MICHIGAN STATE
U N I V E R S I T Y

Project Plan
StackLife 2.0: Library Search and Display Tool

The Capstone Experience

Team Harvard Law School

Brandon Field
Allison Mutka
Jake DeNell
Zian Gong

Department of Computer Science and Engineering
Michigan State University

Spring 2020

From Students…
…to Professionals

Functional Specifications

- Store information about Islamic law from Harvard Library.

- Provide universal access by creating a Web Application.

- Allow user to customize searches and save searches.

- Support general users and registered users.

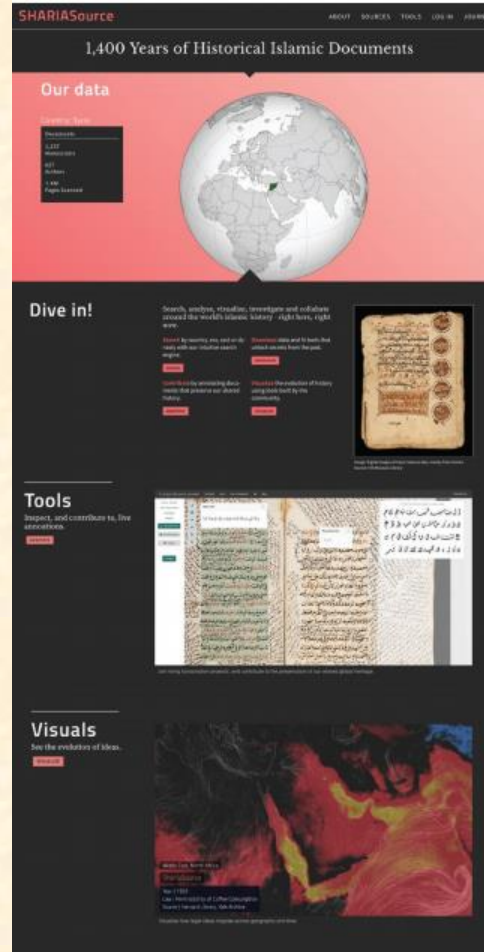- Display data and a photo about the book.

Design Specifications

- General search based on titles, author and ISBN

- Advanced search on genre, date and region

- Homepage visualization of spinning globe that pings a country and list statistics about that country's records

- Customizable graph to plot information about resources
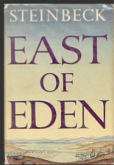
Screen Mockup: Client-Provided

Screen Mockup: Search Results

Screen Mockup: Book Detail View

Screen Mockup: Advanced Search

Technical Specifications

- Flask web microframework(Python)
- HTML/CSS/Javascript
  - Bootstrap for UI design
  - Planetary.JS
  - D3.js/Chart.js
- Amazon Web Services RDS
  - MySQL 8.0

System Architecture

Database System

Application

Server Side

Client Side

System Components

- Hardware Platforms
  - Any platform that can access the internet
    - Must keep mobile in mind

- Software Platforms / Technologies
  - Python/Flask
  - HTML/CSS/JavaScript(and associated libraries)
  - MySQL
  - Gitlab

Risks

- **Database Speed – Difficulty: High | Priority: High**
  - The database is going to have over 14 million entries in it, writing a MySQL query to search for a book could take a demanding amount of time if the database is not optimized.
  - Mitigation: Add indices in our tables within the database to make query speeds much faster.
- **Database Structure - Difficulty: Medium | Priority: High**
  - Each of the 14 million entries have individual complicated attributes. Having an intuitively structured database is an important milestone in not only our success on this project but also in future iterations of the project.
  - Mitigation: Minimize the number of tables in our database to make it easier to follow
- **Data conversion/migration(last semester) – Difficulty: Medium | Priority: High**
  - MARC-21 is a complicated format, previous semester's group converted to CSV and migrated some data into a database.
  - Mitigation: Verify the data and parsing scripts to make sure the data is correct.
- **User Friendly Front-End – Difficulty: Medium | Priority: Medium**
  - Users might not be as fluent with computers as we are so one of our first priorities is to make an intuitive front end for all of the users.
  - Mitigation: Use technologies such as bootstrap to make a better-looking UI, consult with client to make sure UI is easy to follow

Questions?

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