MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Semantic Search for Code and Architecture Assets

The Capstone Experience

Team Amazon

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From Students…
…to Professionals

Project Sponsor Overview

- A Big Five American IT company
- E-commerce platform
- Offers web services
  - Databases
  - LLMs
  - Hosting Platforms
  - Computing

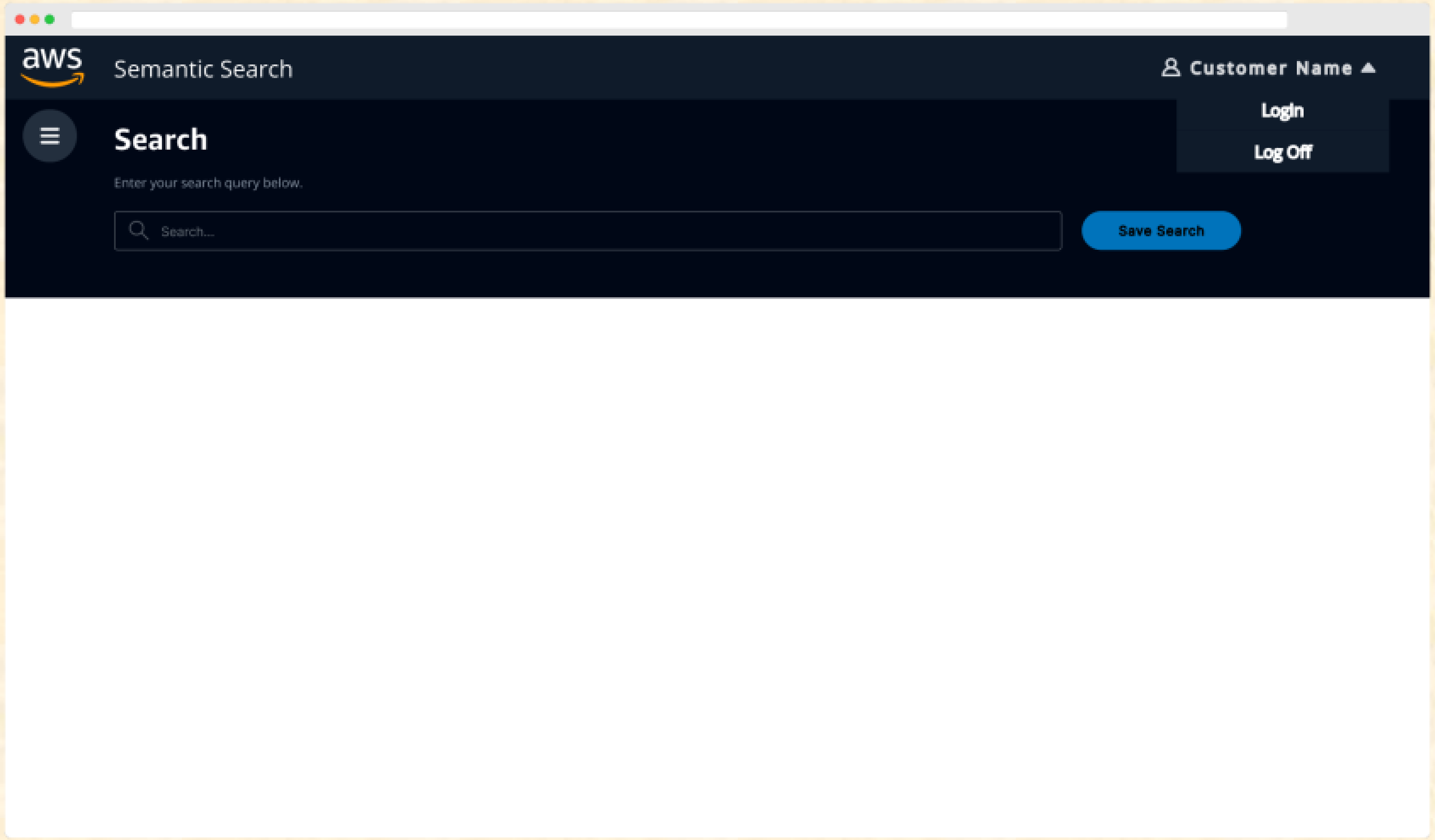
Project Functional Specifications

- Problems
  - Codebases are scattered
  - Manual code searching is inconvenient
- Solution
  - Centralize the code database
  - Search using natural language query
  - Returns relevant code results

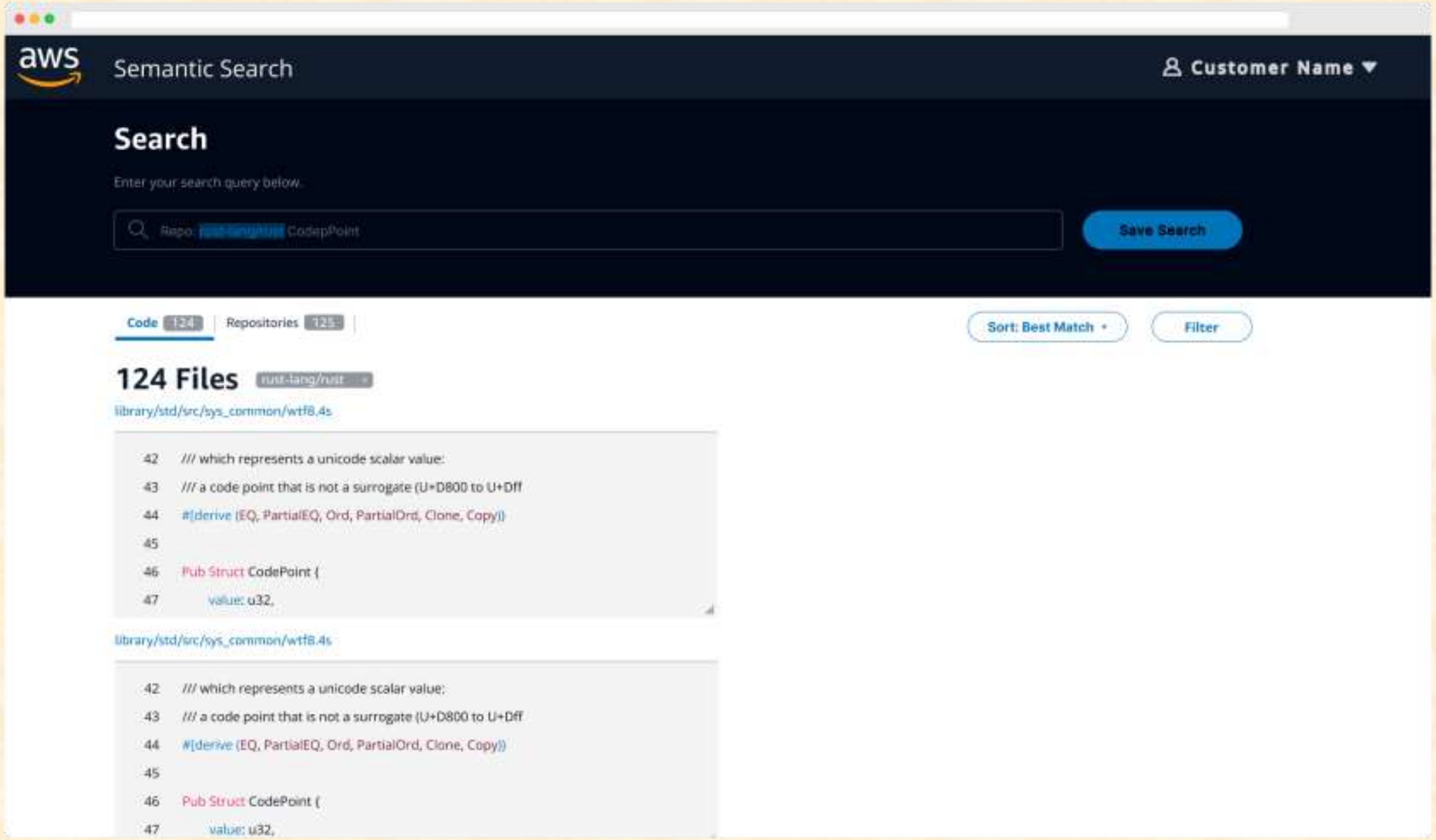
Project Design Specifications

- Intended for Amazon developers
- Enter query into search bar
- Returns top 3 relevant results
- Filter search results

Screen Mockup: Search Page



Screen Mockup: Results Displayed



Search

Enter your search query below.

Repo: rust-lang/rust CodepPoint

124 Files rust-lang/rust

library/std/src/sys_common/wtf8.4s

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/// which represents a unicode scalar value:
/// a code point that is not a surrogate (U+D800 to U+Dff
#[derive (EQ, PartialEQ, Ord, PartialDrd, Clone, Copy)]

Pub Struct CodePoint {
      value: u32,
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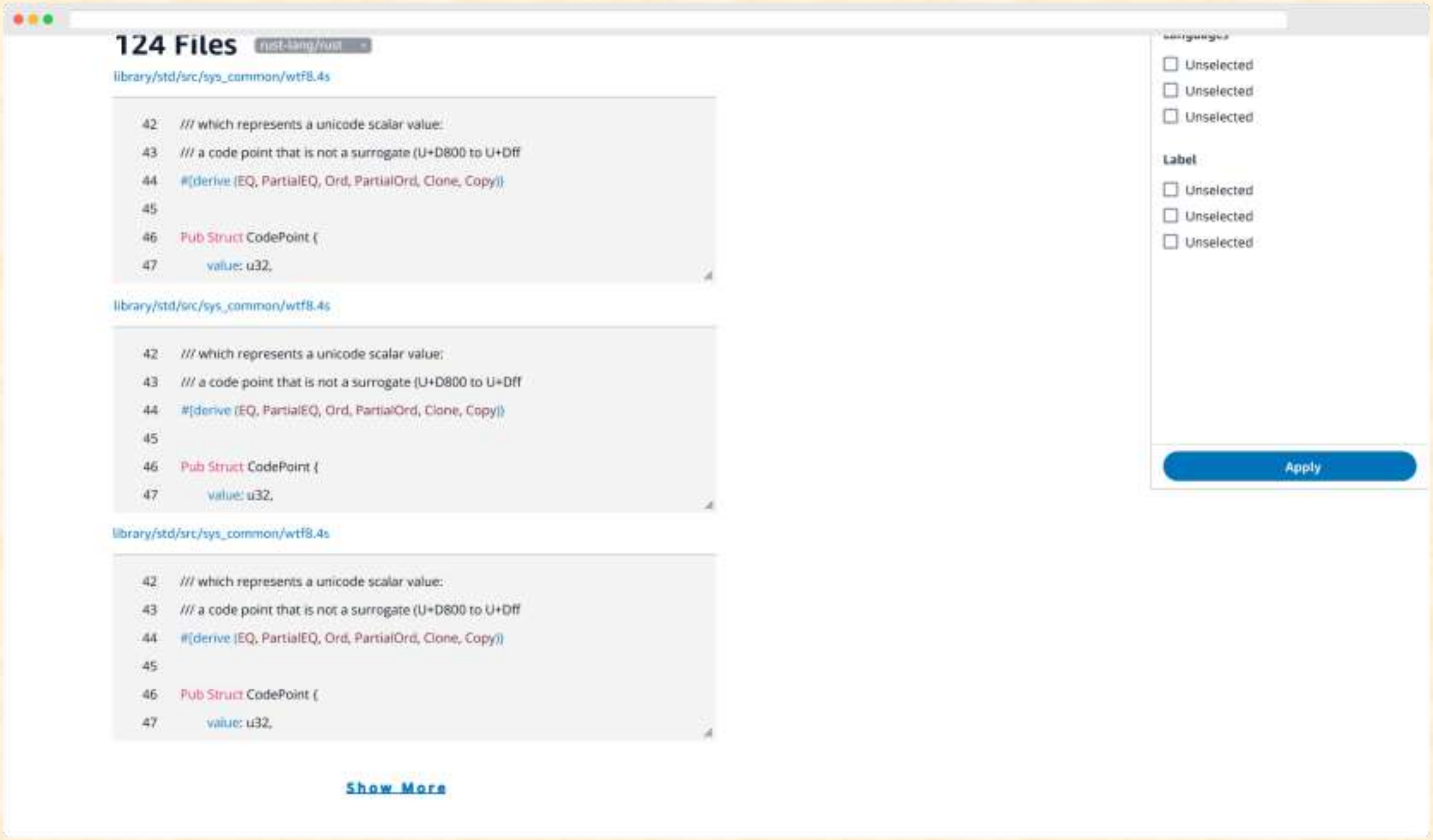
Screen Mockup: Show More Code



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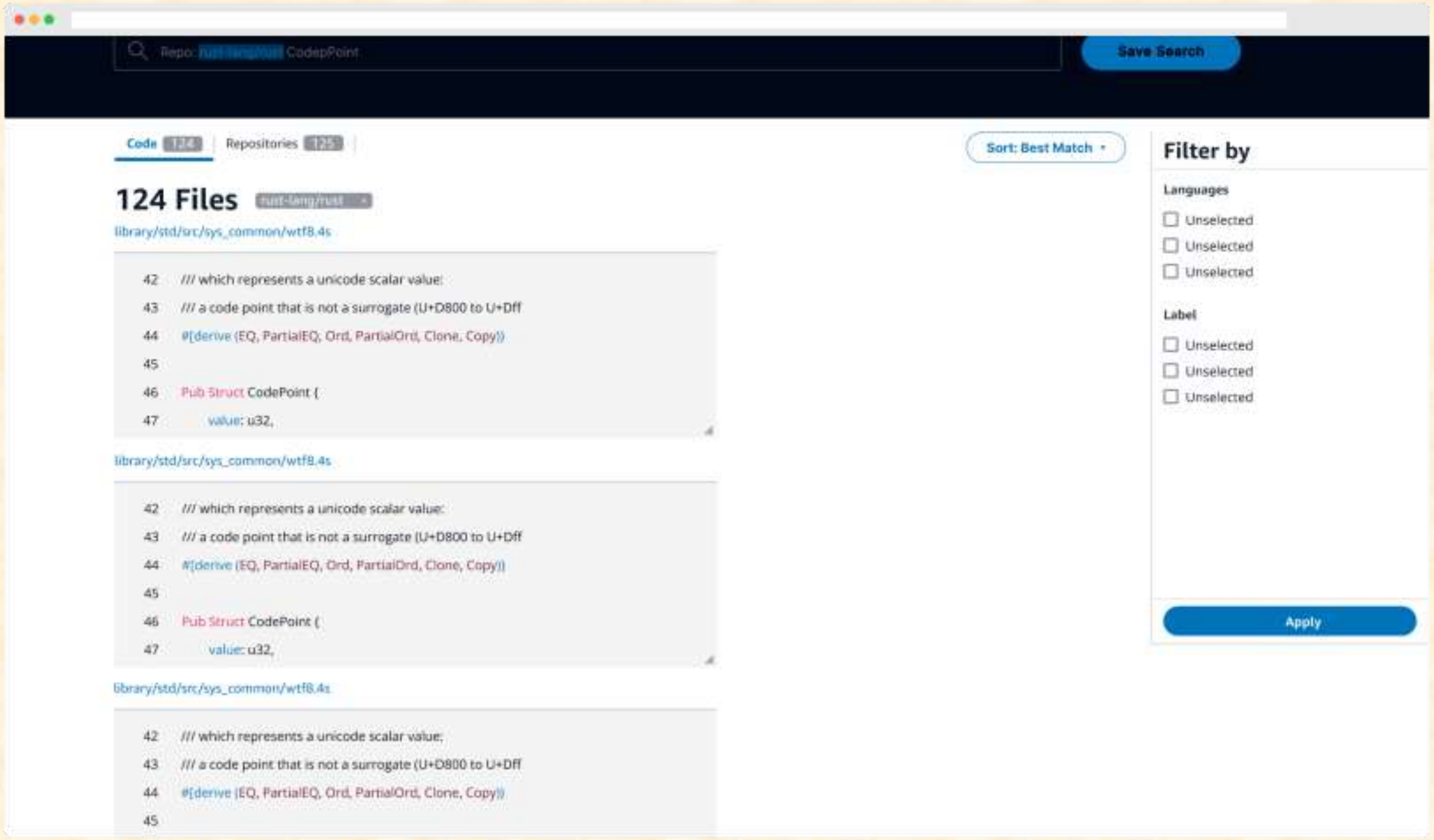
Show More

Screen Mockup: Filters Expanded



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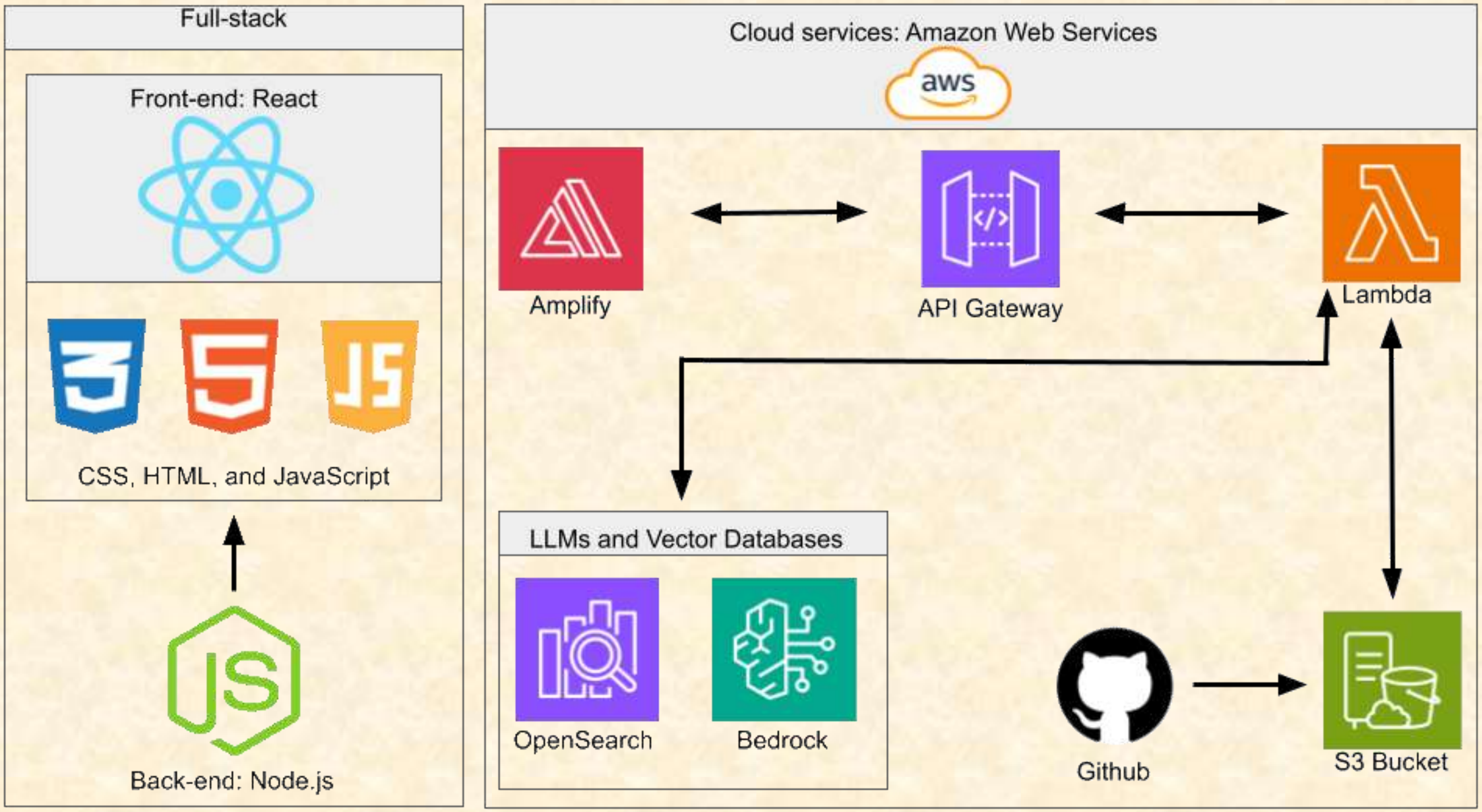
Project Technical Specifications

- Frontend: React.js
- Backend: Node.js
- Amazon Web Services
- LLMs from Amazon Bedrock
  - Titan Text Embeddings
  - Titan Text

Project System Architecture



Project System Components

- Hardware Platforms
  - None
- Software Platforms / Technologies
  - Amazon Web Services
    - AWS Lambda
    - Amazon OpenSearch
    - Amazon Bedrock
    - Amazon S3
  - Languages
    - Python
    - JavaScript

Project Risks

- Project Expenses
  - Costs for using AWS cloud resources
  - Research and provide cost estimate to client for approval
- Rate Limiting
  - Rate limits occur with quick, consecutive calls to APIs
  - Plan to segment API calls
- Frontend and Backend Connection
  - How to send LLM-generated data from back-end to front-end
  - Implement API Gateway and Amplify solutions

Questions?

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