Hazard Analysis
Software Engineering

Team 8 – Rhythm Rangers

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Table 1: Revision History

Date	Developer(s)	Change
Date1	Name(s)	Description of changes
Date2	Name(s)	Description of changes
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Contents

1 Introduction

2 Scope and Purpose of Hazard Analysis

3 System Boundaries and Components

3.1 Diagrammatic System Characterization
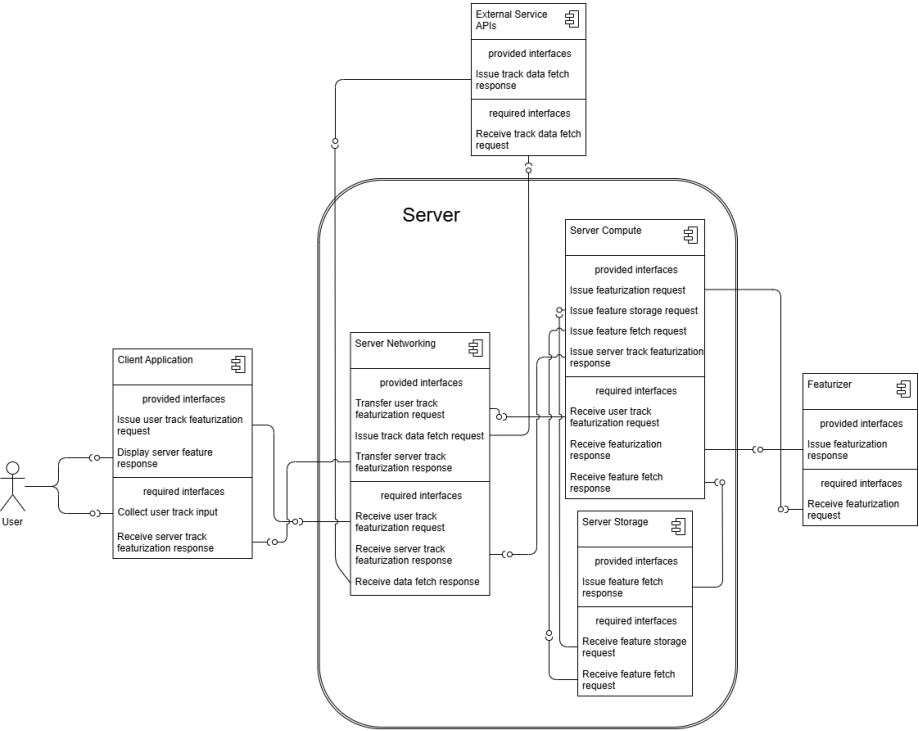
3.2 System Component Descriptions

Please refer to table 3.2.

Component Name	Component Description
Client Application	User-facing component through which they can input track information and view track features as system output.
Server Networking	Abstract component that represents communication between the server and external components, i.e., the client application and external service APIs.
Server Compute	Component that represents the server processing mechanism, i.e., the component that issues the featurization request.
Server Storage	Component that represents the server storage, i.e., the database.
External Service APIs	Component that represents external service APIs, e.g., the Spotify API or Deezer API.
Featurizer	Component that handles the featurization process.

Table 2: System Component Descriptions

4 Critical Assumptions

[These assumptions that are made about the software or system. You should minimize the number of assumptions that remove potential hazards. For instance, you could assume a part will never fail, but it is generally better to include this potential failure mode. —SS]

5 Failure Mode and Effect Analysis

Component/Design Function	Failure Mode	Effects of Failure	Causes of Failure	Detection	Recommended Action(s)
User Interface App	Unresponsive UI elements	UI stops responding to user inputs User frustration	Poor backend implementation Poor frontend implementation		Display a message to the user to refresh the page
Featurizer	Poor featurization of music	Featurizer returns incorrect or incomplete data to the webapp	Poor implementation of featurizer algorithm		Ensure featurizer algorithm is robust and well tested
External Service APIs	API Request Blocked	Service that requires API stops functioning	Hit Music Streaming Provider API rate limit		- Throttle API requests if there are a large amount of them - minimize the amount of API calls the service makes - fallbacks if API request denied (request post-poned instead of cancelled)
Version Control System	Merge conflict resolved improperly	Section(s) of documentation are erroneously deleted	Improper merge conflict resolution within github	- Regularly Checking Github Repo for integrity - Recompiling the PDF from latex to check for errors before deadlines - Project Supervisor(s) notice during marking	- Use Github Branchrs - Proper Merge Conflict resolution
Server Networking	Webapp can't connect to server	App gets stuck on current task	Server network module fails Server loses power Webapp device network module fails		Display message to user, attempt to reconnect to the server Regularly backup server storage
Server Compute	Server timeout	No response from the server	Server is overloaded Server power loss Poor computation logic		Display message to user to contact system administrator Regularly backup server storage Optimize processing algorithms
	Server storage is inaccessible	Server query failure	Storage device failure Server power loss		Display message to user to contact system administrator Regularly backup server storage
Server Storage	Duplicate database entries	Compute unit returns incorrect information	Lack of duplicate protection		Implement duplicate protection measures Merge duplicate entries
	Data corruption	Compute unit response contains errors or is empty Data loss	Server power loss Storage device failure		Regularly backup server storage

6 Safety and Security Requirements

7 Roadmap

Appendix — Reflection

The purpose of reflection questions is to give you a chance to assess your own learning and that of your group as a whole, and to find ways to improve in the future. Reflection is an important part of the learning process. Reflection is also an essential component of a successful software development process.

Reflections are most interesting and useful when they're honest, even if the stories they tell are imperfect. You will be marked based on your depth of thought and analysis, and not based on the content of the reflections themselves. Thus, for full marks we encourage you to answer openly and honestly and to avoid simply writing "what you think the evaluator wants to hear."

Please answer the following questions. Some questions can be answered on the team level, but where appropriate, each team member should write their own response:

1. What went well while writing this deliverable?

2. What pain points did you experience during this deliverable, and how did you resolve them?

3. Which of your listed risks had your team thought of before this deliverable, and which did you think of while doing this deliverable? For the latter ones (ones you thought of while doing the Hazard Analysis), how did they come about?

4. Other than the risk of physical harm (some projects may not have any appreciable risks of this form), list at least 2 other types of risk in software products. Why are they important to consider?