

Lab 2: Software Requirements Specifications for Sapphire Sounds

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1 Introduction

1.1 Purpose

This document provides detailed specifications and requirements for Sapphire Sounds, a mobile application for tenants/property managers and sensor-based hardware that detects excessive audio levels.

1.2 Scope

In shared living environments it is often difficult to resolve noise disputes due to subjective complaints which can lead to false accusations, tensions, and overall tenant dissatisfaction. There is currently no widely adopted method to monitor or handle noise disturbances and remain objective and privacy conscious. Sapphire Sounds addresses this problem with a mobile and web application paired with a noise sensor that provides real-time alerts and history to tenants and property managers as well as providing rewards for maintaining a quiet environment.

1.3 Definitions, Acronyms, and Abbreviations

dB (Decibel): A unit to measure the intensity of sounds.

Noise Event: An occurrence when decibel thresholds are reached for a specific duration. Used for reporting.

Noise Sensor: A physical device that monitors sound levels without recording audio.

Report: A structured report generated by the system, detailing the noise event.

Threshold: A predefined decibel level, which if exceeded, will trigger a noise event

Tenant: A resident or occupant of a shared or multi-unit housing space using the system to manage and monitor noise activity.

1.4 References

Team Sapphire. (2025, October 29). Lab 1 – Sapphire Sounds.

Retrieved October 29, 2025 from <https://zboudreaux99.github.io/Sapphire-Sound-Monitoring-Website/>.

1.5 Overview

Section 2 of this document provides a brief overview of Sapphire Sounds.

Section 3 provides specific functional requirements, organized by feature.

2 Overall Description

2.1 Product Perspective

Sapphire Sounds is an application available for both mobile and web that pairs with a small noise sensor. The sensor measures decibel levels of nearby audio only and does not conduct any recording. The application generates a report citing timestamps and noise levels that exceed a threshold and available as insight to both property managers and tenants. Sapphire Sounds provide real-time alerts and a built-in reward system for tenants maintaining consistent noise levels. These tools provide a peaceful shared living space.

2.2 Product Functions

Sapphire Sounds has four major innovations: privacy-first monitoring, data driven dispute resolution, positive reinforcement, and smart alerts. The system only collects sound intensity and never records audio. The data collected provides stamped decibel logs which gives property managers and tenants objective evidence. This data serves as real-time alerts and notifies tenants to make corrections. Rewards are offered to tenants who maintain acceptable noise levels which in turns promotes respectful community behaviors.

2.3 User Characteristics

There are two main classes of users of Sapphire Sounds: tenants and property managers/landlords. Tenants will be able to monitor the noise level in the space which in turn will promote a positive relationship with their neighbors. Consistent streaks of low levels give tenants a platform within the application to redeem rewards as positive reinforcement. Property managers or landlords will use the application to monitor overall noise levels of their properties as well as investigate noise complaints in a fair manner to address any concerns.

2.4 Constraints

N/A.

2.5 Assumptions

N/A.