CS 6359: Object-Oriented Analysis and Design

Interim Project 1 Report

Deliverables

Team 5

TECH TUNES

A MODERNIZED MUSIC SEARCH ENGINE

Team Members

Team No 5

1. Manan Dalal (MUD200000)
2. Lipi Patel (LDP210000)
3. Namrata Thaker (NDT200003)
4. Yash Kolhe (YSK210001)
5. Yash Shingvi (YXS210018)
6. Akash Ramani (AXR200012)
7. Nishant Ramani (NXR210001)
8. Fenil Godhani (FKG210000)
9. Nishchal Sudeep (NTS200000)

Introduction

- Tech Tunes is a user-friendly search engine built from scratch.
- Tech Tunes focuses on 'Music' as a specific domain and will only provide results confined to the knowledge of that domain.
- The primary functional units of the search engine are as follows:
    - Crawling: That will systematically browse the WWW to collect data for indexing.
    - Indexing: Refers to collecting, parsing, and storing data for fast retrieval.
    - Searching: Matching the user query to provide accurate results
    - Displaying: Presenting the retrieved data in a convenient and accessible manner.
- Our aim is to build a powerful and efficient engine to make custom searches utilizing the attributes of the movie entity and design a novel approach to perform this task.

Team Website: https://ooad-team-website.web.app/

GitHub Repo Link: https://github.com/lipi5899/OOAD

Demo Link: https://drive.google.com/file/d/1w_dGUJLdVWWonQbUFFy772Jr7Kz7Drfy/view?usp=sharing

Functional Requirements:

FR01: Case Insensitive Search

This means that a search for a term matches other occurrences of that term, regardless of their case in the original document, and regardless of the case in which the search term is written. For example, a search for Iron Man matches documents that originally contained terms such as IRON MAN, iron man, etc.

FR02: Hyperlink Enforcement

This means that the results returned by the search will have hyperlinks to the actual location of the search result on the Internet.

FR03: Specifying OR/AND/NOT Search

Logical operators form the basis of mathematical sets and database logic can be used in the search query. They connect your search words together to either narrow or broaden your set of results. The three basic Boolean operators are: AND, OR, and NOT. For example, a search query containing Angelina Jolie ‘and’ Tom Cruise will return the list of movies they both have acted in or the documents containing both their names.

FR04: Concurrent Operation

Two or more operations performed at the same time (or within a given interval) without failure. The system should function properly in case multiple users perform a search.

FR05: Deletion of out-of-date URL

Outdated URL deletion is a way in which search engines can provide the most relevant and updated information to its users. To find outdated pages, we can use measures like the website's traffic, or if a URL still exists or not.

FR06: Listing of the query result in ascending alphabetical order and popularity

The user would have an option to view the query results sorted alphabetically as well as based on popularity.

FR07: Most frequent search query

The Administrator would be able to view some of the most frequently searched queries and provide some business intelligence.

FR08: Setting the number of results to show per page, and navigation between pages

The search results for the keyword should be displayed with pagination i.e., the number of results should be limited to a fixed number per page which depends on the size of the UI of the device that the user accesses the application.

FR09: Autofill, while correcting typographical errors

The search functionality should provide suggestions of the search text to the user based on the input he provides in the search bar. The Autofill should happen in real-time, the suggestions should be provided as soon as the user starts typing.

FR10: Filtering out symbols that are not meaningful, according to the user configuration

The application should filter out the stop words from the user input. The stop words are the most common words in any language (articles, prepositions, pronouns, conjunctions, etc.) which does not add much information to the text. Ex: a, an, the, what, there etc.

Non-Functional Requirements

NFR1: Performance and scalability.

How fast does the system return results? How much will this performance change with higher workloads?

NFR2: Portability and compatibility.

Which hardware, operating systems, browsers, and their versions does the software run on? Does it conflict with other applications and processes within these environments?

NFR3: Reliability, availability, maintainability.

How often does the system experience critical failures? and how much time is it available to users against downtimes?

NFR4: Usability

How easy is it for a customer to use the system?

NFR5: Security

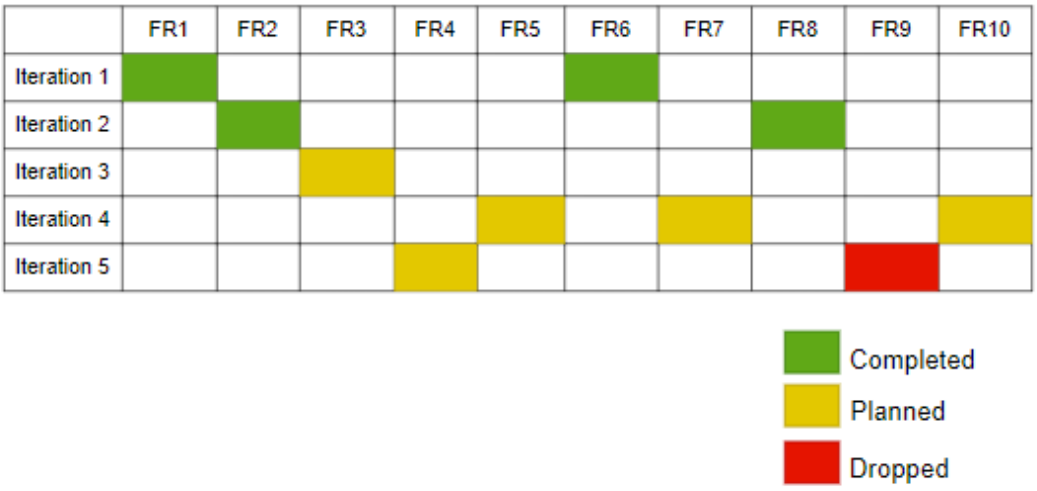
How are the system and its data protected against attacks?

NFR5: Open to Enhancement

How will the system manage when new features and functionality are added as time goes.

Planned Development Cycle

We plan to achieve the said FRs within each of the projected iterations and we are currently reviewing our plan of action for the FRs to maybe merge a few of them because they are dependent on each other.



- As of now, FR01, FR02, FR06 and FR08 have been completed and the team has worked halfway through on few other FR's.
- FR09 has been dropped from the scope of the two-phase project since it can be a feature in pipeline for the phase three of the project which will be implemented post-completion of the course.

Deliverables

- Interim Project I - Initial conceptualization of ideas/designs that can lead to possible solutions along with a ppt file.
- Final Project I - Reporting intermediate deliverables of codebase, designs, and diagrams.
- Interim Project II - Delivering most part of the code base with final designs and implementing improvement suggestions received at the end of Project I along with a ppt.
- Final Project II - Submission of final report with complete code base.

Project Plan

- May 31 - Preliminary Project Plan
- June 16 - Interim Project I
- June 30 - Final Project I Submission
- July 14 - Interim Project II
- July 30 - Final Project II Submission

Team Divisions

Front End Team

This team is responsible for creating a feature-rich and easy-to-use User Interface (UI). This team creates what you will see and interact with while using our search engine. The members of this team are:

- Manan Dalal
- Nishchal Sudeep
- Yash Kolhe

Backend Team

This team creates is responsible for server-side web application logic and integration of the frontend with the database through custom built APIs. The members of this team are:

- Namrata Thaker
- Manan Dalal
- Yash Shingvi

Web Scraping Team

This team is responsible for scraping data from the web and storing in into the database.

- Yash Shingvi
- Lipi Patel
- Namrata Thaker

Documentation/System Design Team

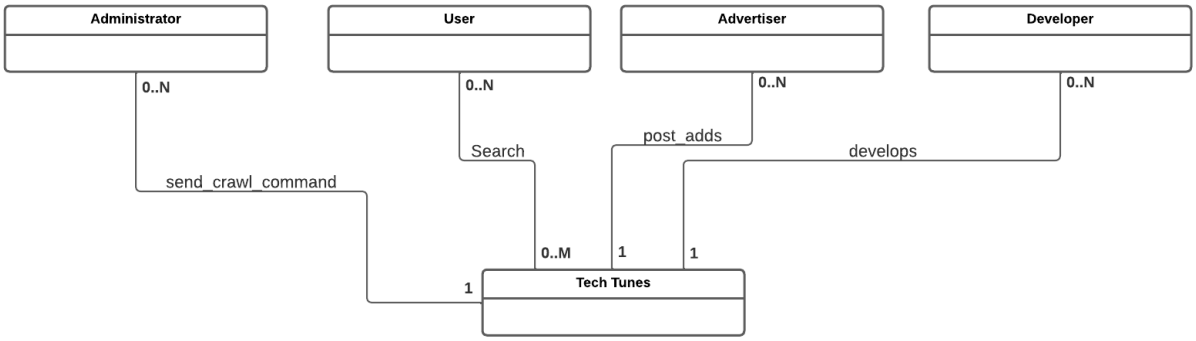
System design team is responsible for collecting data requirements, deriving functional and non-functional requirements, preparing diagrams, and making a detailed design of the whole system. The members of this team are:

- Lipi Patel
- Akash Ramani
- Nishant Ramani
- Fenil Godhani

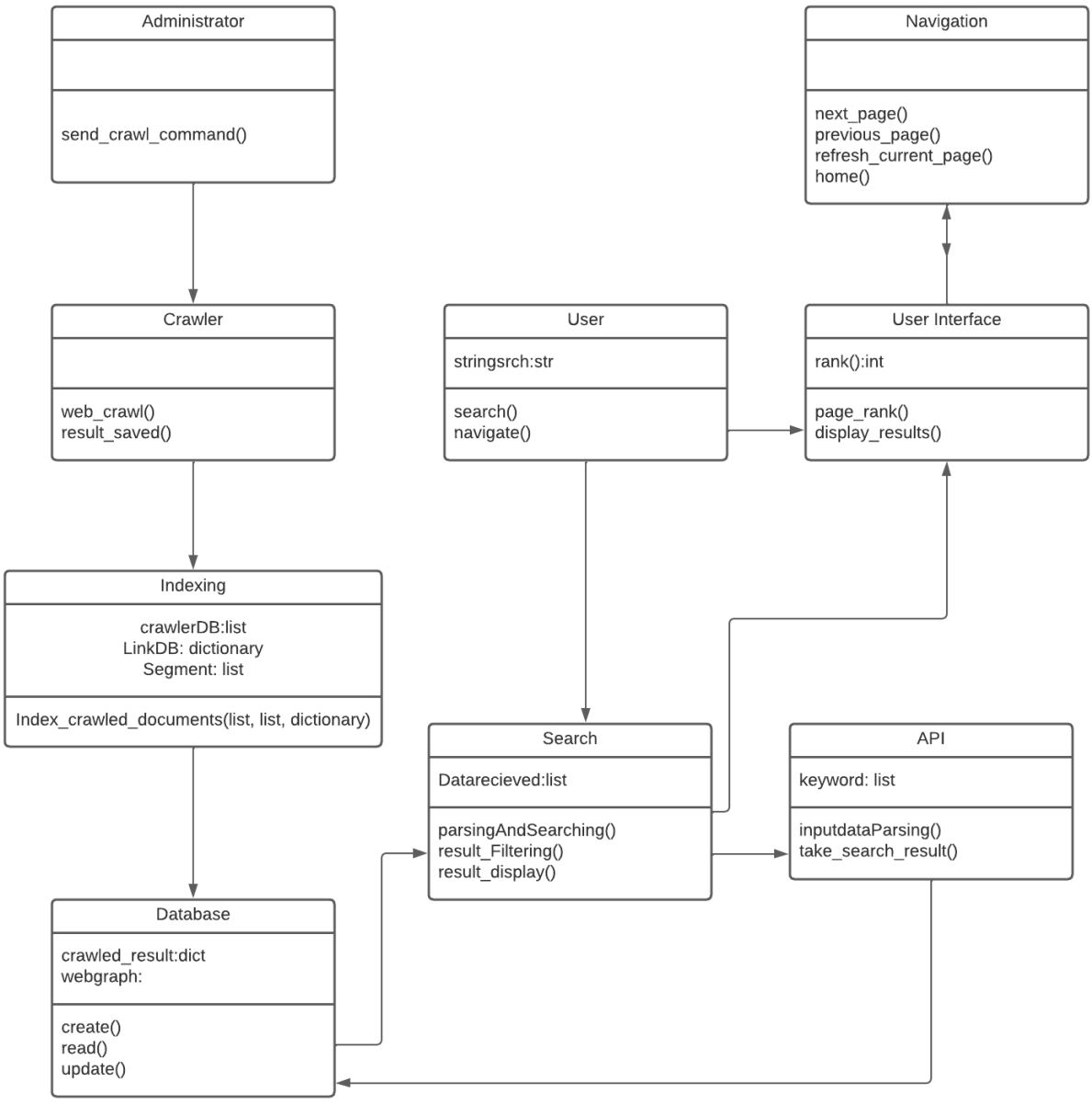
System Diagrams

Following are the initial drafts of all the UML diagrams required for completion of Phase- 1.

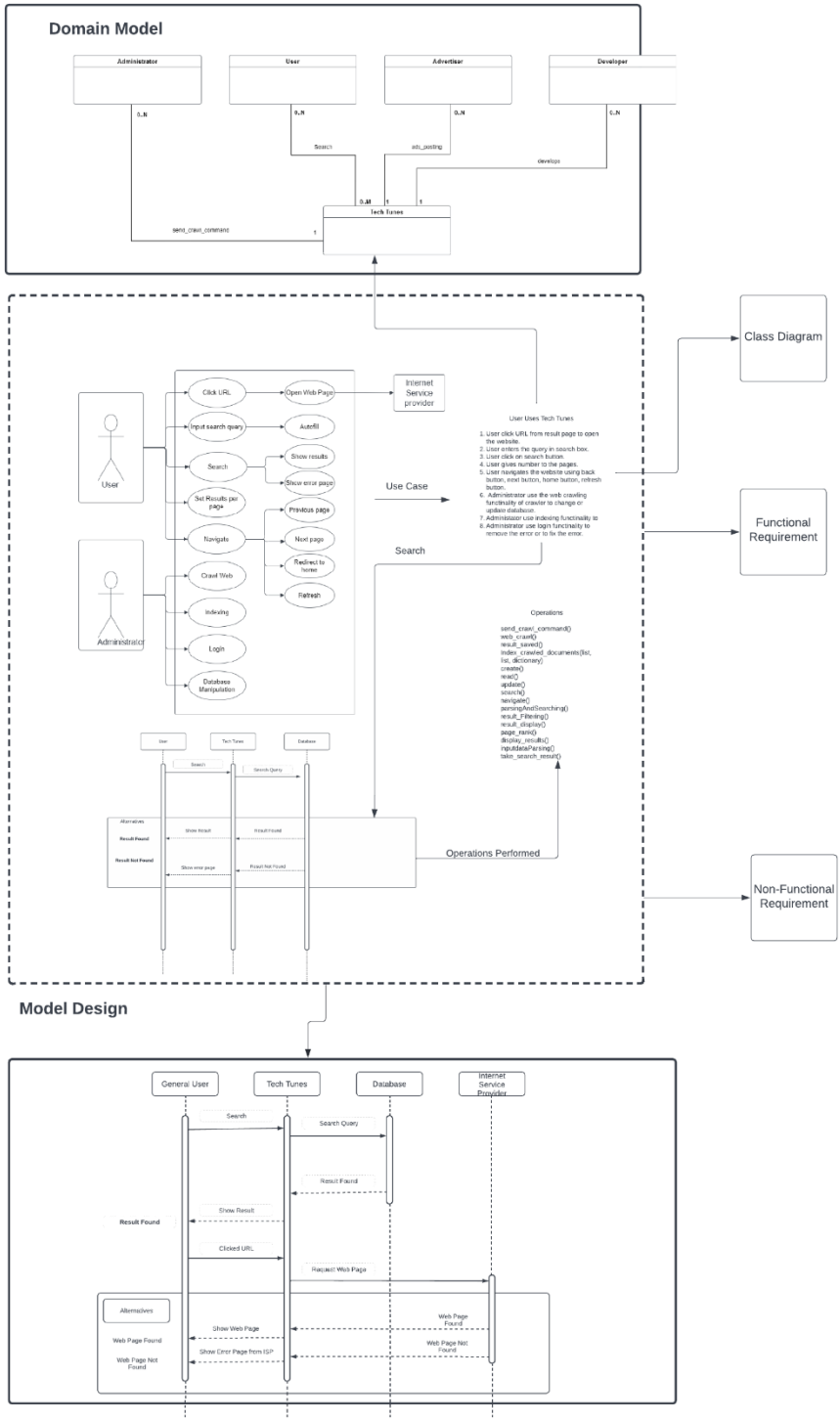
Domain Model



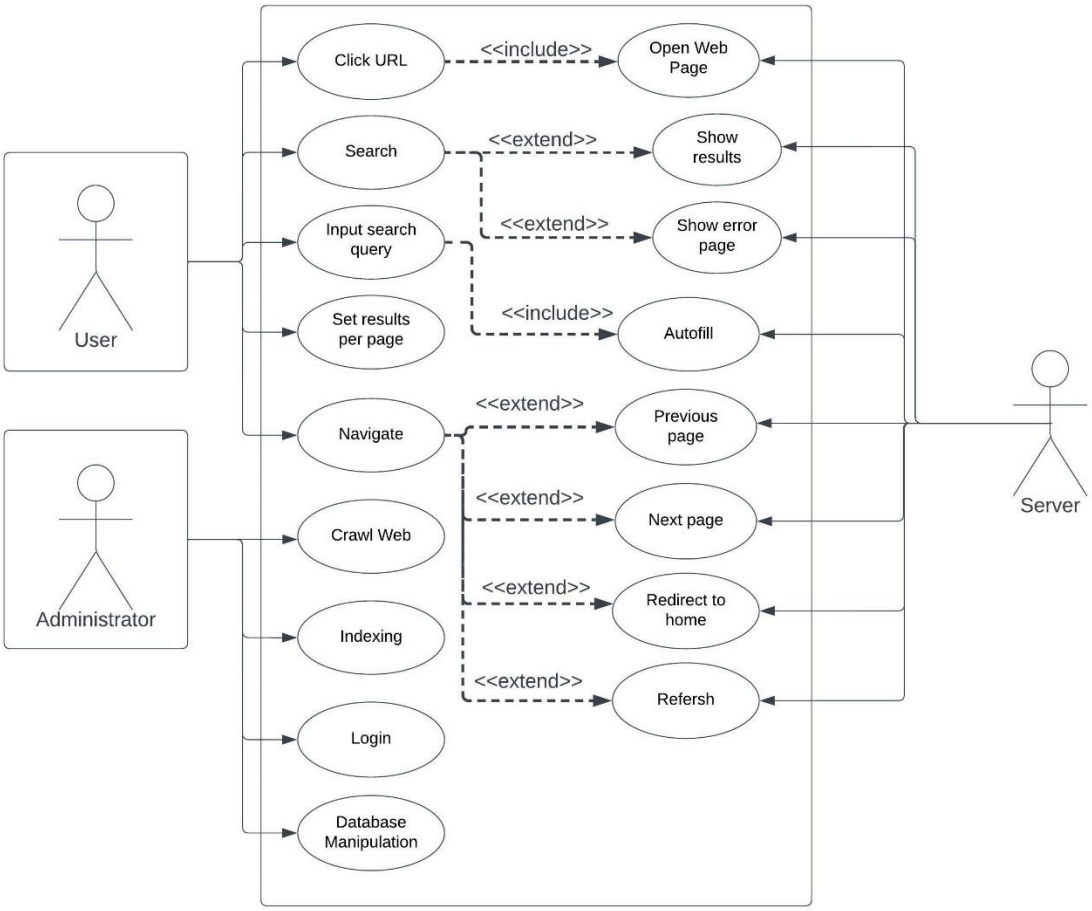
Class Diagram



Big Picture Diagram

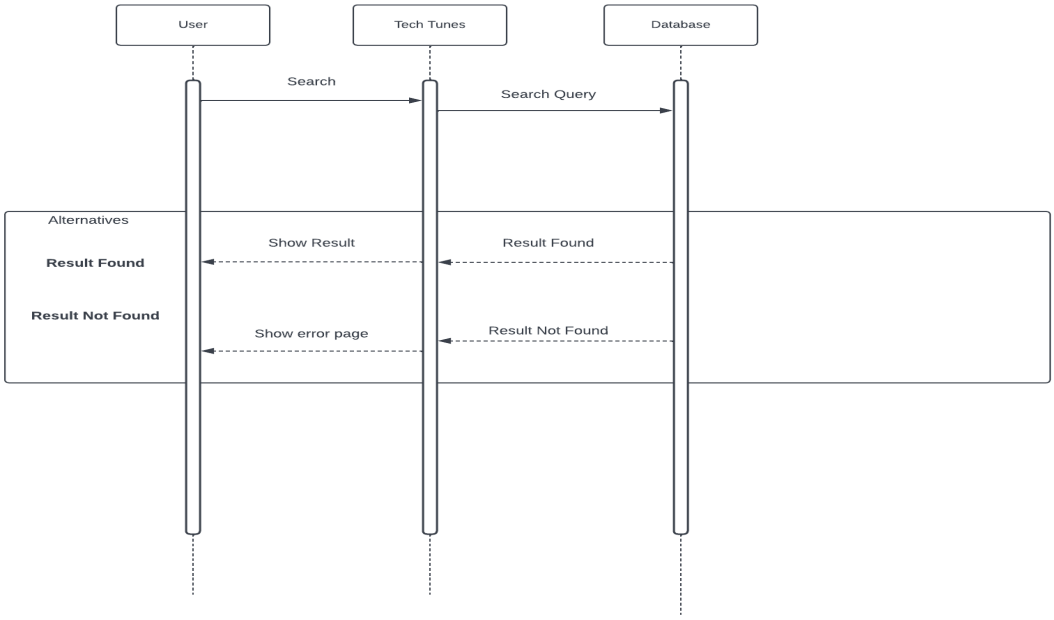


Use Case

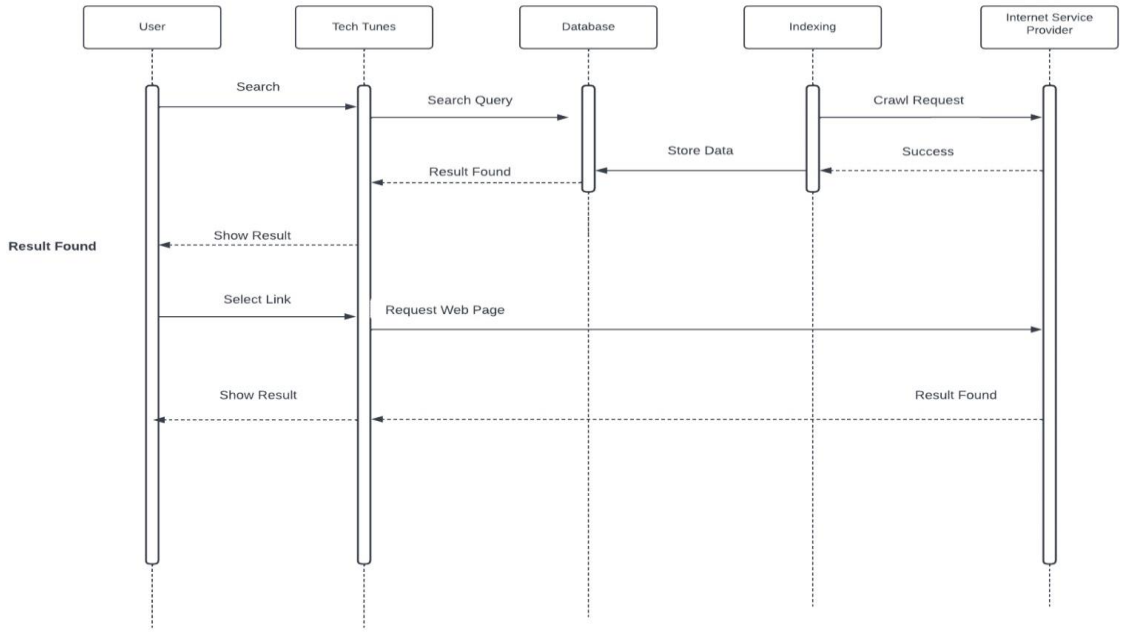

Click URL
<<include>>
Open Web Page
Search
<<extend>>
Show results
Input search query
<<extend>>
Show error page
Set results per page
<<include>>
Autofill
Navigate
<<extend>>
Previous page
Crawl Web
<<extend>>
Next page
Indexing
<<extend>>
Redirect to home
Login
<<extend>>
Refersh
Database Manipulation
User
Administrator
Server

Sequence Diagrams

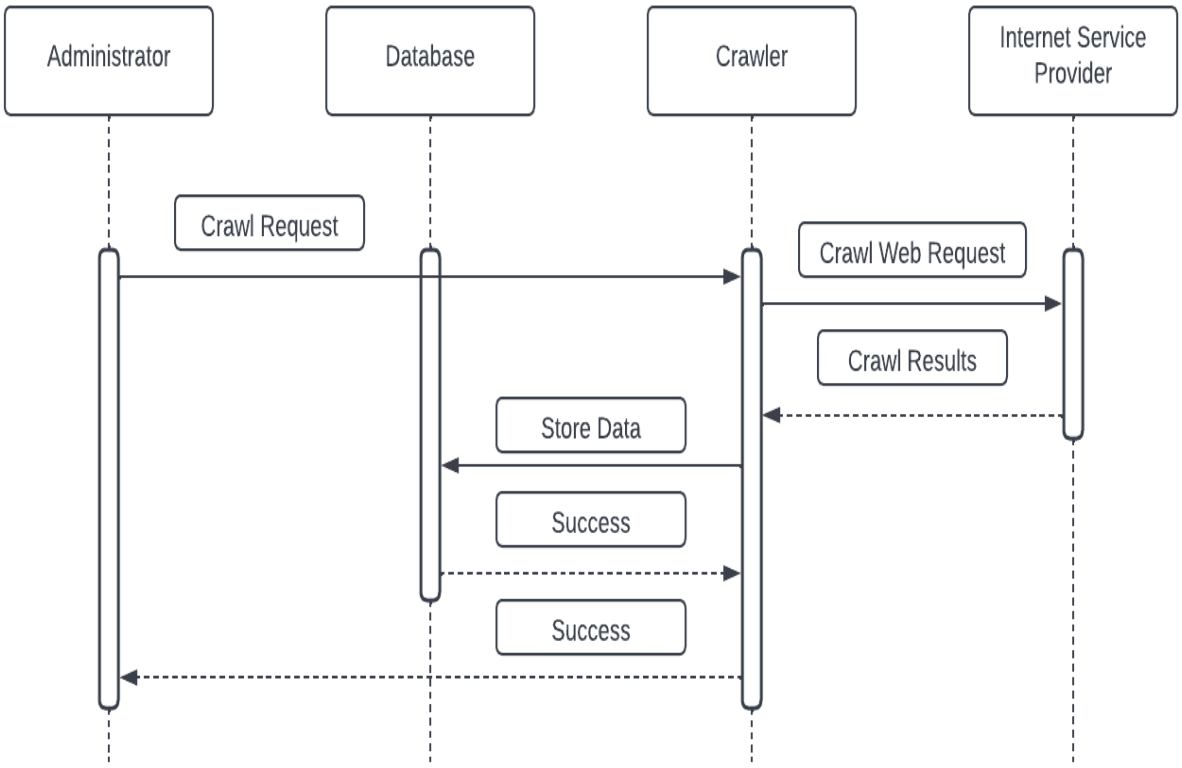
1. User Search



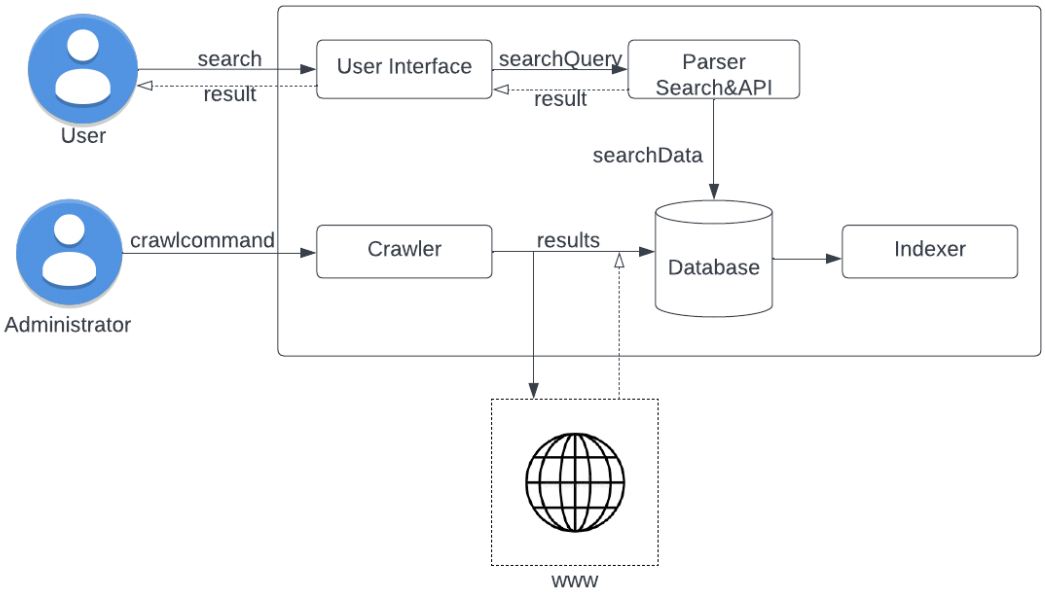
2. User Clicks Link



3. Administrator Crawl Request



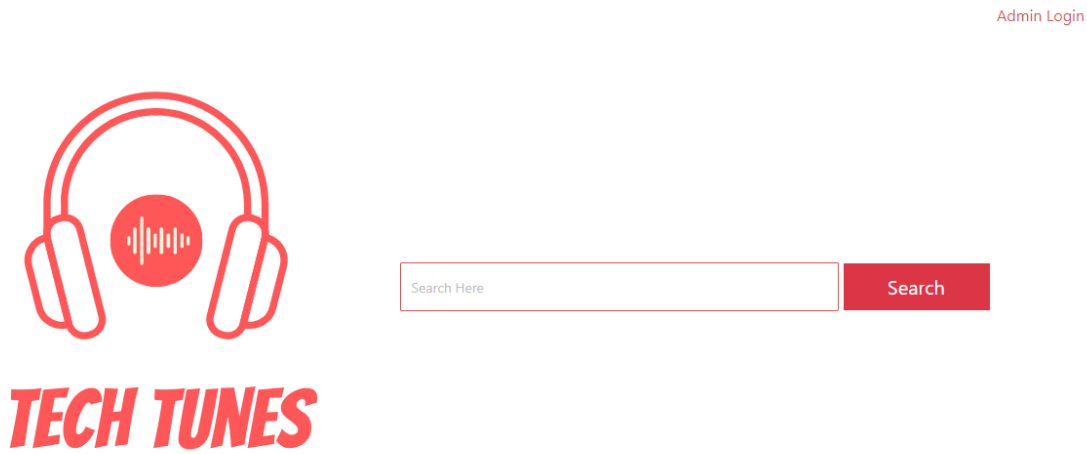
Component Diagram



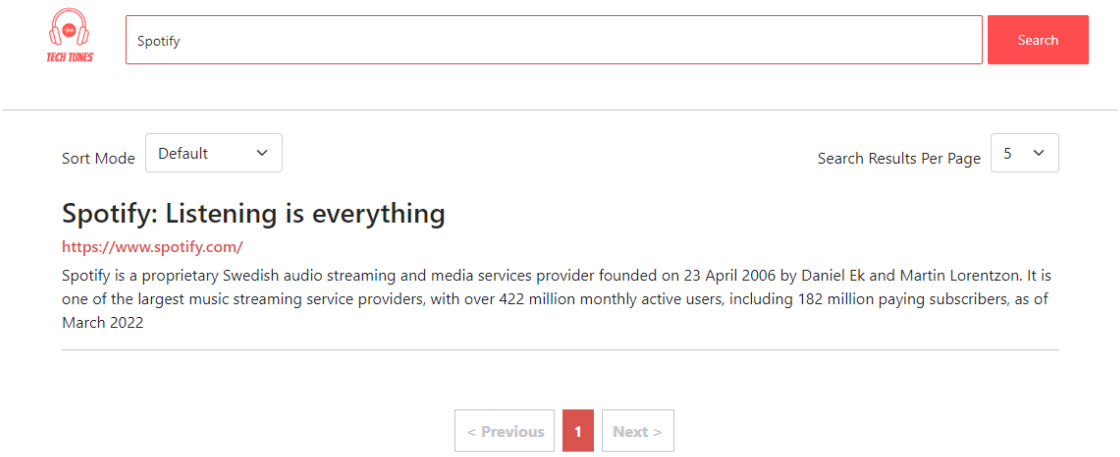
Implementation

Following are some of the screens, we have functionally completed or are under completion.

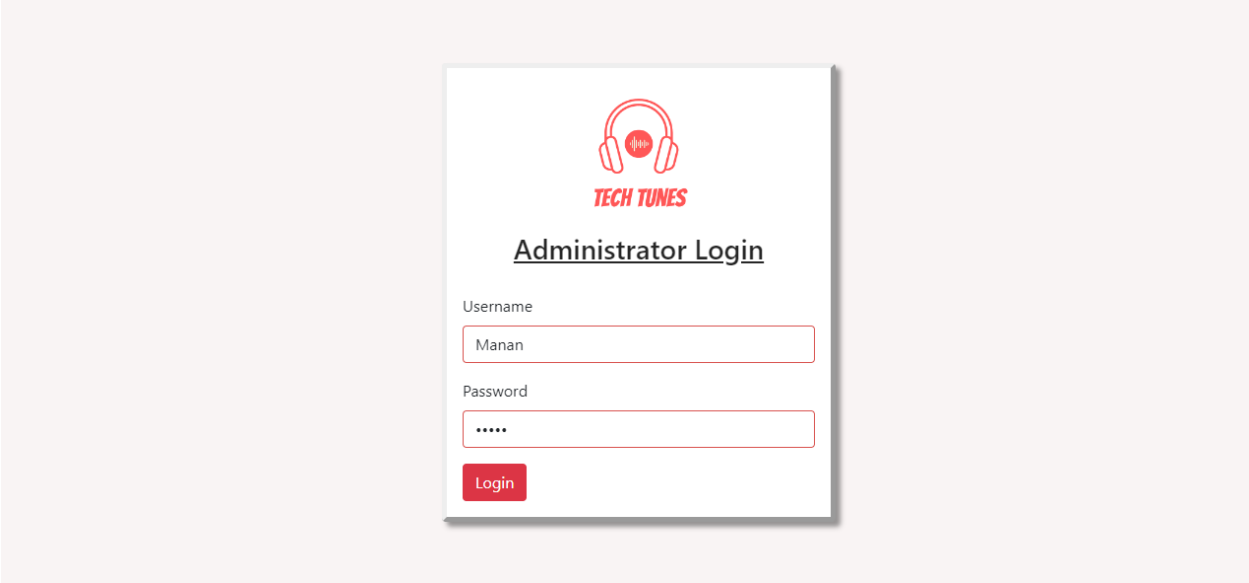
1. Home Screen



2. Search Result Screen



3. Admin Login Screen



4. Admin Dashboard Screen