banks, response processing through evaluation algorithms, feedback generation through personalization systems, and result storage in progress tracking databases.

Progress tracking dataflows document competency recording, advancement decisions, prerequisite verification, and completion certification throughout the sequential learning process. The flow ensures accurate progress maintenance across user sessions.



*Figure 3.5: Dataflow Diagram*

**3.8.6 Control Flow Diagram**

Control flow diagrams model decision-making logic and conditional processing within system operations, ensuring proper handling of different scenarios and exception conditions. The diagrams cover authentication decisions, progression logic, assessment evaluation, and error handling procedures.

Authentication control flow addresses login validation, session management, timeout handling, and security challenge processing. Decision points include credential verification, account status checking, and security threat detection with appropriate response mechanisms.

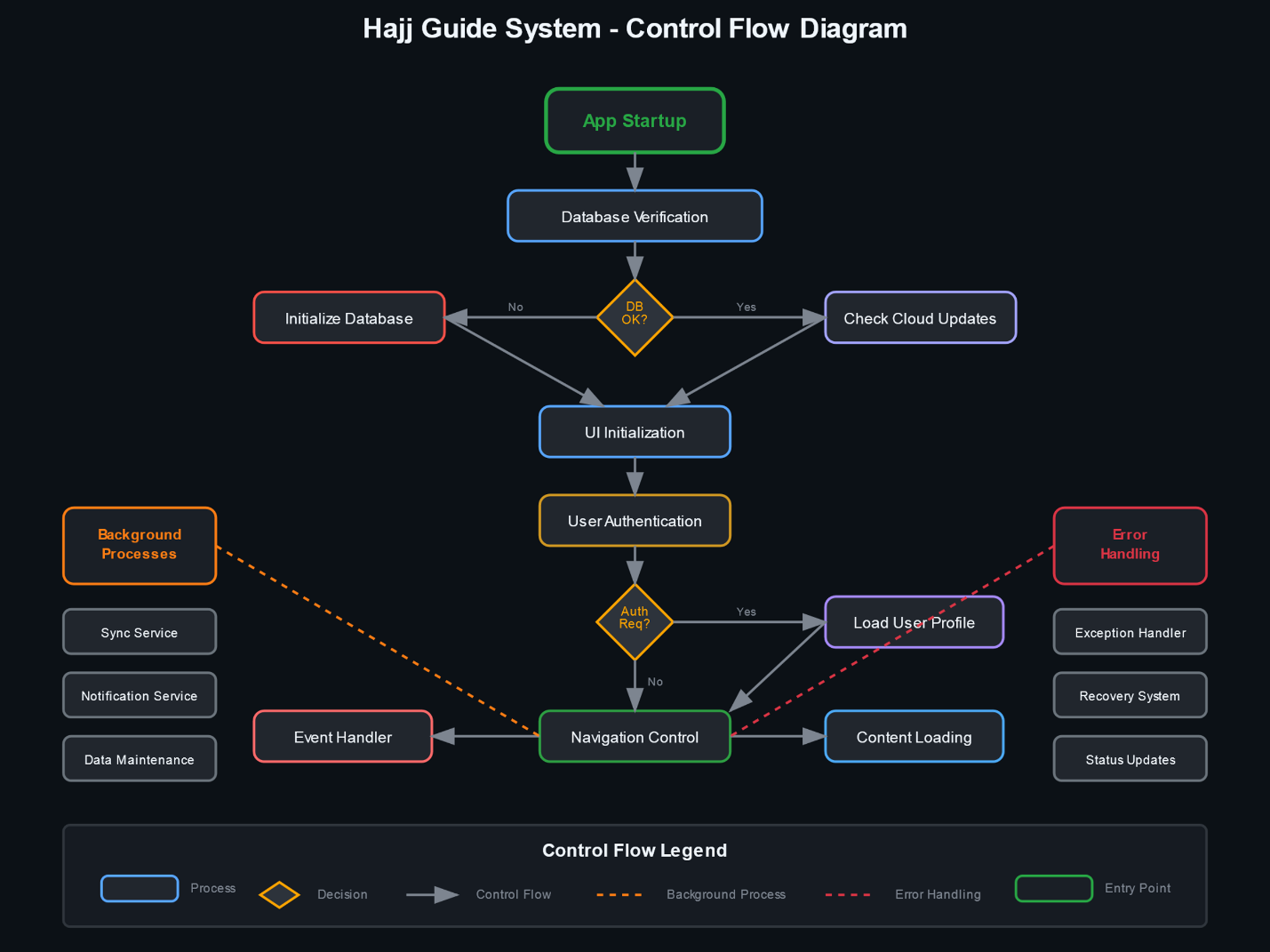
Module progression control logic manages prerequisite verification, competency assessment, advancement authorization, and exception handling for incomplete requirements. The flow ensures strict sequential learning whilst accommodating different learning paces and assessment outcomes.

Assessment evaluation control flow processes user responses through scoring algorithms, generates appropriate feedback based on performance levels, updates progress records according to competency demonstration, and determines advancement eligibility through comprehensive evaluation criteria.

Content access control manages multilingual presentation, cultural appropriateness filtering, scholarly validation verification, and personalized content adaptation based on user preferences and progress status.

Utility component control flows handle initialization procedures, input validation, processing algorithms, result storage, and session management for practical tools including counters, calculators, and checklists.

Error handling control flows address network connectivity issues, data validation failures, authentication problems, and system maintenance scenarios with appropriate user messaging and recovery procedures maintaining system stability.



*Figure 3.6: ControlFlow Diagram*

**3.8.7 Entity-Relationship Diagram (ERD)**

The Entity-Relationship Diagram defines data relationships and constraints within the Hajj Guide System database structure, ensuring referential integrity and efficient information organization supporting educational and functional requirements.

User entities maintain account credentials, personal preferences, learning progress, and system interaction history with relationships to progress tracking, assessment records, and utility usage data. Privacy constraints limit personal information storage whilst supporting necessary functionality.

Content entities organize educational materials through hierarchical relationships linking modules, lessons, demonstrations, and assessments. Scholarly validation relationships connect content items to approval records ensuring religious authenticity throughout the system.

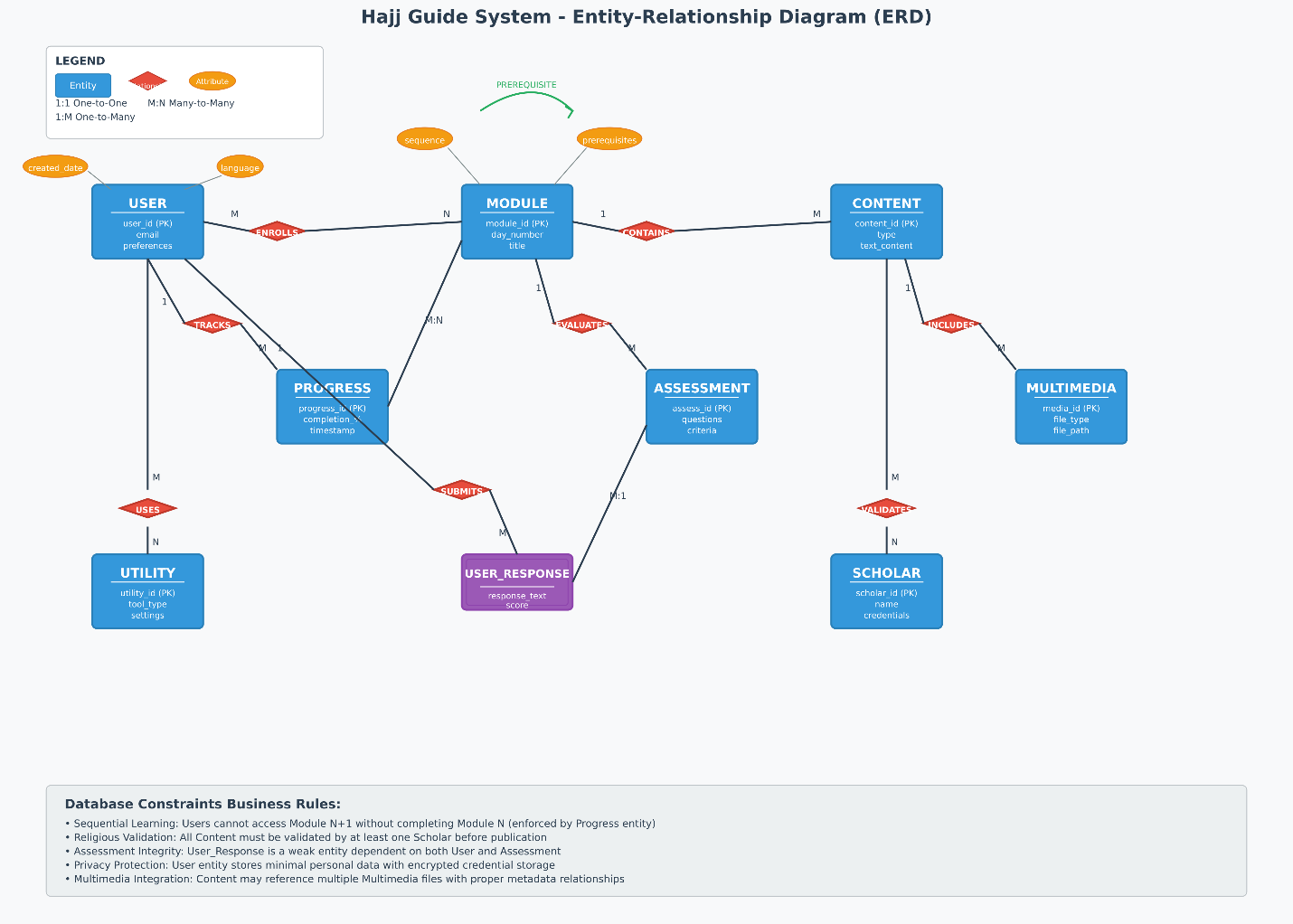
Module entities represent daily Hajj guidance with sequential relationships enforcing chronological progression and prerequisite dependencies. Completion relationships track user advancement through the learning sequence with timestamp and competency recording.

Assessment entities include question banks, evaluation criteria, user responses, and feedback generation with relationships supporting personalized learning guidance and progress measurement. Cultural appropriateness constraints ensure Islamic educational standards.

Multimedia entities manage video demonstrations, audio recordings, visual aids, and interactive components with metadata supporting efficient retrieval and appropriate cultural presentation across different user preferences.

Utility entities support practical tools including counting sessions, calculation parameters, checklist items, and personalization settings with user relationships maintaining individual usage patterns and preferences.

Administrative entities manage content approval workflows, user management procedures, system monitoring data, and performance analytics with security constraints ensuring appropriate access control and data protection.

*Figure 3.7: Entity-Relationship Diagram (ERD)*

**3.8.8 User Interface Design**

The user interface design prioritizes Islamic aesthetic principles whilst implementing modern web usability standards supporting effective educational interaction and cultural appropriateness. Design decisions balance technological sophistication with cultural sensitivity ensuring authentic religious representation.

Visual design employs traditional Islamic geometric patterns as subtle background elements without overwhelming educational content presentation. Colour schemes utilize culturally appropriate combinations avoiding combinations considered inappropriate within Islamic contexts whilst maintaining sufficient contrast for accessibility.

Typography integrates Arabic script capabilities for religious text presentation alongside clear English fonts optimized for extended reading. Font sizing accommodates different user preferences whilst maintaining readability across various device categories and viewing conditions.

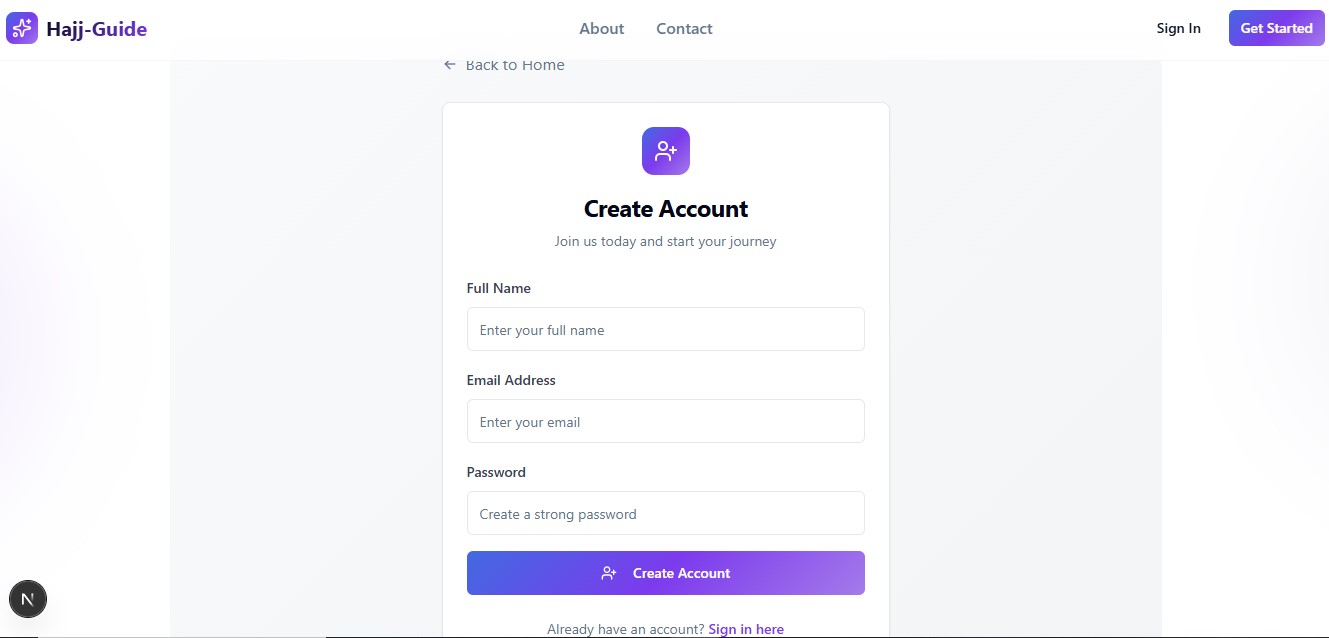
Navigation design implements intuitive menu structures reflecting the sequential learning approach with clear progress indicators showing user advancement through the Hajj timeline. Breadcrumb navigation supports orientation within the hierarchical content structure.

Content presentation layouts balance multimedia demonstrations with textual explanations using responsive grid systems adapting to different screen sizes. Interactive elements receive clear visual emphasis whilst maintaining respectful presentation of religious content.

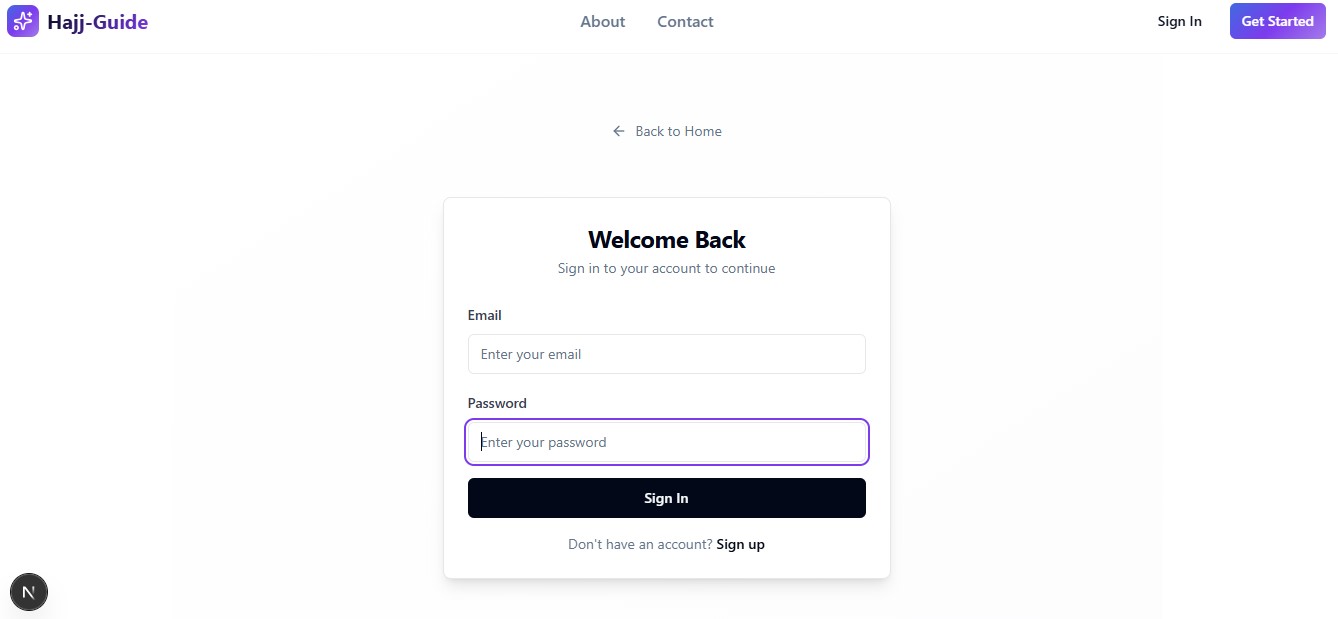
Form design for assessments and user input employs culturally appropriate interaction patterns avoiding elements that might conflict with Islamic sensibilities. Input validation provides helpful guidance whilst maintaining respectful error messaging.

Utility interface design prioritizes functionality for practical tools whilst integrating seamlessly with the overall educational experience. Counter interfaces employ clear visual feedback with tactile interaction support for mobile device usage.

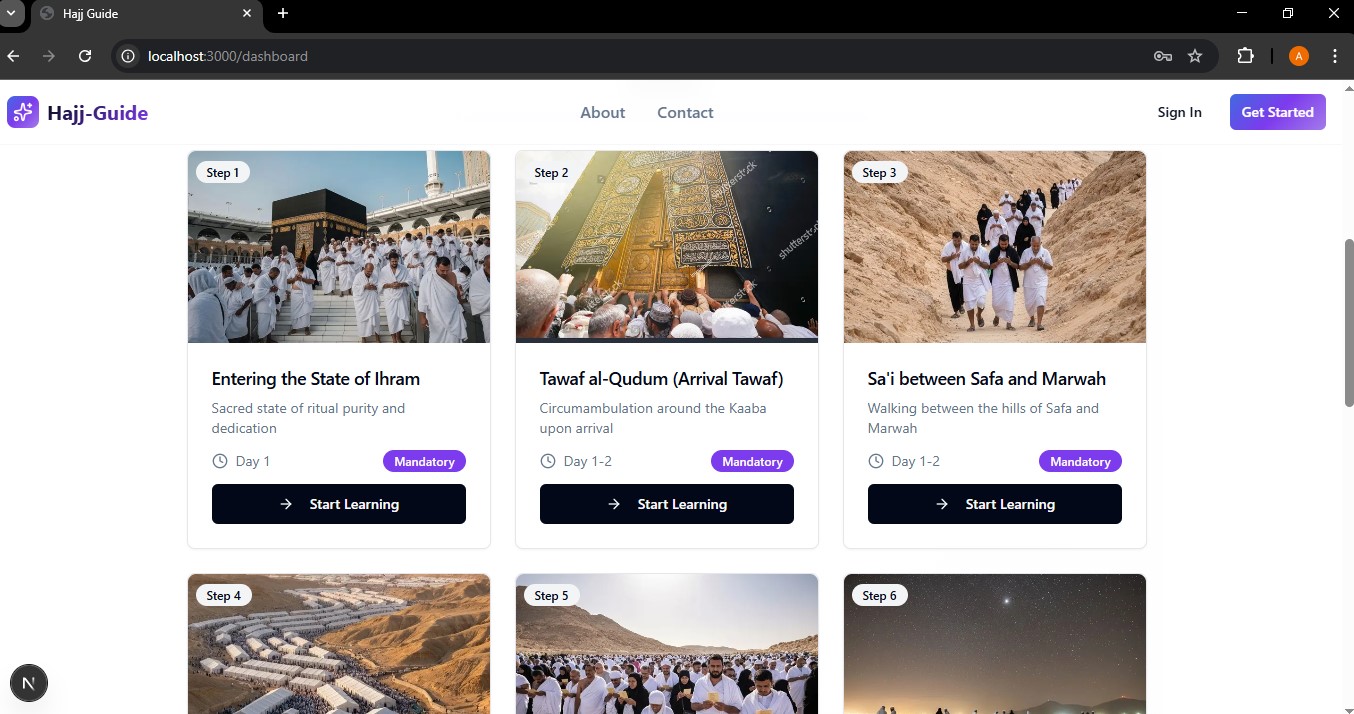
Accessibility features include alternative text for all images, keyboard navigation support, screen reader compatibility, and customizable interface elements supporting users with different capabilities whilst maintaining cultural appropriateness throughout the design.

**

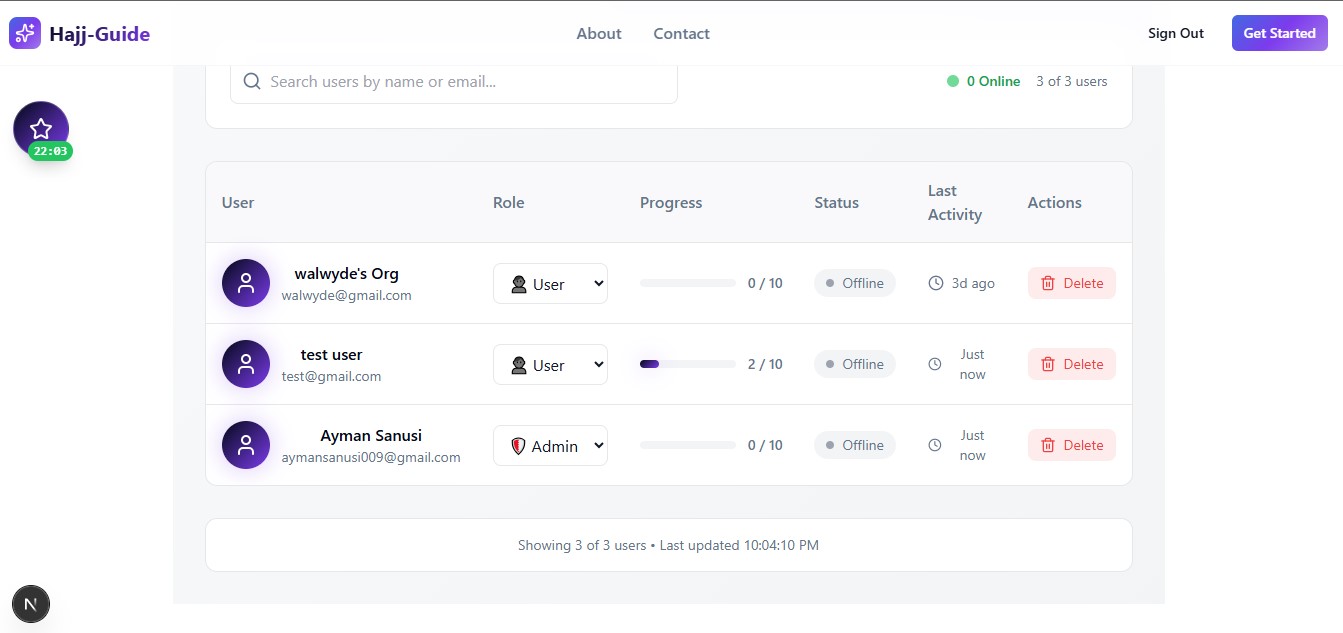
*Figure 3.8.1: User Interface Design –Signup page*



*Figure 3.8.2: User Interface Design –login page*



*Figure 3.8.3: User Interface Design –user dashboard page*

**

*Figure 3.8.4: User Interface Design –Admin Dashboard page*

**3.9 SUMMARY**

Chapter 3 presented comprehensive requirements analysis and system design for the Hajj Guide System, documenting the systematic approach employed to translate user needs into technical specifications supporting effective Islamic educational technology implementation. The methodology combined traditional software engineering approaches with culturally appropriate research techniques ensuring authentic community engagement throughout the requirements gathering process.

The proposed Sequential Progressive Learning Model addresses identified gaps in existing Hajj guidance applications by implementing true chronological progression through educational content whilst maintaining Islamic pedagogical traditions. The model supports both educational objectives and practical preparation requirements through integrated utility components and assessment mechanisms.

Requirements specifications established clear functional and non-functional criteria ensuring system success whilst maintaining cultural appropriateness and religious authenticity throughout implementation. The systematic approach to requirement gathering revealed convergent needs across different stakeholder categories whilst identifying specific priorities for different user groups.

System design documentation provides comprehensive technical specifications supporting effective development and implementation processes. The three-tier architecture ensures scalable performance whilst accommodating the specific requirements of Islamic educational content and diverse user environments.

The complete requirements analysis and design process established solid foundations for system implementation whilst ensuring alignment with project objectives and stakeholder expectations. The systematic approach supports both immediate development needs and future enhancement opportunities through modular architecture and comprehensive documentation.