

User Manual

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This user manual is to ensure the smoothest possible user experience. Please follow the steps below carefully before starting the application, as there are a few processes that will not work otherwise. See the README text file for a summary of the below instructions.

1 Before Starting the Application

1.1 Required Installations

1.1.1 Tkinter

Tkinter is the standard Python interface to the Tk GUI toolkit, and is Python's de facto standard GUI. Tkinter should be included with standard Linux. If it is not installed, run the following line of code in the Linux terminal to install it: *sudo apt-get install python-tk*

1.1.2 TK Calendar

Tkcalendar is a python module that provides the Calendar and DateEntry widgets for Tkinter. Please follow the instructions below by running the italicised lines of code in the Linux terminal:

- Installing with pip: *\$ pip install tkcalendar*
- Installing with apt-get:
\$ sudo add-apt-repository ppa:j-4321-i/ppa
\$ sudo apt-get update
\$ sudo apt-get install python3-tkcalendar

1.1.3 FPDF

FPDF is a PHP class which allows to generate PDF files with pure PHP. Please follow the instructions below by running the italicised lines of code in the Linux terminal:

1. Install pip3: *sudo apt install python3-pip*
2. Upgrade setup tools: *pip3 install --upgrade setuptools*
3. Install FPDF: *pip3 install fpdf*

1.2 Setting up Cron

Cron is a time-based job scheduler in Unix-like computer operating systems. Thus, in order to allow for automated billing to occur, please configure your Linux device's cron settings as follows:

1. Open the terminal
2. Run the following line of code in the terminal: `crontab -e`
3. Editable text will appear in the terminal, enter the following line of text:
`0 1 1 * * cd /path/to/application/folder`
`&& /usr/bin/python3 /path/to/application/folder/script.py`
`>>/path/to/application/folder/Logs/BillingLog.txt`
4. Save and close

NOTE: "0 1 1 * *" ensures that the automatic billing runs on the first of every month, at 01:00. However, if the user wants to test if this is working, this can be replaced by "*" * * * *" which will run the automatic billing every minute. There is also a button within the application which allows a user to manually run the automatic billing if further testing is required.

2 Starting the Application

Once the above installations are completed successfully, please open the Linux terminal and access the file directory in which the program is saved via the terminal. In this file directory, users can launch the application by entering:

python3 program.py.

2.1 Logging In

Users will be prompted with a login window upon launching the application. The three login roles include that of a supervisor (highest access level), employee and customer (lowest access level). To Login, Users must type in their username and password.

There is a default supervisor login role with username: "**admin**" and password: "**admin**".

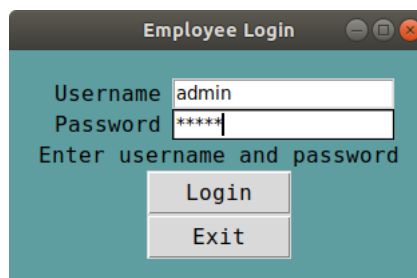


Figure 1: Login Screen

The default admin role should be replaced and then deleted as soon as possible.

3 Navigating the Application as an Employee

Upon logging in, the user will be prompted with the main menu window. From here users can choose to enter Edit Mode, View Mode, Invoice Mode, Search Mode, Stock Take Mode or they can log out.

3.1 Edit Mode

Only employees with a high enough access level (i.e. supervisors) are able to access the Edit Mode, which will direct the user to the edit menu. From the edit menu, the user can manipulate the database.

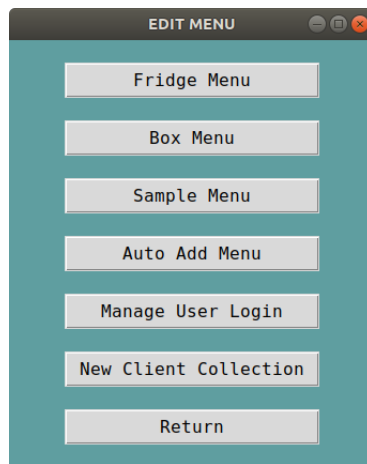


Figure 2: Edit Menu Screen

3.1.1 Fridge Menu

The user will be presented with two options: Add Fridge and Delete Fridge. If Add Fridge is selected, the user will be prompted to input the relevant information for a new fridge. If Delete Fridge is selected, the user will be prompted to enter the unique ID of the fridge they wish to delete (NOTE: this can only happen if the fridge is empty).

3.1.2 Box Menu

The user will be presented with three options: Add Box, Delete Box, and Move Box. If Add Box is selected, the user will be prompted to input the relevant information of a new box. If Delete Box is selected, the user will be prompted to enter the unique ID of the box they wish to delete (NOTE: this can only happen if the box is empty). If Move Box is selected, the user will be prompted to enter the unique ID of the box they wish to move, as well as the destination fridge and a position in that fridge.

3.1.3 Sample Menu

The user will be presented with four options: Add Sample, Move Sample, Delete Sample, and Add Sample Test. If Add Sample is selected, the user will be prompted to input the relevant information for a new sample. If Delete Sample is selected, the user will be prompted to enter the unique ID of the sample they wish to delete. If Move Sample is selected, the user will be prompted to enter the unique ID of the sample they wish to move, as well as the destination box and a position in that box. If Add

Sample Test is selected, the user will be prompted to enter the unique ID of the sample being tested, as well as the details of the test.

3.1.4 Auto Add Menu

Auto Add is used to add large batches of samples from a text manifest. The user will be prompted to enter the name of the text file that should already be placed in the ToAdd folder in the root directory of the program. This text file must be in the form of a Comma Separated Value (CSV) file which can be converted from an excel spreadsheet. Each line of the CSV file should follow the following format:

```
sampleID,fridgeID,boxID,boxPosition_X,boxPosition_Y,boxPosition_Z,collectionTitle,  
sampleType,originCountry,collectionDate,subjectAge,tubeRating,returnType,  
returnDate,phenotypeValue,diseaseState,
```

3.1.5 Manage User

As seen in figure 3 below, if Add User is selected, the user will be prompted to enter the username, password, and access level of the user they wish to add. If Delete User is selected, the user will be prompted to enter the username of the user that they wish to delete.

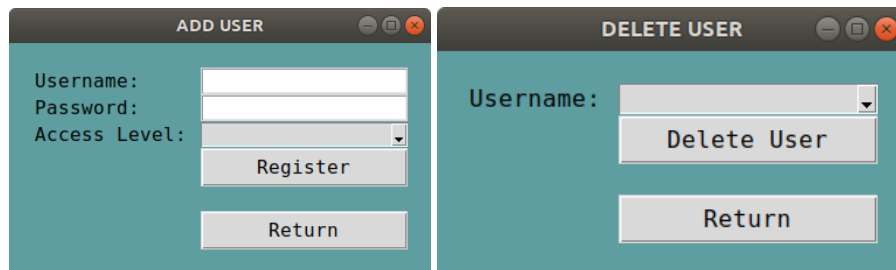


Figure 3: Add New User Screen & Delete User Screen

3.1.6 New Client Collection

The user will be prompted to enter the details of the new client collection. Adding a new collection will also register the client within the system. Each client will be able to login to the system (using their collection title as username and their password) in order to view their relevant data.

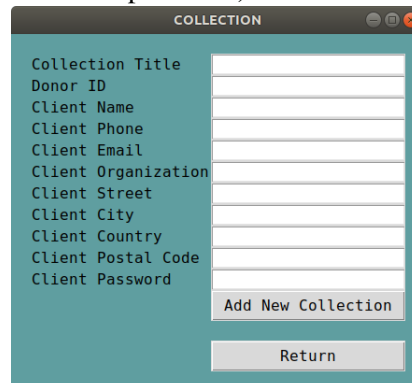


Figure 4: Add New Collection Screen

3.2 View Mode

Upon entering View Mode, the user will be presented with a visual representation of all the fridges within the database. Selecting a fridge will display all the boxes contained within that fridge, as well as a number of details about the fridge. Selecting a box will display all the samples contained within that box. From the sample display screen, the user will be able to view what tests have been performed on which samples.

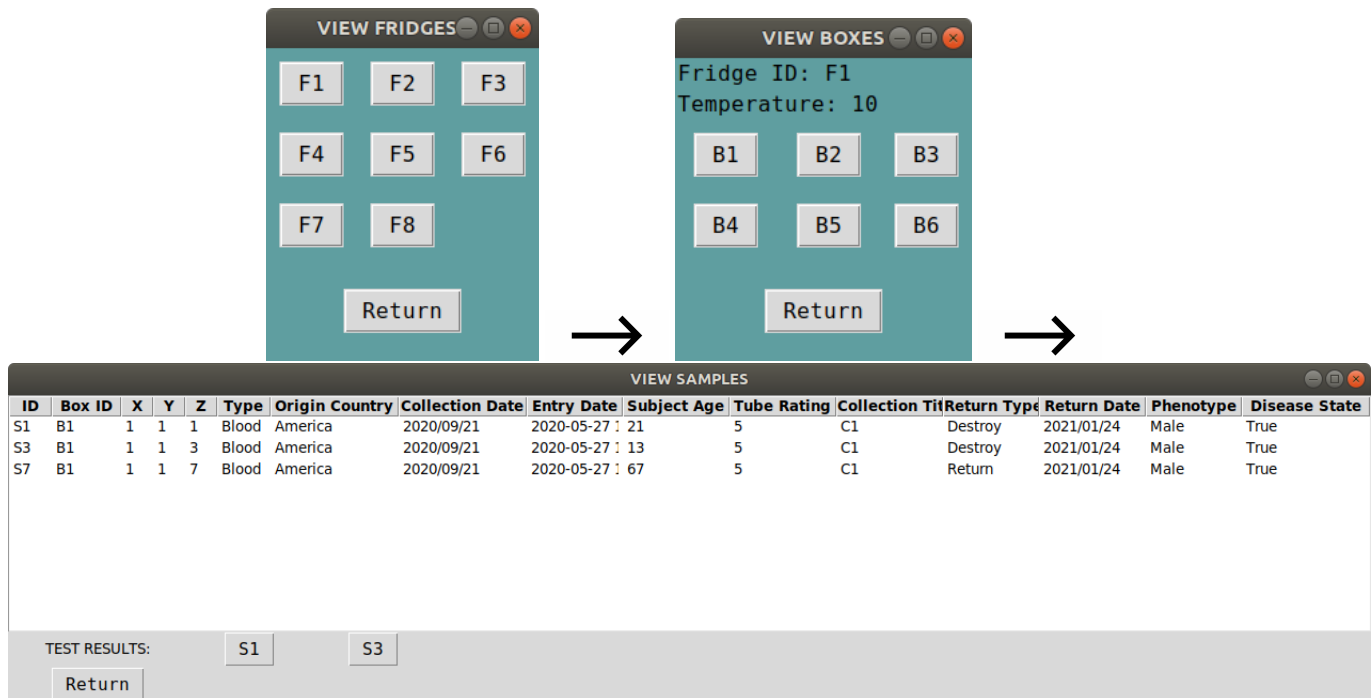


Figure 5: View Mode Screens

3.3 Invoice Mode

The user will be able to generate pdf invoices for any newly added samples in the database. This mode also contains a manual option for generating further monthly invoices (see the red button in the Invoice Mode Screen), however this is done automatically every month (on the 1st day at 01:00) and thus this option is purely for testing purposes.

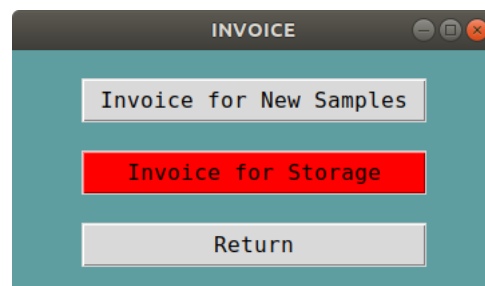


Figure 6: Invoice Mode Screen

3.4 Search Mode

The user will be presented with the options of searching through all the various sections of data within the bio-bank. Once the user has selected which section they would like to search through, they will be presented with multiple parameters to further narrow the search results. The user can choose to search for 1 specific parameter at a time or multiple.

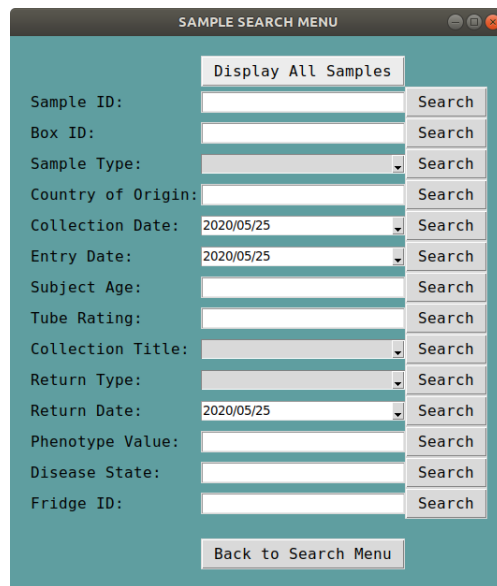
The screenshot shows a window titled "SAMPLE SEARCH MENU". At the top, there is a button labeled "Display All Samples". Below this, there is a list of search parameters, each with a text input field and a "Search" button to its right. The parameters are: Sample ID, Box ID, Sample Type (a dropdown menu), Country of Origin, Collection Date (pre-filled with "2020/05/25"), Entry Date (pre-filled with "2020/05/25"), Subject Age, Tube Rating, Collection Title (a dropdown menu), Return Type (a dropdown menu), Return Date (pre-filled with "2020/05/25"), Phenotype Value, Disease State, and Fridge ID. At the bottom of the window, there is a button labeled "Back to Search Menu".

Figure 7: Search Samples Screen

3.5 Stock Take Mode

The user will be able to check the digital system against manual counts. The user enters the number of a particular type of item (fridges, boxes, or samples) and the system will check for a match.

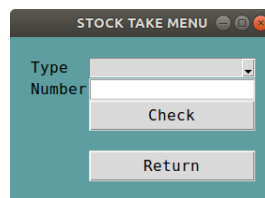
The screenshot shows a window titled "STOCK TAKE MENU". It contains a "Type" dropdown menu and a "Number" text input field. Below these fields are two buttons: "Check" and "Return".

Figure 8: Stock Take Mode Screen

4 Navigating the Application as a Customer

Upon logging in as a customer, the user will only be able to see a window which is the equivalent to the view mode mentioned above (see section 3.2 View Mode). This allows the customer to only view any samples that belong to the particular customer's collection(s).

A default customer can login with username: **C1** and password: **1234**