

CS 410

Crystal Group - SoftWhere

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Table of Contents

1. Introduction	3
2. SoftWhere Product Description.....	3
2.1 Key Product Features and Capabilities	4
2.2 Major Components.....	5
3. Identification of Case Study	6
4. Product Prototype Description.....	8
4.1 Prototype Architecture	8
4.1.1 Algorithms.....	9
4.2 Prototype Features and Capabilities.....	11
4.2.1 Technical	12
4.2.2 Customer.....	13
4.2.3 Legal	13
4.3 Prototype Development Challenges.....	14
5. Glossary	14
6. References	14

Table of Figures

Figure 1 - Competition Matrix	5
Figure 2 - Current Process Flow	6
Figure 3 - Solution Process Flow	7
Figure 4 - Major Functional Components	8
Figure 5 - User Account Creation	9
Figure 6 - User Login	10
Figure 7 - Search Query	10
Figure 8 - Database Schema	11

1. Introduction

- If you have a goal, and are looking for a piece of software to accomplish it, it can be difficult to find something that fits your needs, especially if you have specific needs. Search results are full of AI-generated top 10 lists, and old forum posts are often outdated. “SoftWhere” aims to fix that!
- Search a large list of software solutions, filter your searches to narrow the search down, see user feedback about software! This will make finding the software you want so much easier!
- Search engines do not always provide good results
- Users may find it challenging to assess the quality of sources of information about software
- Users may not be aware of all of the options available
- Users may not be able to effectively conduct software searches
- A general user may search “best pdf reader” when looking for a free pdf reader
- This search resulted in “Best Free PDF Readers of 2024” (Clark)
- This page suggests largely free-trial software, which may not be what the user wants
- This page does not seem to be a reliable source of information, and may be AI-generated
- A more technical user may be more specific, such as searching for “concatenate pdfs cli”
- This search resulted in a StackOverflow post from 2011 (StackOverflow)
- The information on this page may be outdated, as some software may no longer be maintained, the interface may have changed, or a newer solution may outperform them all
- Further research would be needed on each software recommended

- Irrelevant search results, such as technical support for other software, or information about a particular relevant technology rather than software solutions

2. SoftWhere Product Description

- We will be developing a web application that will provide end users a powerful search engine for software
- Users will have the capability to filter software based on specific categories or tags
- Duplicate search results will be limited
- End users will be able to like, dislike, and leave comments about specific search results
- Search results will be shown in order of most liked to least liked

2.1 Key Product Features and Capabilities

- Powerful keyword search over software descriptions
- Tag-based filtering of results
- Results ordered by search relevance and by user ratings
- User comments on each result
- SoftWhere aims to be an effective tool for general computer users and advanced users alike
- A simple search will provide more relevant results than a generic search
- Advanced search options, such as tags, will allow advanced users to search for precisely what they are looking for Software curation will be completed manually for the prototype
- What it will do:

- Keyword Search
- Powerful tag-based filtering
- Display like and dislike counts
- Display user comments
- Allow users to generate their own pages
- What it will not do:
 - Provide direct means of installation
 - Provide bug tracking or user support
 - Provide unsolicited recommendations of software
 - Search by competitor

Feature	<u>SoftWhere</u>	AlternativeTo.net	GitHub.com	Search Engines (Google, Bing, etc.)	App Stores (iOS, Google Play, etc.)
Display user comments	✓	✓	✓		✓
Display likes and dislikes separately	✓	✓	✓		✓
Search by competitor		✓			
Search by use case	✓			✓	✓
Search by programming language	✓		✓	✓	
Search by keyword query	✓	✓	✓	✓	✓
Filter search by user-defined tags	✓				

Figure 1 - Competition Matrix

2.2 Major Components

- There will be an Apache web server hosting the service
- There will be a Django backend

- There will be a React frontend combined with HTML5
- There will be a MySQL database
- There will be Python3 code that handles a lot of the backend logic and SQL queries
- There will be an admin section of the web app for maintainers to maintain things

3. Identification of Case Study

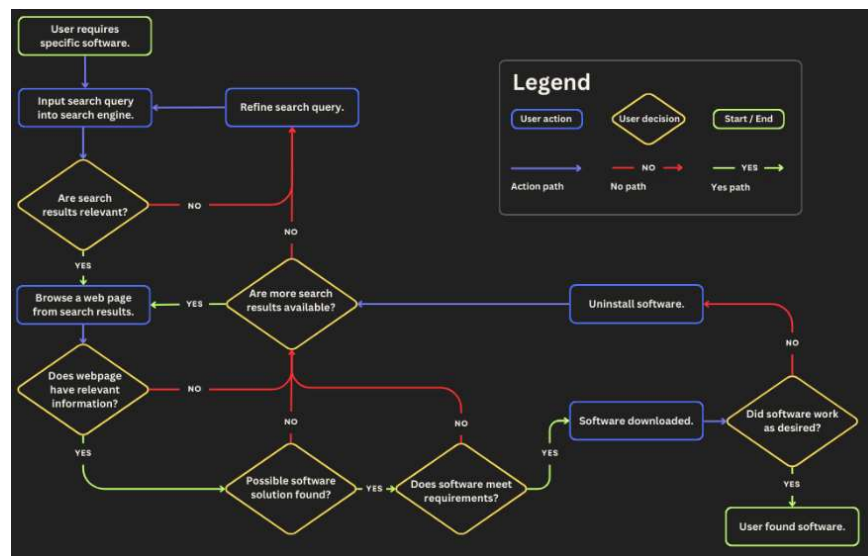


Figure 2 - Current Process Flow

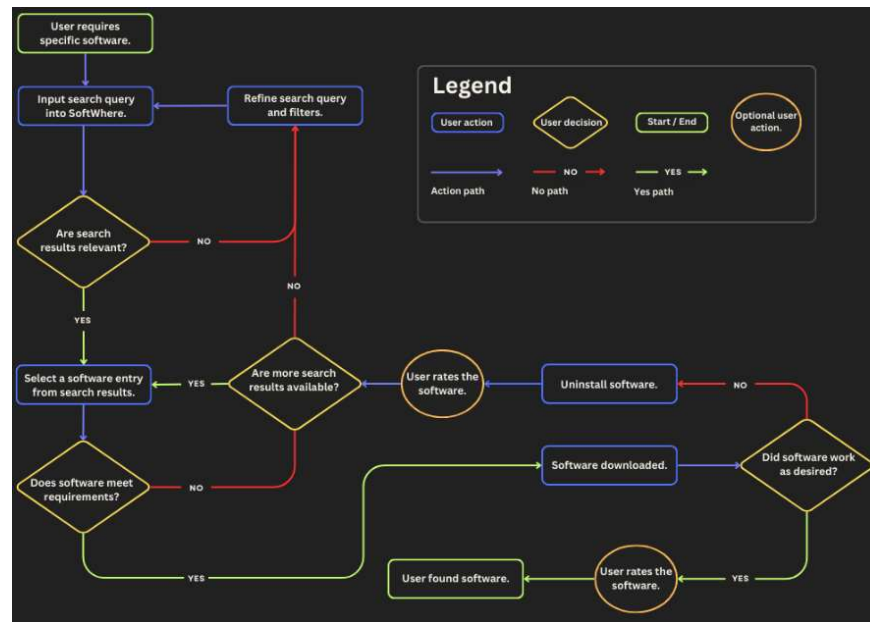


Figure 3 - Solution Process Flow

- Search engines do not always provide good results
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4. Product Prototype Description

4.1 Prototype Architecture

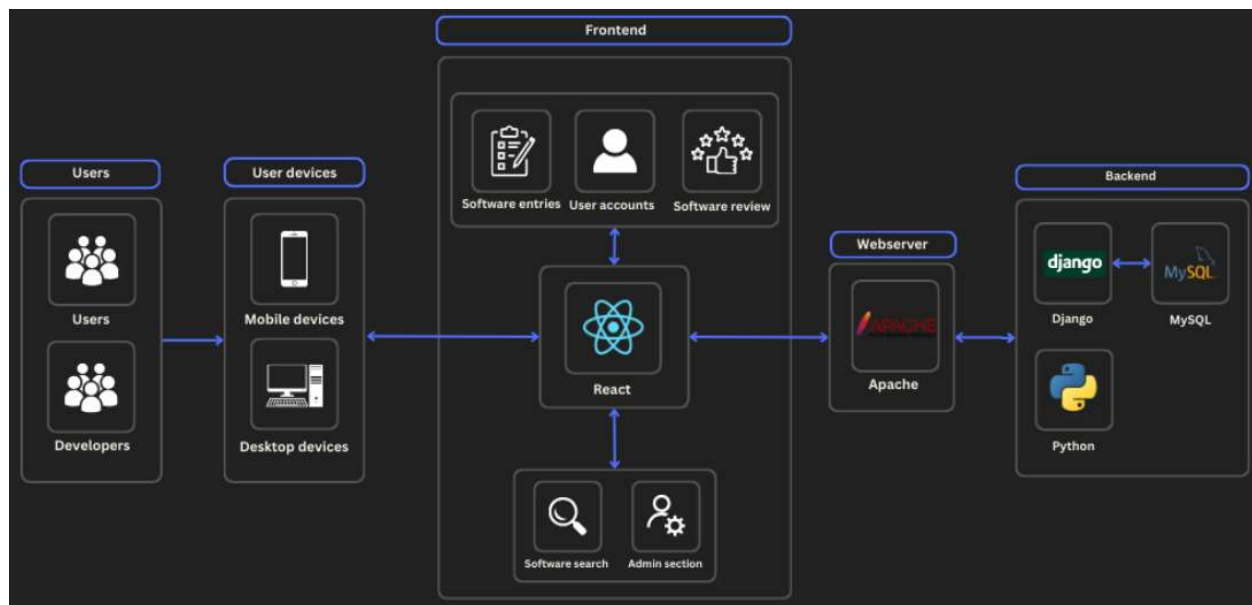


Figure 4 - Major Functional Components

- Basic web server configuration for hosting the prototype
- Backend built using Django
- Backend logic in Python
- Frontend built using React and HTML5
- MySQL database
- SoftWhere will have an admin section for maintenance

4.1.1 Algorithms

- SoftWhere will utilize a text-matching algorithm to perform keyword search
- This algorithm will assign matches a relevance score
- A simple filtering algorithm can be used to implement tag filters
- Any database entries not matching a tag set can be discarded and not considered further
- Results must be ordered according to a combination of search relevance and like/dislike counts
- This will be implemented using a sorting algorithm
- Software page creation algorithm
- A sanitization and verification algorithm to ensure user input aligns with the software entry schema
- Software entry reporting algorithm
- An algorithm to handle reporting of software entries that will ensure a user submission aligns with the reporting schema, ensuring all appropriate parties are notified

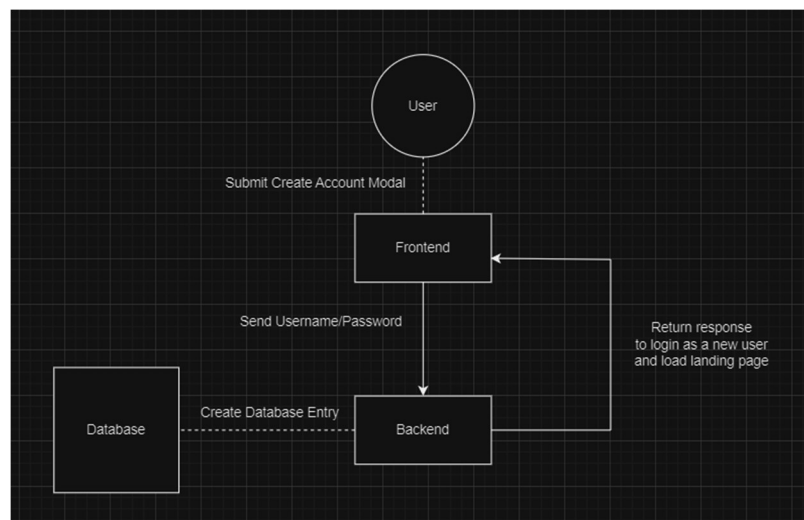
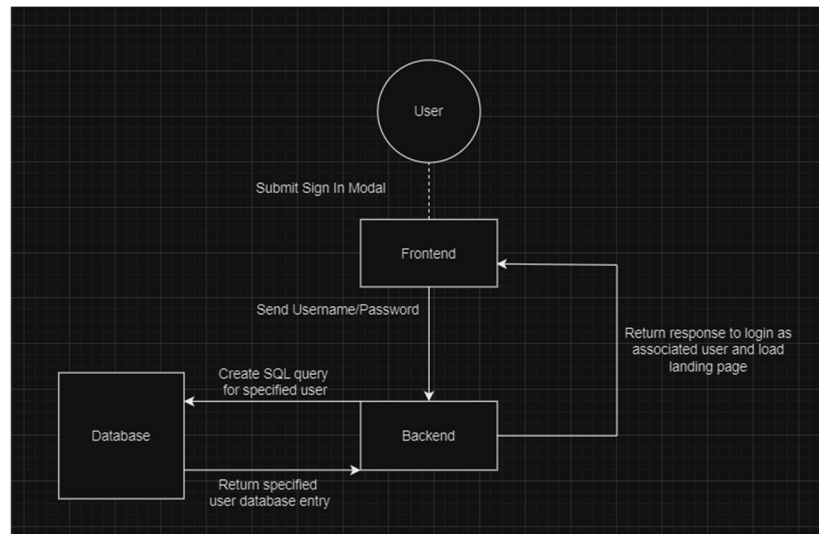
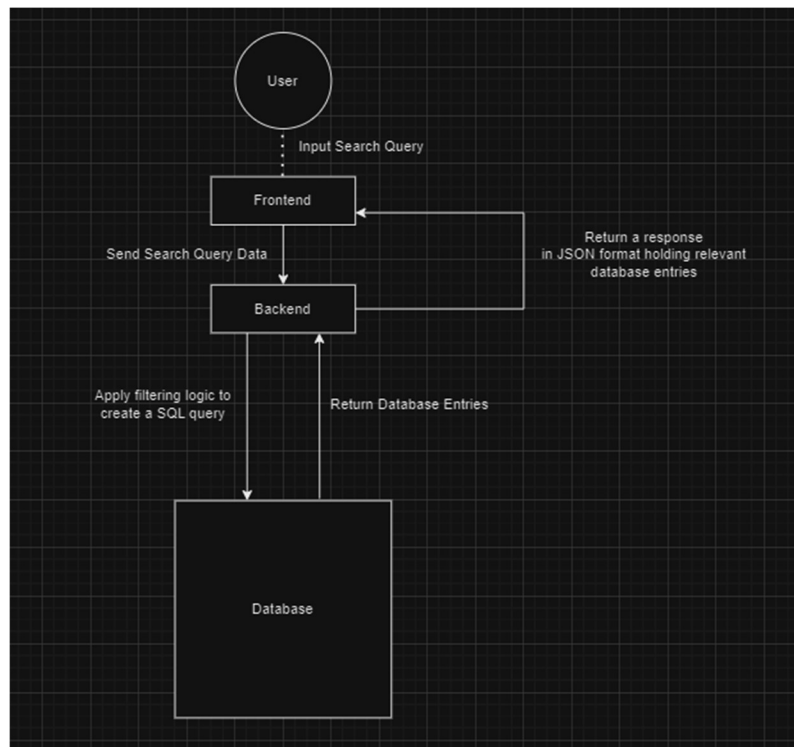


Figure 5 - User Account Creation

*Figure 6 - User Login**Figure 7 - Search Query*

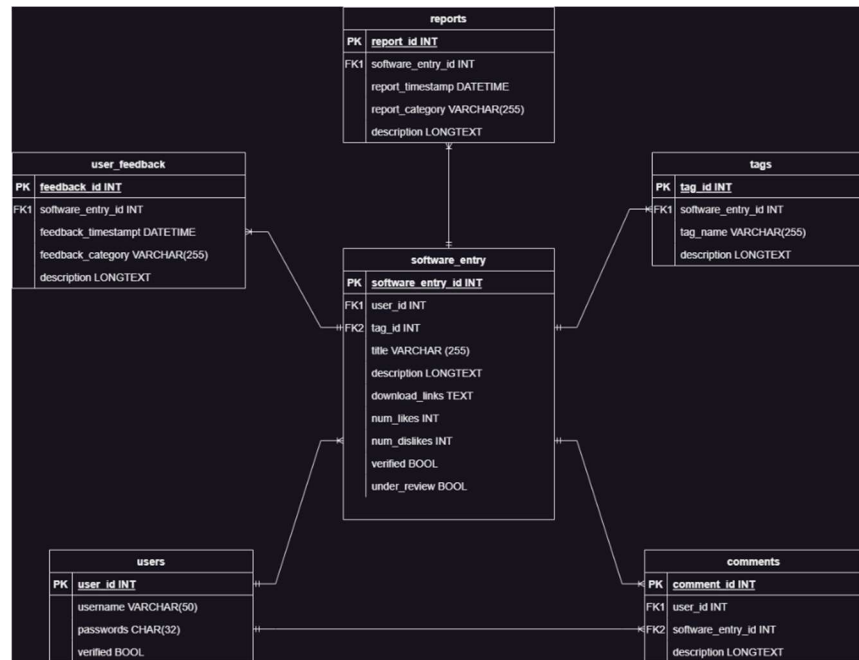


Figure 8 - Database Schema

4.2 Prototype Features and Capabilities

- The prototype will include:
- User-Generated Product Pages
- User feedback system for rating software
- Likes and dislikes
- Comments
- Account creation
- Basic search and tag filtering functionalities
- Fundamental content to guarantee search result relevance
- The prototype will not include:
- Verified pages
- would require cooperation with third parties

- User page customization
- out of scope of a prototype
- Password analysis
- unnecessary without real users
- Account verification
- unnecessary without real users
- More advanced search functionality
- reducing scope
- Moderator staff
- unnecessary without a community

4.2.1 Technical

- A SQL injection involves a hacker attempting to corrupt our database
- This will be mitigated using standard input sanitation techniques
- A DDOS attack usually uses bots to overwhelm a service with a flood of traffic
- These attacks typically do not last long, and will be mitigated by limiting the number of request from a single IP address
- A backend server crash is also possible
- This would be mitigated by ensuring proper hardware redundancy, and performing regular backups and maintenance

4.2.2 Customer

- Bad user generated content
- Involves poor content being rated higher incorrectly, possibly by an employee or creator of a piece of software
- Will be mitigated by allowing users to report pages they feel are incorrectly rated
- Dislike trolls
- Similar to the previous risk, but for the opposite reason– intentionally bombing an undeserving page with poor reviews
- Will be mitigated by slightly weight the likes higher than the dislikes and reporting capabilities for users
- Inadequate results due to lack of database population
- The database is community-driven, so it is possible that it is not as effective in the early stages of release
- Could be mitigated by reaching out to companies to create pages, but the issue will decrease as SoftWhere's database grows
- Links to malicious software
- Should naturally be mitigated through the rating process by users
- Will provide verified users as a safety

4.2.3 Legal

- A misinformation lawsuit due to incorrectly recommended resources
- We will provide a terms of use document to limit the effectiveness of such a lawsuit

- A lawsuit due to lack of adherence to licensing laws
- We will not directly distribute any executables, instead only providing links to the appropriate download page

4.3 Prototype Development Challenges

- Insufficient resources to execute every intended feature.
- Limitations on time for creating prototypes of intricate components.

5. Glossary

- Glossary content goes here.

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