Agentic Design Engine System Design Document

Executive Summary

Project Type: ML / AI System

The Agentic Design Engine is a system designed to automate the creation of high-quality system design documents using AI agents and structured human-in-the-loop interactions.

Core Features

- Document Generation

- Customization

- Collaboration

Constraints

- Performance

- Cost

- Security

User Scale: 100 MAU, 10 concurrent users

System Overview

Functional Goals

- Generate high-quality system design documents

- Provide customization options for documents

- Enable collaboration between users

Non-Functional Requirements

- Ensure performance and scalability

- Maintain cost-effectiveness

- Guarantee security and compliance

Primary User Personas

- Development Team

- Technical Writers

Architecture Design

The Agentic Design Engine will utilize a microservices architecture with AI agents and human-in-the-loop interactions.

System Components

Component	Responsibility	Technologies	Interfaces
AI Agent	Generate system design documents	Machine Learning, Natural Language Processing	API
Web Interface	Provide user interaction and customization options	Web Development, JavaScript	Web-based form

Database Design

Database Type: Relational Database

High availability and scalability

Table: Documents

Column	Type	Nullable	Description
id	integer	False	Unique document identifier
title	string	False	Document title
content	string	False	Document content

Table: Users

Column	Type	Nullable	Description
id	integer	False	Unique user identifier
username	string	False	Username
customization_options	string	False	Customization options

Cost Estimation

Cost Item	Monthly Cost	Rationale

Infrastructure costs	$1000.0	Cloud-based infrastructure costs
Personnel costs	$5000.0	Personnel costs for development and maintenance

Testing & QA Strategy

Unit testing for AI agent – AI agent functionality

Integration testing for AI agent and web interface – Integration of AI agent and web interface

End-to-end testing for document generation – Document generation workflow

Load and stress testing for web interface – Web interface performance

Security testing for AI agent and web interface – Security vulnerabilities

Appendices

Glossary

AI agent: Artificial intelligence agent

System design document: Document outlining system design

References

Reference 1

Reference 2

Additional notes and comments

System Architecture & Diagrams

System Architecture Diagram (Mermaid Code):

flowchart LR
User -->| Requests | API_Gateway
API_Gateway -->| Routes | AI_Agent
AI_Agent -->| Generates | Document
Document --> API_Gateway
API_Gateway --> User

User Flow Diagram (Mermaid Code):

```
flowchart TD
Start --> Login
Login --> Dashboard
Dashboard --> Generate_Document
Generate_Document --> End
```

Database ER Diagram (Mermaid Code):

```
erDiagram
DOCUMENT {
int id
string title
string content
}
USER {
int id
string username
string customization_options
}
DOCUMENT ||--o{ USER : belongs_to
```