
SYSTEM REQUIREMENTS SPECIFICATIONS



CSCE 361 - SPRING 2015

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1.0 Introduction

1.1 Purpose

This document is intended to give a detailed overview of the functions BlueRoll will have and how those functions will be implemented. The intended audience for this document are the clients, project managers, testing engineers and system designers.

1.2 Scope

BlueRoll is a system using Bluetooth to monitor attendance. The system has the ability to register bluetooth devices as students, allows an instructor to locate nearby (within 10 meters) students and mark them as present, allows an instructor to manually enter attendance for students, and give a simple summary report to the instructor. Simply, it should allow an instructor to quickly take attendance in a class setting.

1.3 Definitions

.csv file: a simple comma separated value file.

Bluetooth Address: a unique 48-bit address usually presented in the form of a 12-digit hexadecimal value identifying a Bluetooth device.

Class: a .csv file containing bluetooth addresses of registered students.

Instructor: main user of BlueRoll with the power to run functions.

Roll call: The function that matches all visible devices' Bluetooth addresses at that time and match them against addresses in the Class file compiling a Summary Report.

Semester Report: a compilation of all summary reports for a class.

Student: a Bluetooth address of a device registered in the class.

Summary Report: a compilation of attendance data for a class.

1.4 Overview

The remainder of this document contains an overall description, a detailed overview of the entire system, the specific functional requirements, and an appendix.

2.0 Overall Description

2.1 Product Perspective

2.1.1 System Interfaces

2.1.1.1

The BlueRoll program will only use the Bluetooth scanning functions of the device in use. It will run inside of the operating system and will access no other functions.

2.1.2 User Interfaces

- 2.1.2.1 BlueRoll uses both a mouse and a keyboard as user interfaces. It also uses the monitor to display the software interfaces as well as all information regarding a class.
- 2.1.3 Hardware Interfaces
 - 2.1.3.1 BlueRoll uses a mouse, keyboard, monitor, and bluetooth adapter/antenna.
- 2.1.4 Software Interfaces
 - 2.1.4.1 BlueRoll requires a computer running Windows XP or newer. The computer must have Bluetooth 2.0 capability or greater.
- 2.1.5 Communication Interfaces
 - 2.1.5.1 BlueRoll will not exchange data with other devices. It will only perform a local scan of all bluetooth enabled devices in the area.
- 2.1.6 Operations
 - 2.1.6.1 Roll Call: Program searches for all bluetooth devices and produces a summary report based on what devices are found.
 - 2.1.6.2 Registering a Bluetooth Device: Instructors can manually insert Bluetooth addresses.
 - 2.1.6.3 Semester Report: A report generated by compiling all summary reports within a semester time frame.
 - 2.1.6.4 Manual attendance: instructors can manually mark change of a students attendance status on any given summary report.

2.2 Product Functions

- 2.2.1 BlueRoll offers instructors a quick and easy solution to attendance as opposed to manually taking it.

2.3 User Characteristics

- 2.3.1 The program was created for instructors in a college or high school setting. Users are required to have minimal computer experience.

2.4 Constraints

- 2.4.1 BlueRoll will use a maximum of 25 Megabytes of onboard system memory.

2.5 Assumptions and Dependencies

- 2.5.1 The program assumes each student will only have their own bluetooth device(s) with them in class. Therefore, this program does not account for the scenarios where students wrongfully bring other students' devices to class when the other party is not present.

3.0 Specific Requirements

3.1 External Interfaces

BlueRoll implements Bluetooth (2.0 or greater), to search for Bluetooth addresses that are within range. BlueRoll does not pair with devices or transmit any data other than the Bluetooth address itself.

3.2 Functions

3.2.1 Phase 1

3.2.1.1 Register Bluetooth addresss

- 3.2.1.1.1 The system shall allow the instructor to register student addresses by manually inserting them into a .csv file.

3.2.1.2 Roll Call

- 3.2.1.2.1 The system will have the ability to have the instructor begin the roll call when he decides.
- 3.2.1.2.2 The system will search for all Bluetooth addresses that are within range (approximately 10 meters).
- 3.2.1.2.3 The system will then match nearby Bluetooth address with Bluetooth addresses that are in the .csv file.
- 3.2.1.2.4 Matched Bluetooth address in the .csv file will mark the student as present and unmatched addresses will mark the student as absent.

3.2.1.3 Semester Report

- 3.2.1.3.1 The system will store all summary reports and compile them into a single Semester Report.
- 3.2.1.3.1 The system will allow the instructor to run the Semester Report at any time during or after the semester.

3.2.2 Phase 2

3.2.2.1 Manual Attendance

- 3.2.2.1.1 The system will have the ability to allow the instructor to mark a student as present manually after the semester report is displayed.

3.2.2.2 Muultiple Classes

- 3.2.2.2.1 The system will allow an instructor to have greater than one class to track attendance.
- 3.2.2.2.2 The system will allow an instructor to choose which class to track attendance, at any time

3.2.2.3 Enhanced User Interface

- 3.2.2.3.1 UI will receive visual updates from phase ones's bare bones design.

3.2.3 Future Releases

3.2.3.1 Mobile Application for Professor

3.2.3.1.1 Mobile application having all the features of the PC application.

3.2.3.1.2 Summary report sync between mobile and PC.

3.2.3.2 Mobile Application for Student

3.2.3.2.1 Mobile application for student to receive a confirmation of recorded attendance.

3.2.3.3 Register Bluetooth addresss

3.2.3.3.1 The system shall allow the professor to create and maintain a student roster.

3.3 Performance Requirements

3.3.1 The system will be able to scan for all bluetooth devices and produce a summary report within 20 seconds of starting the Roll Call function.

3.4 Maintainability

3.4.1 The system uses the principles of Modularity in Object Oriented Programming to minimize the cost of upgrade/maintenance.

3.5 Security

3.5.1 The system will not have any special Security functions.

3.6 Response Time

3.6.1 The system should have the ability to produce a summary report in 10 seconds or less.

3.7 Design Constraints

3.7.1 All functions that allow an instructor to take attendance via bluetooth, produce a summary report, and display the UI and summary reports shall be implemented in Phase One.

4. Appendix

4.1 Home Screen Mockup

