CMSC 447

Software User Manual (SUM)

Revision 1

1 Scope

1.1 Identification

This Software User Manual (SUM) describes the detailed steps needed to accomplish various goals (as documented by the requirements in the SRS) in version 1.0.0. of the CSCI, called the ROBBR system. No other releases of this system have been made, and no new releases are foreseen as of latest document revision.

1.2 System overview

The purpose of the ROBBR system is to allow a user to determine the best location for a new headquarters for a jewel thief syndicate. The system collect publicly available statistics about all zip codes within the United States, and the user provides criteria for filtering and ranking houses within a user-selected state. The system then generates a list of houses, weighed by their adherence to the user specified criteria, and displays it to the user along with a map of the houses. The ROBBR system is being developed for the customer who will be the sole sponsor, acquirer, and user. The ROBBR system will run on a bootable USB which may be carried by the customer. The I am Root Software Engineering Team shall be the sole developers of the software, and any reference to the developer will refer to the I am Root Software Engineering Team. For privacy and security reasons, the customer is not identified.

1.3 Document overview

The SUM provides the customer or user with instructions on how to use the system to the extent that was defined by the customer requirements at the beginning of the SDLC onward. These requirements reside in the SRS, are addressed within the system as shown in the SDD, and are tested as per the STD. This SUM includes details of the software portions and environments, to be adhered to for the system to function as is described in this document.

2 Referenced documents

Number	Title	Revision	Date
1	Software Requirement Specification	3	5/13/2018
2	Software Design Description	2	5/13/2018
3	Software Test Description	1	5/13/2018

3 Software summary

3.1 Software application

The ROBBR software will be used by a jewelry thief syndicate to help them find the best place for their headquarters. Using this software, the users will know what the crime level will be like in an area, how wealthy the area is, and how close they are to most jewelry stores. With the data provided by the ROBBR software, the customer will be able to be the most effective thief they can be.

3.2 Software inventory

All the data needed to run the ROBBR software is contained within the USB device provided. This information has been collected from publicly available websites and compiled into csv files. These files contain zip codes for every state, center of mass of jewelry stores for each state, crime statistic for each zip code, average income for each zip code, and what house are for sale in the United States. This data will only be contained on the USB drive provided to the customer, making the data as secure as the I Am Root development team could manage.

3.3 Software environment

The CSCI consist of just the ROBBR software and a USB drive. In order to run the software the USB drive must be plugged into a computer's USB port. To make best use of the computers hardware it is recommended to plug the USB device into a USB 3.0 port. If the computer is not off it should be shutdown and restarted. During the restart process the user will have to access the BIOS or UEFI by typically pressing either delete, f2, or f12, this varies computer to computer so the user may have to look up how to do this on the computer they are using. This will typically be displayed on the computers screen during the boot process. Once in the BIOS or UEFI menu choose in the boot options to boot into the thumb drive from a list of bootable media. Once the computer boots into the USB linux environment, the software can now make use of hardware such as CPU, RAM, and network adapter. A network connection is needed to map the selected houses.

3.4 Software organization and overview of operation

The user will use the terminal to navigate into the ROBBR directory found on the desktop. The program is then launched by typing in, "python main.py". The speed of the software is most strongly affected by the USB port that it is plugged into. USB 3.0 can transfer files over 10 times faster than USB 2.0. The speed can also be affected by the speed of the CPU, but in today's hardware landscape this is more than likely not a concern of a user with modern hardware. Users only need to focus on GUI windows after launching ROBBR from the terminal. New input windows are automatically displayed when the program is ready for more input. Each GUI window says what the user is supposed to be entering, and will not progress until valid input has been entered.

3.5 Contingencies and alternate states and modes of operation

The ROBBR software will always function the same.

3.6 Security and privacy

The customer may do whatever they see fit with the ROBBR software. The I Am Root development team is not held responsible for software after it is relinquished to the customer. For the privacy of the customer the only copy of ROBBR will be stored on the USB they receive from the I Am Root development team.

3.7 Assistance and problem reporting

The I Am Root development team relinquishes all responsibility of the ROBBR software upon delivery.

4 Access to the software

4.1 First-time user of the software

4.1.1 Equipment familiarization

This shall all be dependent on the computer that the user plugs the USB drive into. The user may use a computer they are already familiar with, or, because of the nature of the software, it is recommended that the user uses a public computer to avoid being tracked from their Internet history.

4.1.2 Access control

The bootable linux distro requires no password and none can be set. The access control of the device is controlled by physically having the USB drive in hand.

4.1.3 Installation and setup

The user must be able to access the BIOS or UEFI menu as described above in section 3.3.

4.2 Initiating a session

If the user has difficulty accessing the BIOS or UEFI menu, refer to the computer's manufacturer documentation for accessing these menus. After reaching BIOS or UEFI the user must select to boot from the ROBBR USB, this step also varies depending on the computer being used, refer to the computer's manufacturer for help. Once booted into the USB the user must launch a terminal window and navigate to the desktop directory. From there enter the ROBBR directory and enter 'python main.py' to run the software.

4.3 Stopping and suspending work

If the user at any time wishes exit the software, they may click the x found in the corner to close the GUI window or closing the terminal will also close GUI windows. If the user wants to remove the USB drive, they must first shut the computer down completely. Pulling the USB drive out of the computer before shutting it down fully may result in damage to the drive and cause it to not work in the future, with the drive being the only copy of ROBBR.

5 Processing reference guide

5.1 Capabilities

ROBBR can only be used in one order where valid input is required to go on to the next stage. The capabilities follow the different interface screens and are as follows: State selection, results filtering, variable weighting, and output.

5.2 Conventions

When the user reaches the output map of houses the blue marker is the center of mass of jewelry stores and the red markers are the houses. If no red markers are shown then no zip codes matched the users search criteria and they should retry with different criteria. 'COM' is used in the ROBBR software to refer to the center of mass (of jewelry stores).

5.3 Processing procedures

The following sections each represent a different screen of the ROBBR interface, in order of execution.

5.3.1 State selection screen

Upon starting the ROBBR software software the state selection screen is the first one the user will encounter. Below is a visual reference so the user knows exactly what the state selection screen section refers to. On this screen the user is to select which state they want to set up their crime syndicate in. To select a state the user clicks on the "-Select State-" box, revealing a drop down menu of all available states (continental U.S. and D.C). To select a state simply click on the desired state and the drop down menu will disappear, now saying the selected state instead of "-Select State-". If not all states can be seen in the drop down menu the user can click on the up arrow at the top of the box to scroll up, or the down arrow at the bottom of the box to scroll down. Once the user has finalized their state selection pressing the next button will progress them to the next stage. If the user presses next without selecting a state an error message will be displayed and they will remain on the state selection screen. Please note that after pressing next the user will not be able to change their state selection, the user must relaunch ROBBR to choose a new state. Also note that the next screen may not appear right away, since the program must do some work in the background; this shouldn't take more than 10-15 seconds, unless the user is using USB 2 to run ROBBR.

5.3.2 Filter selection screen

After the user has selected their state the next screen to pop up is the filter selection screen, after a brief period where ROBBR gathers all the zip codes in the selected state. Below is a visual reference so the user knows exactly what the filter selection screen section refers to. On this screen the user enters the lower and upper bound that they would like for household income, crime rate, and distance from COM, in the form of quintiles. The first set of sliders is for the user to enter their prefered lower bounds. The selected value for a slider is displayed above the slider along with what quintile it falls into. To select the desired value the user can drag the slider to where they want it, or they can click to the left or right of the slider to automatically move down or up, respectively, by one quintile. After the user has entered the lower bounds they can click next to select the upper bounds. The user is able to go back and edit the lower bounds as they see fit. Selecting the upper bounds works exactly the same as selecting the lower bound. On the upper bound selection screen a 'DONE' button is displayed below the 'NEXT' button. When the done button is pressed ROBBR checks to ensure the lower bound is less than or equal to the upper bound, if not an error message will be displayed and the user will remain on the filter selection screen. The min and max values for the income and crime sliders are the min and max values from the zip codes in the selected state. The min and max values for the distance from COM is fixed in main.py with min = 25 and max = 100, since the customer does not wish to be either too close or too far from the COM. If the users selected lower and upper bounds are valid when the press done the program will now filter the all zips codes in the selected state, storing all the zip codes that fit all of the users criteria, this may take upwards of a minute, or longer if the user is using USB 2. After filtering is done the weight selection screen will appear for the user.

5.3.3 Weight selection screen

After the user has selected their filter conditions the user will be brought to weight selection screen, after up to a minute of processing, or longing if the user is using USB 2, where ROBBR gathers all the zip codes in the selected state. Below is a visual reference so the user knows exactly what the filter selection screen section refers to. On the weight selection screen the user is to enter how important they find each aspect of the algorithm for selecting zip codes. The three categories of weighting are income, crime, and distance from COM, which correspond to the three sliders from the previous page. To enter a weight the user must click in the text box below the weight they want to enter, and type a decimal value between 0 and one, inclusively. The three weight values must add up to 1 when the user presses the 'DONE' button in order for the user to continue, otherwise an error message will be displayed and the user will remain on the weight selection screen. If the user chooses to weight a value to be zero they need not enter zero, as the weight will default to zero. Once the user is happy with their weight selection they can click the 'DONE' button at the bottom to continue on to the output screen. The output screen should appear within a few seconds, although the map may take longer to load.

5.3.4 Output screen

After the user has selected their weight conditions the user will be brought to output screen. Below is a visual reference so the user knows exactly what the output screen section refers to. The output screen requires no user input. The user will always see a blue marker on the map, which is the COM for the selected state. If the user does not see any other markers than there are no zip codes that fit the search criteria. Below the map the user will see any houses that are placed on the map listed out including the price and address. ROBBR only shows one house per zip code and up to five zip codes. If the user wishes to see all the possible zip codes and houses they can open the 'crimeSorted.csv' in the ROBBR directory that contains 'main.py'. When the user is done looking at the map and list they can click the 'X' button to close the window, then click the 'X' on the terminal. This concludes the operation of ROBBR, if the user wishes to do a different state or different filter criteria they can simply run ROBBR again, following the same process as described above.

5.4 Related processing

All data used in the ROBBR program is preprocessed and loaded on to the USB drive before it is delivered to the customer.

5.5 Data backup

There is no data backup, this is a security feature to protect the user and their crime syndicate.

5.6 Recovery from errors, malfunctions, and emergencies

If the program crashes reboot and follow directions found in 3.3. If program still doesn't work there is nothing more that can be done, since the USB is the only copy of the ROBBR software.