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TRICERATOPS SYSTEM REQUIREMENTS DOCUMENT

DRAFT

TRICERATOPS

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INTRODUCTION

This document was made to show the system requirements for our app. It contains a Description Model, Class Diagram, Use Case Diagram, Use Case Scenarios, and System Sequence Charts. These diagrams go into the specifics on how our app will function. With these different models and diagrams, it will make it easier to understand the different parts of our app and how it will work.

DESCRIPTION MODEL

System Requirements for Triceratops Web Browser

Output Requirements:

1. ***Search Results Presentation***:
   - ***Local Search**: Display a list of relevant files, applications, or directories with metadata such as file name, size, path, and last modified date.*
   - ***AI Search**: Present generative responses in a clear, readable format, with options for citations, summaries, or deep links for detailed exploration.*
   - ***Standard Search Engine**: Render results retrieved from external search engines in a structured and scrollable interface.*
2. ***User Notifications***:
   - *Notify users of incomplete searches, errors, or permissions required for local file access.*
   - *Provide progress indicators for processes like indexing local files or generating AI responses.*
3. ***Visualization***:
   - *Combine search results from all three modes into a unified view with tabs or sections to differentiate sources.*

Input Requirements

1. ***Search Query Interface****:*
   - *Single input field where users can type natural language or specific keywords.*
   - *Optional toggle to select one or more search modes (Local, AI, or Standard Search Engine).*
2. ***File Permissions****:*
   - *System prompts for user consent to access local storage or specific directories for local search functionality.*
3. ***Advanced Search Options****:*
   - *Filters for file type (e.g., documents, images, applications) or date range in local searches.*
   - *Options to customize AI tone (concise, explanatory, creative).*
4. ***User Feedback****:*
   - *Input forms for user feedback on search accuracy, functionality issues, or feature requests.*

Process Requirements

1. ***Local Search Process****:*
   - *Index local directories and files on the user's system, caching metadata for quicker retrieval.*
   - *Update the index periodically or based on user-specified schedules.*
   - *Execute searches on the indexed data efficiently and return results in real-time.*
2. ***AI Search Process****:*
   - *Send the user query to the AI model via API and process the response.*
   - *Handle token limits and fallback gracefully when the query exceeds limits.*
3. ***Standard Search Engine Process****:*
   - *Redirect the user query to the chosen search engine (e.g., Google) using a backend API or direct web request.*
   - *Parse and render results in the browser interface.*

4. ***Integration***:
    - *Seamlessly integrate results from all three search modes into a unified, intuitive user experience.*

Performance Requirements

1. ***Speed***:
    - *Local search results should be displayed within 2 seconds for indexed directories.*
    - *AI-generated responses should load within 3-5 seconds, depending on the complexity of the query.*
    - *Standard search engine results should appear within the average time for an external search (1-3 seconds).*
2. ***Scalability***:
    - *Support large local file directories (e.g., 1 million+ files) without significant degradation in performance.*
    - *Handle concurrent queries in different modes without delays.*
3. ***Efficiency***:
    - *Minimize system resource usage, including CPU, memory, and disk I/O, especially during local file indexing.*

Security Requirements

1. ***Local Search Security***:
    - *Ensure user data from local searches remains private and never transmitted outside the user's device.*
    - *Encrypt local search index files to prevent unauthorized access.*
2. ***AI Search Security***:
    - *Use secure HTTPS communication for API requests to the AI service.*
    - *Avoid sending sensitive or personally identifiable information in AI queries.*

3. ***Standard Search Engine Security***:

    - *Ensure user anonymity when sending queries to external search engines by preventing tracking where possible.*

4. ***Access Control***:

    - *Provide robust user authentication and permission handling to restrict access to local directories and sensitive files.*

5. ***Data Privacy***:

    - *Clearly inform users about data collection and provide an option to opt-out of non-essential tracking.*

CLASS DIAGRAM

See "Class Diagram" file in GitHub

USE CASE DIAGRAM

See "Triceratops Use Case Diagram.vsdx" file in GitHub.

USE CASE SCENARIOS

See "Triceratops Use Case Scenarios.xlsx" file in GitHub.

SYSTEM SEQUENCE CHARTS