**Software Requirements Specification**

**for**

**Phil, the Automated Bartender**

**Version 1.0**

**Prepared by Team DrinkTank**

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**Table of Contents**

[**Revision History**](#_x33wp8gkz48x) **3**

[**Introduction**](#_g296inlmrh13) **4**

[**Purpose**](#_3znysh7) **4**

[**Intended Audience and Reading Suggestions**](#_cpm6vqhc4hod) **4**

[**Product Scope**](#_s9laor9cnkhc) **4**

**Goals 5**

[**Overall Description**](#_ds304dd9adgv) **5**

[**Product Perspective**](#_54m0hfc2ocjx) **5**

[**Product Functions**](#_m7wgk2zcc8p0) **5**

**User Classes and Characteristics/Use Cases 5**

**Bar/Pub 5**

**Restaurant 6**

**Home user 6**

**Operating Environment 6**

**Design and Implementation constraints 6**

**Assumptions and Dependencies 7**

[**External Interface Requirements**](#_1uv3gqnf2sm0) **7**

[**User Interfaces**](#_827j90j7g97s) **7**

[**Hardware Interfaces**](#_fikwiybl0cl4) **7**

[**Software Interfaces**](#_xfbw6orzupyy) **7**

[**System Features**](#_cf5x82a3tlcf)**/Functional Requirements 8**

[**Account Creation and Login**](#_li5jyccpc3b1)

**Drink/Cocktail Manipulation 8**

[**Other Nonfunctional Requirements**](#_8otsignfb2n5) **9**

[**User Requirements**](#_73vm1xk2xf22) **9**

[**Performance Requirements**](#_fphjqdp2jyd5) **9**

# **Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Name** | **Date** | **Reason For Changes** | **Version** |
| Chris Baierski | 9/13/2018 | Initial Document Creation, Description, Functions | 0.10 |
| Aaron Riggs | 9/20/2018 | Hardware and operating environment update | 0.11 |
| Andre Manz | 9/20/2018 | System Features and Other NFA | 0.12 |
| Wesley Scott | 9/20/2018 | External and Internal Interfaces | 0.13 |
| Wesley Scott | 9/20/2018 | Fixing Table of Contents | 0.14 |
| Chris Baierski | 09/20/2018 | Dependencies | 1.0 |

# **Introduction**

## **Purpose**

Phil will provide a greater ease for bars, restaurants, and homes to have access to accurately measured beverages. Phil will satiate the alcoholic beverage market’s need for accuracy, and peace of mind for those who are pouring said beverages. Additionally, Phil poses to greatly reduce the amount of profits lost by the industry due to spills and drink theft.

## **Intended Audience and Reading Suggestions**

This document is meant for:

1. Developers of Phil
   1. Reading Sequence
      1. Entire Document
2. Product Owner of Phil
   1. Reading Sequence
      1. 1 - Introduction
      2. 2 - Overview
      3. 4 - Functionality
      4. 5.5 - Business Rules
3. Testers and Quality Control of Phil
   1. Reading Sequence
      1. 1 - Introduction
      2. 2 - Overview
      3. 4 - Functionality
4. Documentation Writers
   1. Reading Sequence
      1. Entire Document

## **Product Scope**

* + 1. **Short Description** - Phil is a piece of hardware that allows for 3 different beverages to be mixed and accurately dispensed in the form of one standard cocktail. Phil will additionally include a companion web application that will track its usage statistics.
    2. **Purpose** - Phil is tailored toward the bar/restaurant industries’ need for accurate measuring and sale of alcoholic beverages. Phil satisfies this need through eliminated the over/under measurement of the alcohol content of the beverage dispensed. Additionally, for many scenarios Phil will reduce the amount of context switching required by bartenders/cashiers, and allow them to have reduced work complexity.
    3. **Relevant Benefit** 
       1. Accurately pour standard drink sizes for beverages delegated to Phil by user.
       2. Log usage statistics of Phil, so that user may keep track of relevant sales data.
    4. **Goals**
    5. Great user interface and experience
    6. Within 5% margin of error for each standard drink poured
    7. Pour mixed beverages with option of 2 alcohols and 1 soda/juice.
    8. Companion web application for logging of usage statistics

# **Overall Description**

## **Product Perspective**

* + 1. Phil is the result of the need of bars/restaurants to eliminate wasteful bartending practices.

Unfortunately, for the industry in question the prominence of human error has resulted in

inaccurate alcohol measurements in their patrons’ drinks. This common error causes a

high loss of profits, as well as in some cases dissatisfaction for patrons of the industry.

Phil poses to resolve these issues in the instances in which it is used by automated the

bartending process. This automation will guarantee accurately poured alcoholic beverages, as well as allow business owners to determine their profit margins based off of Phil’s usage.

Major Components - Diagram

## **Product Functions**

* + 1. **User Functions**
       1. Place desired beverages in each of 2 alcohol nozzles, and 1 soda nozzle
       2. Input desired partition of each drink to be poured
       3. Save mixed drink partitions
       4. Pour standard measured beverage
    2. **System Functions**
       1. Measure amount poured according to standard alcohol measurements
       2. Save drink partitions in memory, and call to dispense beverages
       3. Dispense beverage desired by user
       4. Keep log file of drinks successfully poured in memory

## **User Classes and Characteristics/Use Cases**

* + 1. **Bar/Pub**
       1. Frequency

2.1.4.1.1 This user will most likely use Phil to dispense special drinks for any given night

of the week.

* + - 1. Subset of Functions
         1. This user will use all functionality as the software is based off of this user.
    1. **Restaurant** 
       1. Frequency
          1. This user will most likely use Phil for drinks at any time of any day of the work

week in order to dispense beverages for patrons.

* + - 1. Subset of Functions
         1. This user will use all functionality, and may additionally use Phil to pour

beer/wine in order to separate the duty of bartending from taking patrons’ orders.

**2.1.7 Home User**

2.1.7.1 Frequency

2.1.7.1.1 This user will most likely use Phil on weekends or during social gatherings that

he/she is hosting on the weekdays.

2.1.7.2 Subset of Functions

2.1.7.2.1 This user will use all functionalities with the exception of the Phil usage statistics

tracking platform, as this will not tailor to their use case.

## **Operating Environment**

Phil will be implemented through a Raspberry Pi, Arduino, and an 8 channel relay connected to 2 pumps and a valve. These devices will be used with food grade tubing to control a precise pouring mechanism to deliver a standard drink to the user. The entire device will be run with a desktop power supply that was removed from an old Dell workstation, this will ensure dependability and power efficiency. The Raspberry Pi being the brains of the device will be responsible for not only the control of the pumps and valve but also the graphical interface for the user, in testing this is a LCD monitor and keyboard/mouse.

* + 1. **Hardware**
       1. Raspberry Pi 3B+
       2. Arduino uno
       3. 8-port relay device
       4. Peristaltic pumps
       5. Flow valve
       6. Dell desktop computer power supply
       7. LCD display
       8. Keyboard/mouse

## **Design and Implementation Constraints**

Since this is a class project the limits we have are as follows:

* + 1. Time - Only semester long class
    2. Budget - We will be looking to keep costs under $50; primarily allocated for hardware and drinks

## **Assumptions and Dependencies**

* + 1. **Dependencies**
       1. Tkinter Python library
       2. Sleep Python library
    2. **Assumptions**
       1. Assume that the operator is of legal drinking age.
       2. Assume that if the operator is not of legal drinking age, then the drinks dispensed

will be non-alcoholic.

# **External Interface Requirements**

## **User Interface**

* + 1. **Design and Implementation**
       1. Using the Python Tkinter library to seamlessly integrate our Raspberry Pi’s native touch screen with the user interface.
    2. **Functionality**
       1. Basic users will be able to interact with GUI buttons for pouring preset drinks.
       2. Those with admin rights will be able to access the admin area. This screen allows for the addition, removal, and modification of the drinks available on the main screen.
    3. **Buttons and other Widgets**
       1. Buttons will be designed and laid out in such a way to still be easily read and intuitive to use, while not looking cluttered on the smaller screen provided by our hardware.

## **Hardware Interfaces**

* + 1. All devices, including all of those in the server infrastructure, need to be able to connect to the internet. Whether that be wired or wireless.

## **Software Interfaces**

* + 1. Software interfaces for the entire project are being installed on the Raspberry Pi.

# **System Features/Functional Requirements**

## **Account Creation and Login**

4.1.1 Description and Priority

This feature will allow registered admin to access drink measurements and analytic data. This will allow for restrictions on amounts being poured.

**Priority: low-** This is not crucial to the product’s overall functionality.

4.1.2 Stimulus/Response Sequences

**Stimulus**: User clicks “Sign In”

**Response**: A form is shown to the user to input sign-in information. After user verification, admin panel will appear on the screen.

4.1.4 Functional Requirements

REQ-1: The system shall allow for an unregistered user to pour a drink.

REQ-2: The system shall allow a user to login with credentials provided on account creation. (REQ - 1)

REQ-3: The system shall allow for a user to reset their password if they forget it.

## **Drink/Cocktail Manipulation**

4.2.1 Description and Priority

This feature will allow the users to add and delete drinks. This manipulation will be initiated by the user to allow them to take advantage of the dashboard and UI that Phil offers.

**Priority: HIGH -** This is an absolutely necessary functionality.

4.2.2 Stimulus/Response Sequences

**Stimulus**: User clicks “Add Drink” or “Remove Drink” and inputs the desired measurements for the cocktail.

**Response**: The page will redirect to the main dashboard with the updated drinks menu.

4.2.4 Functional Requirements

REQ-4:The system shall allow for a user to add drinks and measurement info to their drink menu.

REQ-5: The system shall allow for a user to delete existing drinks from their drink menu.

# **Other Nonfunctional Requirements**

## **User Requirements**

* + 1. REQ -15: The user should have a basic understanding of touchscreen GUI manipulation.

## **Performance Requirements**

* + 1. Pouring - Drinks must be poured to completion within 60 seconds to ensure the customers do not get bored and use a bartender.

REQ-13: The system shall pour a drink in under 60 seconds for all users.

* + 1. Page load time - All page load time should be less than a second. This does not include all account info on the page.

REQ-14: The system shall always load page in less than a second 95% of the time.