

RIPHAH INTERNATIONAL UNIVERSITY



Faculty of Computing FINAL YEAR PROJECT PROPOSAL & PLAN

IslamXplorar

Project Team

Full Name of Student	SAP Id	Program	Contact Number	Email Address
Ahmad Hassan	23324	BSCS	03317055570	23324@students.riphah.edu.pk

Shahid Ali Khan
(Jr. Lecturer)

IslamXplorar

Change Record

Author(s)	Version	Date	Notes	Supervisor's Signature
Ahmad Hassan	1.0	11/9/2023	Original Draft	
Ahmad Hassan	2.0	11/10/2023	Changes Based on Feedback From Faculty	

Project Proposal

Project Title: IslamXplorar

Opportunity & Stakeholders:

Opportunity

- **Educational Resource:** This project can serve as a valuable educational resource for individuals seeking to study the Quran and Hadith, scholars, students, and the general public.
- **Research Aid:** It can aid researchers and scholars in analyzing and extracting valuable insights from Islamic texts more efficiently.
- **Interfaith Dialogue:** The project can facilitate interfaith dialogue by providing accessible information about Islamic teachings.
- **Content Accessibility:** It can make Quranic and Hadith content easily accessible to a global audience.

Stakeholders

Knowledge Seekers

- **Muslim Community:**

This is your primary user base, consisting of individuals who may be using your application for a variety of purposes, including personal learning, spiritual growth, or research. Catering to the needs of this group is crucial.
- **Experts, Scholars, Researchers:**

Access to authentic and reliable Islamic texts is essential for scholars and researchers in the field of Islamic studies. Providing them with a resource for in-depth research and analysis is a valuable service.
- **Institutions:**

Schools, universities, and Islamic educational institutions often require quality resources for teaching Islamic studies. Your application could become a valuable tool for educators and students alike.

Existing System/ Description of the Current Situation:

Existing Islamic apps and platforms, while useful, often come with several limitations and defects. Understanding these shortcomings can help you identify areas where your project can offer improvements. Here are some common defects in existing systems:

- **Limited Content Depth:** Many existing Islamic apps offer a limited selection of Quranic verses and hadiths. Users may not find comprehensive content or detailed explanations on various topics.
- **Lack of Contextual Understanding:** Some apps don't provide the necessary context for users to understand the significance and meaning of Quranic verses and hadiths. Context is crucial for interpreting and applying these texts correctly.
- **Scattered Information:** Information is often scattered across various sources and platforms, making it challenging for users to find all the relevant content in one place.
- **Search Limitations:** The search functionality in many apps may be basic and not optimized for advanced queries. Users may have trouble finding specific content or relevant information.
- **Scalability:** With the use of Traditional databases, existing apps are not much scalable as their content and data is fixed and static, making it impossible for them to grow as new researches are happening everyday.

	<i>Google</i>	<i>Islam 360</i>	<i>Quran.com</i>	<i>Tarteel</i>	IslamXplorar
Islamic Content Focused		✓	✓	✓	✓
Central Islamic DB		✓	✓	✓	✓
Interconnected Data	✓				✓
Search Engine	✓	✓	✓		✓
Context Awareness	✓				✓
Semantic Analysis	✓				✓
Bookmarks/ Favourites	✓	✓		✓	✓

Problem Statement:

Current platforms offer Quranic texts, Hadith collections, and other related material in isolation, making it difficult for users to establish meaningful connections between them. This fragmentation hinders comprehensive understanding of Islamic teachings. Representing the complex semantic relationships between Quranic verses, Hadiths, and other entities in a traditional database is challenging.

While various resources exist for Islamic studies, they are often scattered across books, websites, and libraries. This makes it difficult for users to find the information they need efficiently and effectively. There is a need for a centralized and comprehensive platform to access these resources, which would make it easier for users to learn about Islam.

Conventional search engines do not cater to the unique challenges of Quranic and Hadith study. Quranic verses and Hadiths are often interconnected, and users may need to be

able to search for content based on these relationships. Additionally, Quranic and Hadith verses may have multiple meanings, and users may need to be able to search for content based on different interpretations.

As a result of these challenges, users often face difficulties in conducting precise, context-aware searches for Islamic knowledge. This can lead to inadequate exploration of the material and a limited understanding of Islamic teachings.

Proposed Solution:

Knowledge graphs excel in capturing semantic relationships between entities. They use nodes (entities) and edges (relationships) to connect data points. This makes them ideal for representing Quranic verses, and Hadiths, which are often interconnected in complex ways, and also, in turn, by providing a way to explore the intricate relationships between them.

Knowledge graphs are also inherently flexible. We can easily add new entities or relationships as our dataset expands, or it can be connected with other large datasets. This is advantageous as we are dealing with a diverse and intricate Islamic textual data, that needs to be continuously updated and enhanced. They can be used to identify and visualize the relationships between different Quranic verses and Hadiths. This can help users to understand the context of verses and Hadiths, and to see how they fit together in the overall body of Islamic teachings.

Knowledge graphs enable users to explore content within a contextual framework. Users can navigate between Quranic verses, and Hadiths seamlessly, as they are inherently connected. This allows users to gain a deeper understanding of the relationships between different Islamic concepts and how they fit together in the overall picture. They can be used to develop new research tools for scholars of the Quran and Hadith. For example, knowledge graphs could be used to identify patterns and trends in the Quran and Hadith, or to develop new hypotheses about the meaning and interpretation of verses and Hadiths.

Scope of the Project:

Module 1: Knowledge Graph

The knowledge graph will be a structured representation of Islamic knowledge, built on top of the Neo4j database. It forms the core of the project, providing a systematic and interconnected view of Islamic texts, concepts, and their relationships. The data will be preprocessed to be stored in the database, and it will be authenticated as well

Module 2: Mobile Application

The mobile app will be the primary user interface through which individuals can access Islamic knowledge. The search bar will be a key feature of the app. It will enable users to enter search queries to find specific Islamic knowledge. The search queries will be based on English language. Additional features might include advanced search filters (allowing users to filter through Hadiths and Verses), bookmarks (for saving a particular search or search result(s)), and user profiles.

Module 3: API

The Python-based Flask API acts as the middleware between the mobile app and the Neo4j database. It handles user requests, interacts with the database, and sends responses back to the mobile app. The parser interprets and translates user search queries to Cypser(the language of Neo4j). It extracts keywords, analyzes user intent, and prepares structured queries for efficient retrieval from the knowledge graph. Here Natural Language Processing (NLP) techniques will be used for semantic analysis of user queries. This goes beyond basic keyword matching and takes into account the meaning and context of the queries.

List of Faculty Proposed Changes

IslamXplorar

Supervisor's Signature: _____

Proposed Change	Proposed By	Supervisor's Decision
Data Scope should be narrowed down	Dr. Musharraf	
Chrome Extension/ Plugin	Mr. Syed Sharjeel Gillani	
Web Application	Mr. Muhammad Waqar Arshad	
Redirecting on Unavailable Data	Mr. Syed Sharjeel Gillani	

Project Plan

Work Breakdown Structure: A work breakdown structure (WBS) is deliverable based decomposition of project scope. The WBS includes 100% of the work defined by the project scope and captures all deliverables – internal, external, interim – in terms of the work to be completed, including project management.

Sample WBS:

1. **Project Management**
 - 1.1. Work Breakdown Structure (WBS)
 - 1.2. Roles & Responsibility Matrix
 - 1.3. Change Control System
2. **Reports / Documentation**
 - 2.1. Final Documentation Introduction
 - 2.2. Literature / Markey Survey
 - 2.3. Requirements Analysis
 - 2.4. System Design
 - 2.5. Implementation
 - 2.6. Testing & Performance Evaluation
 - 2.7. Conclusion & Outlook
 - 2.8. End User Documentation
 - 2.9. Application Administration Documentation
 - 2.10. System Administrator Documentation
3. **System**
 - 3.1. Development Environment
 - 3.1.1. IDE
 - 3.1.2. Version Control
 - 3.1.3. Server
 - 3.1.4. Database

3.2. Presentation Layer

3.2.1. Deliverable 1

3.2.2. Deliverable 2

3.2.3. ...

3.3. Business Logic Layer

3.3.1. Deliverable 1

3.3.2. Deliverable 2

3.3.3. ...

3.4. Data Management Layer

3.4.1. Deliverable 1

3.4.2. Deliverable 2

3.4.3. ...

3.5. Physical Layer

3.5.1. Deliverable 1

3.5.2. Deliverable 2

3.5.3. ...

Roles & Responsibility Matrix:

The purpose of roles & responsibility matrix is to identify who will do what.

WBS #	WBS Deliverable	Activity #	Activity to Complete the Deliverable	Duration (# of Weeks)	Responsible Team Member(s) & Role(s)
1	Knowledge Graph	1.1	Initial Schema Definition	1	Ahmad Hassan
		1.2	Data Addition in the Graph	7	Ahmad Hassan
		1.3	Authentication	4	Ahmad Hassan
		1.4	Use Case Testing	2	Ahmad Hassan
		1.5	Refactoring	2	Ahmad Hassan
2	Mobile Application (Flutter)	2.1	Wireframes (UI/UX)	1	Ahmad Hassan
		2.2	Development of Activities	5	Ahmad Hassan
		2.3	API Integration	2	Ahmad Hassan
		2.4	Additional Features/ Functionalities	4	Ahmad Hassan
		2.5	Code Testing (Debugging)	3	Ahmad Hassan
		2.6	Use Case Testing (Scenarios)	3	Ahmad Hassan
3	API	3.1	Integration with Neo4j	2	Ahmad Hassan
		3.2	Parser (Queries to Ciper)	6	Ahmad Hassan
		3.3	Semantic Analysis	6	Ahmad Hassan
4	Documentation	4.1	System Design	3	Ahmad Hassan
		4.2	Testing & Evaluation	5	Ahmad Hassan
		4.3	Other Documentations	4	Ahmad Hassan

Approval

Project Supervisor

Comments _____

Name: _____

Date: _____ Signature: _____

Project Coordinator

Comments _____

Name: _____

Date: _____ Signature: _____