DISASTER MANAGEMENT PROGRAM

A Group Study in Partial Fulfillment
For the Course: **Data Structures and Algorithms**
CPE 0211.1-3

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PROJECT TOPIC TITLE

Disaster Management Program

BACKGROUND OF THE PROJECT TOPIC

The modern world is ruled over by technology and inventions that take humanity to its peak capacity, but little do we notice that there is another player in this eternal development, the yin to the yang, and those are what we call natural phenomena or as we in the Philippines call it by the name we frighteningly live upon, Natural Disasters.

The Philippines, one of the number-one patrons of Natural Disasters in South-East Asia, considering its position in the Pacific Ring of Fire and in addition to this being adjoined by a massive mass of water (Pacific Ocean) makes the natural phenomena grow tenfold: disasters. It has also seen its fair share of calamities like Super Typhoons; Ondoy, Yolanda, the recent Odette, Destructive earthquakes in Bohol(1990), and Laoag (1983), Volcanic Eruptions like the famous Mayon Eruption, and special mention: will we ever forget this COVID-19 Pandemic which continues to haunt us until this day?

The main impetus of our Case Project Study is to serve our fellow countrymen. Not only to protect but also to cater to those who've fought their way through disasters with a steel heart, a trait which we Pinoys survive with. Our Project can be used in its current form when disasters hit and also serve as a footprint for those who'd want to improve it for the betterment of the Filipino people.

TOPICS AND SUBJECT MATTERS IN USED IN THE PROJECT

- Searching Algorithms
- Arrays
- Structures
- Pointers
- Queues
- File Manipulation

TOPICS AND SUBJECT: APPLICATIONS

Searching Algorithms

The program uses Linear Searching Algorithm to determine whether the user input is found in the array. This is used in Location Finder - one of the highlighting features of the program - (1) when searching for the shortest path using Dijkstra's Algorithm; (2) asking for user's input of a specific location and checking the array whether the location exists or not. It is also used when searching for the available list of supplies. If it exists, the user is meant to add a certain quantity of supplies. If not, the program assumes it is a new item. The algorithm is also present in other parts of the program.

```
int search(struct Vertex Vertices[], string locationChoice, string
subLocationChoice, int maxVertexCount, int switchCase, int row){
        //Linear Search Algorithm
        for(int i=0;i<maxVertexCount;i++){
                switch(switchCase){
                        case 1:
                                if(//long if statement){
                                        return Vertices[i].locationIndex;
                                }
                                break;
                        case 2:
                                if (//long if statement){
                                        return Vertices[i].locationIndex;
                                }
                                break;
                }
        }
}
```

Linear Search algorithm in determining whether the user input of location is present on the list.

Arrays and Vectors

The program uses arrays and vectors in order to store, add, and retrieve data (recipients, list of supplies, and list of locations).

```
extern vector<recipientsList> Recipient;
extern vector<SuppliesList> Supply;
struct Vertex Vertices[maxVertexCount];
int connectedVertices[maxVertexCount*maxVertexCount];
```

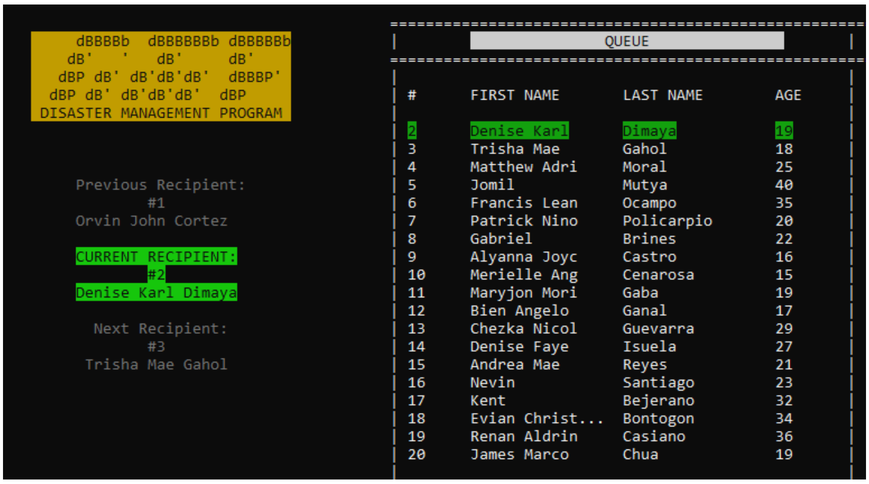
Structures

Each recipient, supply, and location indices contain different types of information (such as name, quantity, age, province, *barangay*, and island) which is defined in the program through the use of structures.

```
struct recipientsList{
	string firstName;
	string lastName;
	int age;
	int queueNumber;
};
struct SuppliesList{
	string name;
	double amount;
	double amountPerPerson;
};
struct Vertex {
	string Location, subLocation;
	int locationIndex, plotX, plotY;
};
```

Queues

The program is used to serve the recipients using the *First in, First Out* algorithm. The figure below shows the queue of a location in the Philippine island of Masbate. The program also shows who the previous recipient is, the current recipient, and the next recipient. Note that as more recipients are added to the list, their queue number is unique to them.



```
     dBBBBb   dBBBBBBb dBBBBBb
    dB'    '    dB'      dB'
   dBP dB' dB'dB'dB'   dBBBP'
  dBP dB' dB'dB'dB'   dBP
 DISASTER MANAGEMENT PROGRAM


     Previous Recipient:
             #1
     Orvin John Cortez

     CURRENT RECIPIENT:
             #2
     Denise Karl Dimaya

       Next Recipient:
             #3
      Trisha Mae Gahol
```

```
==========================================================
|                         QUEUE                          |
==========================================================
|                                                        |
| #      FIRST NAME        LAST NAME         AGE         |
|                                                        |
| 2      Denise Karl       Dimaya            19          |
| 3      Trisha Mae        Gahol             18          |
| 4      Matthew Adri      Moral             25          |
| 5      Jomil             Mutya             40          |
| 6      Francis Lean      Ocampo            35          |
| 7      Patrick Nino      Policarpio        20          |
| 8      Gabriel           Brines            22          |
| 9      Alyanna Joyc      Castro            16          |
| 10     Merielle Ang      Cenarosa          15          |
| 11     Maryjon Mori      Gaba              19          |
| 12     Bien Angelo       Ganal             17          |
| 13     Chezka Nicol      Guevarra          29          |
| 14     Denise Faye       Isuela            27          |
| 15     Andrea Mae        Reyes             21          |
| 16     Nevin             Santiago          23          |
| 17     Kent              Bejerano          32          |
| 18     Evian Christ...   Bontogon          34          |
| 19     Renan Aldrin      Casiano           36          |
| 20     James Marco       Chua              19          |
|                                                        |
```

Pointers

Pointers are used in the program in conjunction with queues to serve the recipients while modifying the variable *currentQueue* and *lastQueue* across different methods as well as other features in graph-related functions.

```
void nextRecipient(int *currentQueue, int *lastQueue){ //Enqueue
        if(checkSupply()){
                return;
        }
        HANDLE hOut = GetStdHandle(STD_OUTPUT_HANDLE);
       if(*currentQueue!=*lastQueue&&*lastQueue!=0&&!Recipient.empty()){
...
```

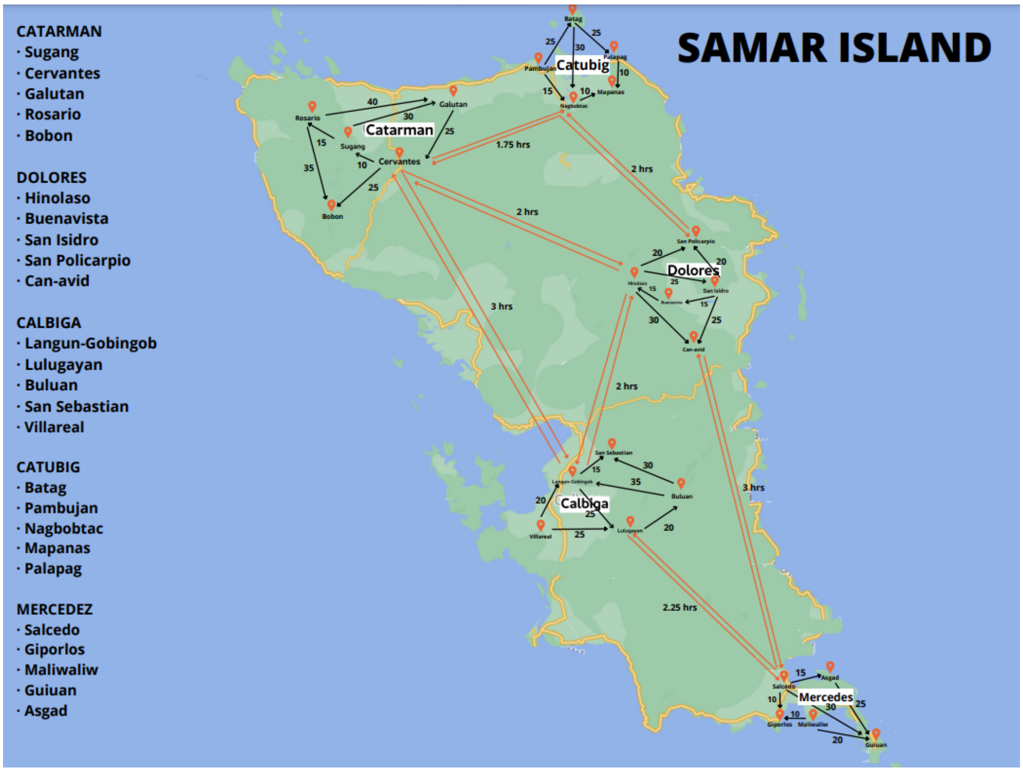
File Manipulation

Another key defining feature of this program is the use of Files Manipulation to save information for later use. The program is designed to be used simultaneously across devices (assuming that everyone uses the same directory whether in local network or web) regardless of their location without any form of duplication and inaccurate amount of supplies. Every time the list is modified, the file is automatically saved, and the program itself updates the list from the current file.

```
void saveRecipientFile(){
        ofstream PrintFile;
        PrintFile.open(RecipientsFile.c_str(), ios::out);

        for(int i=0; i<Recipient.size();i++){
                PrintFile << Recipient[i].firstName << "\t" << Recipient[i].lastName <<
"\t" << Recipient[i].age << "\t" << Recipient[i].queueNumber << endl;
        }
        PrintFile.close();
}
void readSuppliesList(){
        ifstream suppliesFile(SuppliesFile.c_str());
        string line;
        int i=0;
        if(!suppliesFile.is_open()) {
        cout<<"File " << SuppliesFile << " not found.  Make sure the .dat files are
downloaded." << endl;
        throw exception();
        }
…
```

Graphs

Since the program uses maps to search for the shortest path from either the evacuation center or user-defined location to a certain destination, the group uses graphs where each barangay (sublocation) is a vertex that is under a cluster called (location) or the municipality it belongs to. The graph also contains a graphical view within the program itself (see coordinate system below).

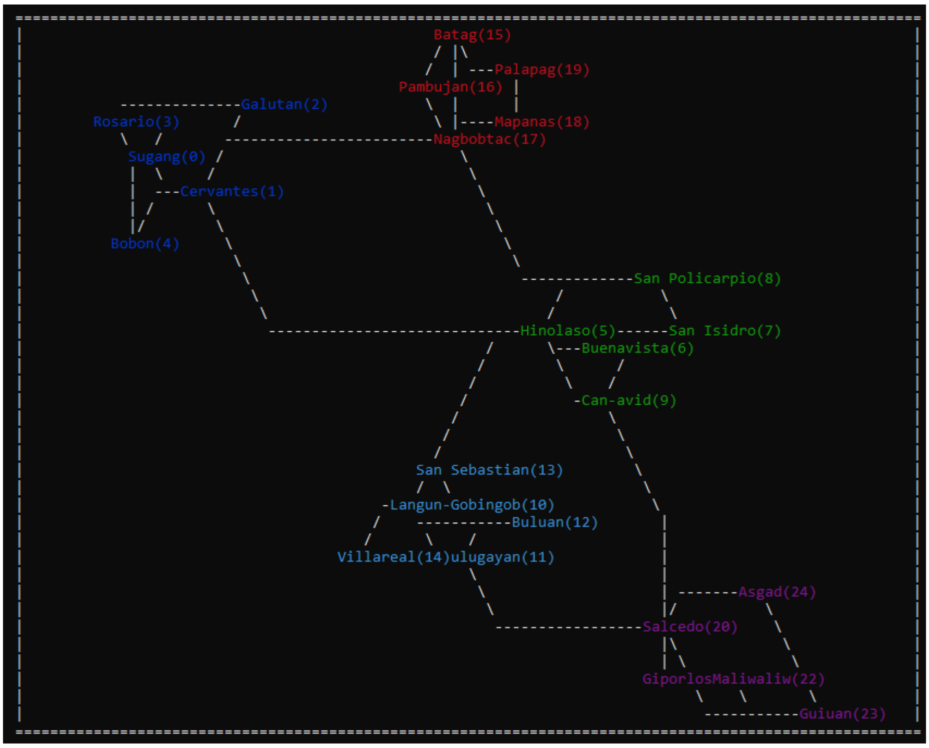


Map of SamarIsland

Other Data Structures

Coordinate System

The program uses a coordinate system that shows all available pathways from one location to another. Each location has its own assigned X and Y coordinates. Whereas, the lines that were shown are algorithmically designed to connect from one location to another depending on what was written in the adjacency matrix. A sample map of Masbate is shown in the figure below.



Map of Samar Island within the Program

PROJECT BENEFITS

This project is an all-in-one solution that can be used inside bases wherein it will be operated by disaster volunteer groups in the Philippines for them to neatly arrange and queue recipients, monitor supply logistics, and locate evacuation centers in cities that were affected by the calamity. Overall, the true beneficiaries of this project are the struggling Filipinos especially in their time of need, serving the Filipino people.

In addition to this, the easily accessible and editable data files for supply logistics and map maker (vertices.dat, matrix.dat) can be easily modified to fit any place in the Philippines (like our previous NCR Map data files in our last project)

STEP BY STEP OPERATION

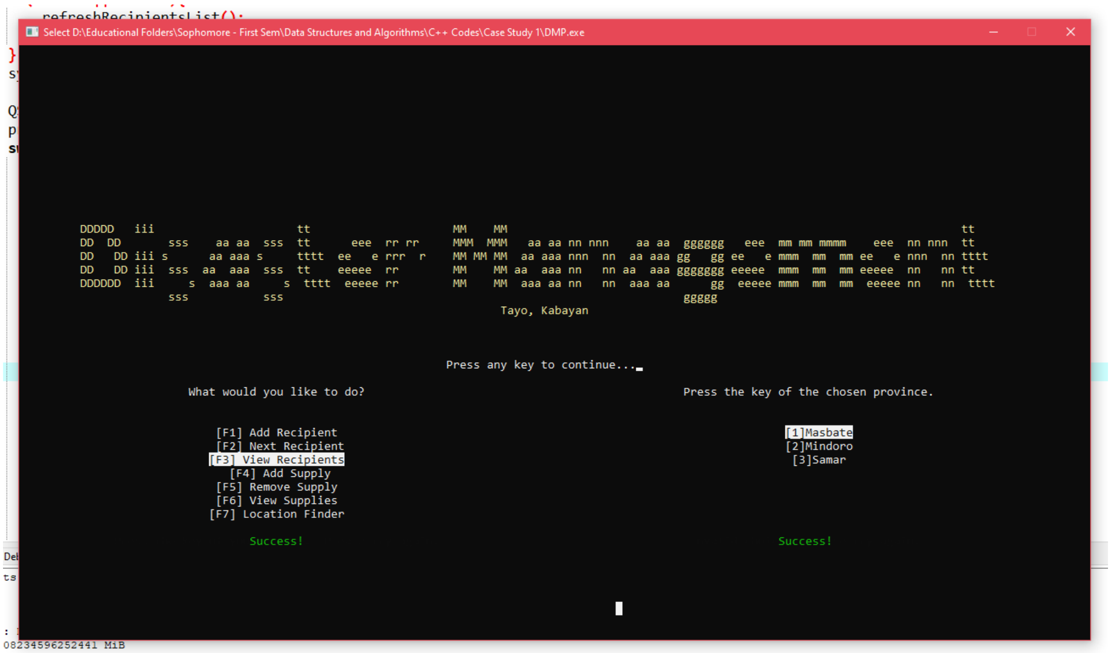
1. Upon opening the program, you are greeted and instructed to press a **keyboard key** of your choice:
   - [Function 1] **Add Recipient** - If you would like to add recipients to the queue
   - [Function 2] **Next Recipient** - Discards the current recipient in the queue and proceeds the next as to be received by the donations.
   - [Function 3] **View Recipients** - Simply lists the list of recipients (Including their First Name, Last Name, Age, and their number inline). Note that the first in line (highlighted in green) is the current recipient.

- [Function 4] **Add Supply** - This allows the user to add a supply of their choice, the total amount available, and the amount that will be given to each person.
- [Function 5] **Remove Supply** - Discards a supply that is present on the list. Useful for duplicate inputs, typographical errors in name, or amount.
- [Function 6] **View Supplies -** Lists the number of supplies available. Colors in yellow represent that the amount of supply is **low** and needs to be replenished soon. Meanwhile, the red color represents that the supply is **empty.**
- [Function 7] **Location Finde**r - this part locates for the nearest place of a user's choice (whether the evacuation area or other) from a specified location.
- [Function 8] **Change Location** (Only available after choosing a location) - This allows the user to change the location of the program. Note that changing affects the list of recipients, supplies, and the direction in the location finder.
- [Function 9] **Exit Program** - Exits the program.

2. After selecting a function, the user is then instructed to press the key to their chosen province. The program currently supports three different provinces:
    - **Masbate Island**;
    - **Mindoro Island**;
    - and **Samar Island**.

   The program can theoretically support various provinces in the Philippines without any error. As a demonstration, we've chosen the three islands above as these islands were devastated by the latest typhoon that caused the lives of hundreds of people. Hence, they were prioritized to be served by the program.

   After selecting a key of their chosen province, the next step to do depends on what the user has pressed on Step 1.

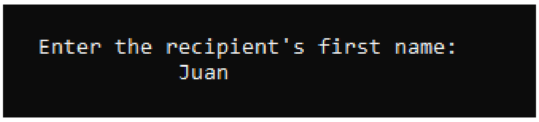


```
Select D:\Educational Folders\Sophomore - First Sem\Data Structures and Algorithms\C++ Codes\Case Study 1\DMP.exe

DDDDD   iii                    tt                 MM    MM                                                           tt
DD  DD       sss    aa aa  sss  tt      eee  rr rr    MMM  MMM   aa aa nn nnn    aa aa  gggggg   eee  mm mm mmmm    eee  nn nnn  tt
DD   DD iii s      aa aaa s     tttt  ee   e rrr  r   MM MM MM  aa aaa nnn  nn  aa aaa gg   gg ee   e mmm  mm  mm ee   e nnn  nn tttt
DD   DD iii  sss  aa  aaa  sss  tt    eeeee  rr       MM    MM aa  aaa nn   nn aa  aaa ggggggg eeeee  mmm  mm  mm eeeee  nn   nn tt
DDDDDD  iii     s  aaa aa     s  tttt  eeeee rr       MM    MM  aaa aa nn   nn  aaa aa      gg  eeeee mmm  mm  mm  eeeee nn   nn  tttt
             sss           sss                                                          ggggg
                                                         Tayo, Kabayan


                                              Press any key to continue..._

                What would you like to do?                                  Press the key of the chosen province.


                    [F1] Add Recipient                                                   [1]Masbate
                    [F2] Next Recipient                                                  [2]Mindoro
                   [F3] View Recipients                                                   [3]Samar
                      [F4] Add Supply
                    [F5] Remove Supply
                    [F6] View Supplies
                   [F7] Location Finder

                        Success!                                                        Success!
```

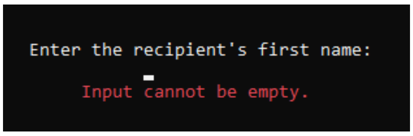
Sample Title Screen Screenshot

3. If the user pressed [F1] **Add Recipient**,

    - The user will be asked to enter the recipient's first name. The program features an input verifier and detects if there's no input, and the names will format automatically.

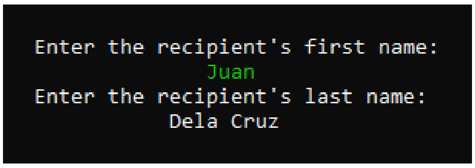


```
Enter the recipient's first name:
             Juan
```



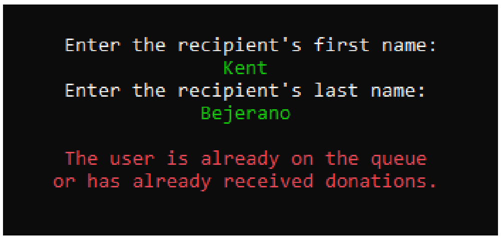
```
Enter the recipient's first name:
              -
      Input cannot be empty.
```

    - Then, the last name of the recipient.



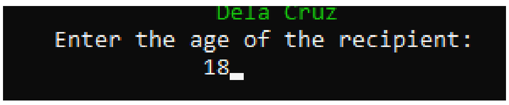
```
Enter the recipient's first name:
              Juan
Enter the recipient's last name:
           Dela Cruz
```

    - The program will tell the user if the name already exists, like this one.



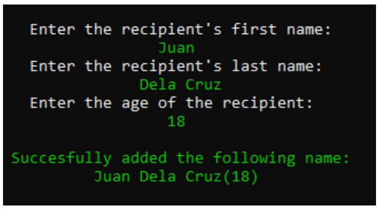
```
 Enter the recipient's first name:
              Kent
 Enter the recipient's last name:
            Bejerano

 The user is already on the queue
or has already received donations.
```

    - If the name is still not in the database, it will ask for the recipient's age. It also verifies if the input is an integer or not and if the age is realistic or not.

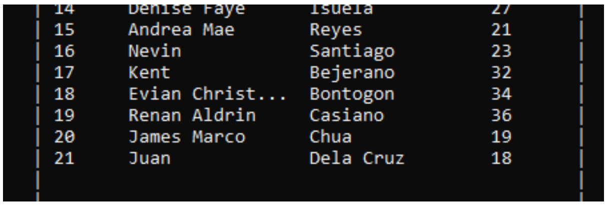


```
                 Dela Cruz
Enter the age of the recipient:
            18_
```

- After all information is entered, the program will tell the user that the name has been added to the queue. He/she is always added to the last line of the queue.



```
   Enter the recipient's first name:
                 Juan
   Enter the recipient's last name:
                Dela Cruz
   Enter the age of the recipient:
                  18

Succesfully added the following name:
           Juan Dela Cruz(18)
```

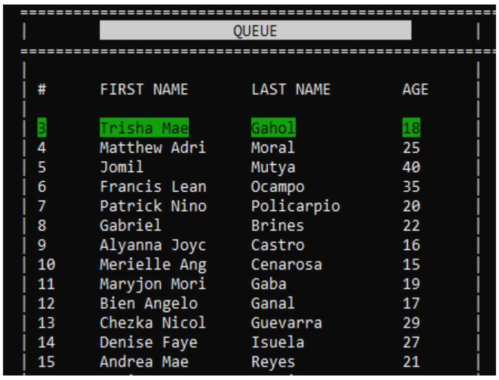


```
| 14    Denise Faye      Isuela           27      |
| 15    Andrea Mae       Reyes            21      |
| 16    Nevin            Santiago         23      |
| 17    Kent             Bejerano         32      |
| 18    Evian Christ...  Bontogon         34      |
| 19    Renan Aldrin     Casiano          36      |
| 20    James Marco      Chua             19      |
| 21    Juan             Dela Cruz        18      |
|                                                 |
```

- The user will then be instructed to press a key of their choice in **Step 1**.

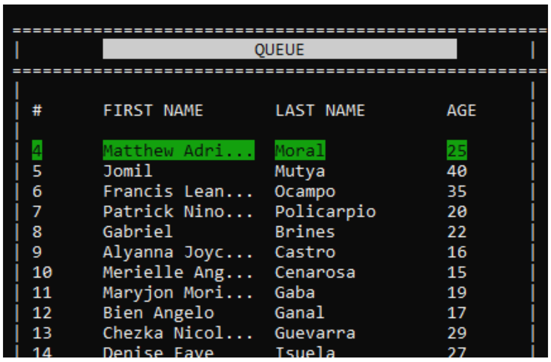
4. If the user pressed [F2] **Next Recipient**

- For demonstration, this is the queue before the button is pressed. Note that Trisha Mae Gahol is currently being served by the program.

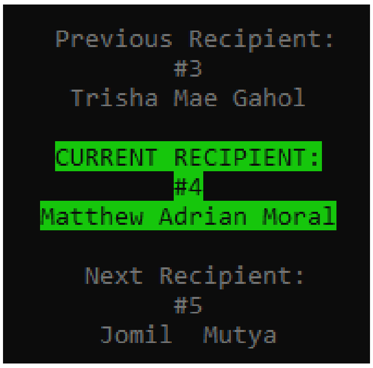


```
===================================================
|                  QUEUE                          |
===================================================
|                                                 |
| #      FIRST NAME       LAST NAME       AGE     |
|                                                 |
| 3      Trisha Mae       Gahol           18      |
| 4      Matthew Adri     Moral           25      |
| 5      Jomil            Mutya           40      |
| 6      Francis Lean     Ocampo          35      |
| 7      Patrick Nino     Policarpio      20      |
| 8      Gabriel          Brines          22      |
| 9      Alyanna Joyc     Castro          16      |
| 10     Merielle Ang     Cenarosa        15      |
| 11     Maryjon Mori     Gaba            19      |
| 12     Bien Angelo      Ganal           17      |
| 13     Chezka Nicol     Guevarra        29      |
| 14     Denise Faye      Isuela          27      |
| 15     Andrea Mae       Reyes           21      |
```

- After pressing the button, the program automatically removes Ms. Gahol from the queue and proceeds to Mr. Moral as the current recipient. The program also provides additional information.

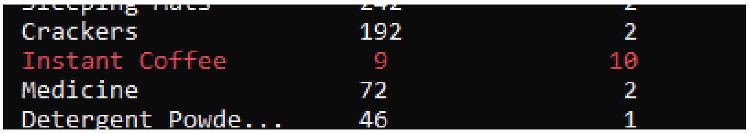


```
===================================================
|                  QUEUE                          |
===================================================
|                                                 |
| #      FIRST NAME        LAST NAME       AGE    |
|                                                 |
| 4      Matthew Adri...   Moral           25     |
| 5      Jomil             Mutya           40     |
| 6      Francis Lean...   Ocampo          35     |
| 7      Patrick Nino...   Policarpio      20     |
| 8      Gabriel           Brines          22     |
| 9      Alyanna Joyc...   Castro          16     |
| 10     Merielle Ang...   Cenarosa        15     |
| 11     Maryjon Mori...   Gaba            19     |
| 12     Bien Angelo       Ganal           17     |
| 13     Chezka Nicol...   Guevarra        29     |
| 14     Denise Faye       Isuela          27     |
```

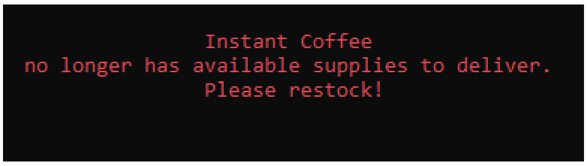


```
  Previous Recipient:
          #3
   Trisha Mae Gahol

  CURRENT RECIPIENT:
          #4
 Matthew Adrian Moral

   Next Recipient:
          #5
     Jomil  Mutya
```

- The program also checks for the number of supplies before dequeuing recipients. In this case, there is an insufficient amount of instant coffee to be distributed. The dequeuing fails and the user will be informed that this item is out of stock. To continue, the user has to add the amount of supply or delete it.



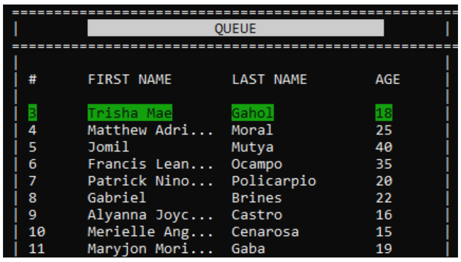
```
Sleeping Mats           242         2
Crackers                192         2
Instant Coffee           9         10
Medicine                72          2
Detergent Powde...      46          1
```



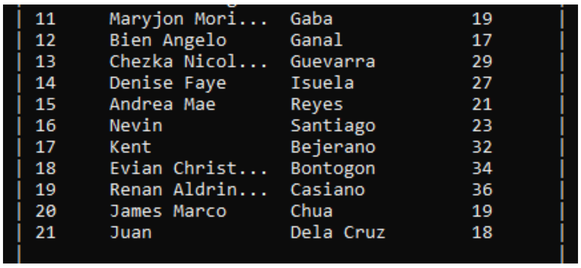
```
            Instant Coffee
no longer has available supplies to deliver.
            Please restock!
```

- The user will then be instructed to press a key of their choice in **Step 1**.

5. If the user pressed **[F3] View Recipients**
    - The option says as it is, it simply displays the list of recipients.



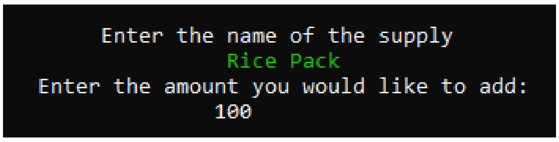
```
===============================================
|                     QUEUE                   |
===============================================
|
| #     FIRST NAME        LAST NAME       AGE  |
|
| 3     Trisha Mae        Gahol           18   |
| 4     Matthew Adri...   Moral           25   |
| 5     Jomil             Mutya           40   |
| 6     Francis Lean...   Ocampo          35   |
| 7     Patrick Nino...   Policarpio      20   |
| 8     Gabriel           Brines          22   |
| 9     Alyanna Joyc...   Castro          16   |
| 10    Merielle Ang...   Cenarosa        15   |
| 11    Maryjon Mori...   Gaba            19   |
```



```
| 11    Maryjon Mori...   Gaba            19   |
| 12    Bien Angelo       Ganal           17   |
| 13    Chezka Nicol...   Guevarra        29   |
| 14    Denise Faye       Isuela          27   |
| 15    Andrea Mae        Reyes           21   |
| 16    Nevin             Santiago        23   |
| 17    Kent              Bejerano        32   |
| 18    Evian Christ...   Bontogon        34   |
| 19    Renan Aldrin...   Casiano         36   |
| 20    James Marco       Chua            19   |
| 21    Juan              Dela Cruz       18   |
|                                              |
```

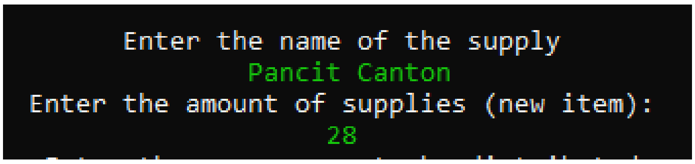
- The user will then be instructed to press a key of their choice in **Step 1**.

6. If the user pressed **[F4] Add Supply,**
    - The user is instructed to enter the name of the supply. The program features an input verifier and detects if there's no input, and the names will format automatically.
    - There are two cases:
        - If the item already exists
            - The program simply instructs the user to enter the amount to be added.



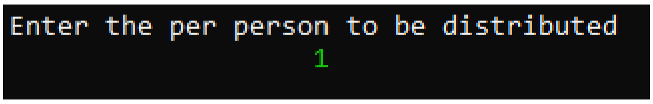
```
         Enter the name of the supply
                  Rice Pack
  Enter the amount you would like to add:
                     100
```

        - If the item is not yet on the list.
            - The program will tell the user that it is a new item and requires input on the number of supplies.



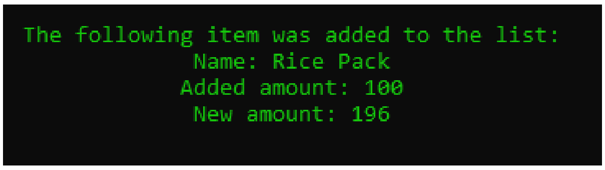
```
       Enter the name of the supply
               Pancit Canton
Enter the amount of supplies (new item):
                    28
```

            - And then the amount per person to be distributed.



```
Enter the per person to be distributed
                  1
```

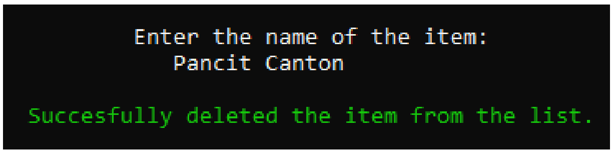
- The program will tell the user that the item has been added to the list.



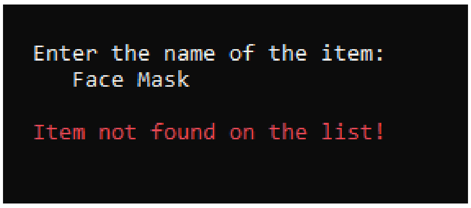
```
The following item was added to the list:
             Name: Rice Pack
            Added amount: 100
             New amount: 196
```

- The user will then be instructed to press a key of their choice in **Step 1**.

7. If the user pressed **[F5] Remove Supply**
   - The program will ask the user to enter the name of the item. If it is on the list, it will be removed. If not, it displays an error.



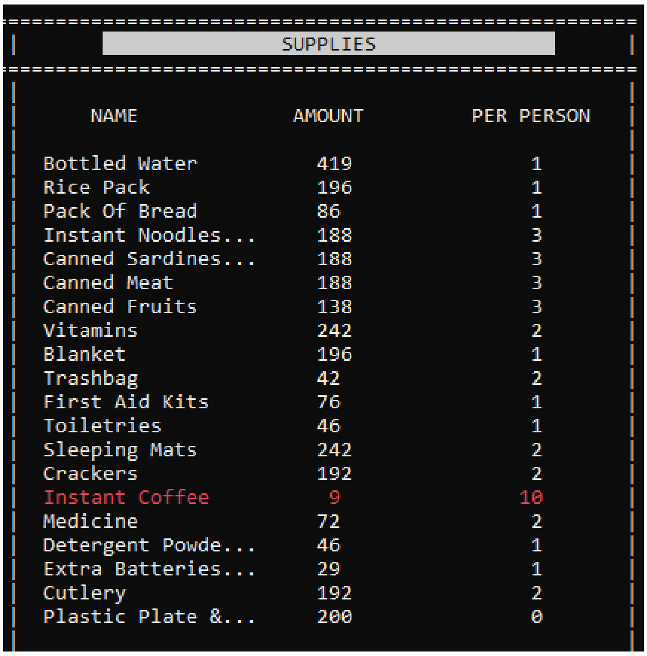
```
          Enter the name of the item:
             Pancit Canton

Succesfully deleted the item from the list.
```



```
Enter the name of the item:
   Face Mask

Item not found on the list!
```

   - The user will then be instructed to press a key of their choice in **Step 1**.

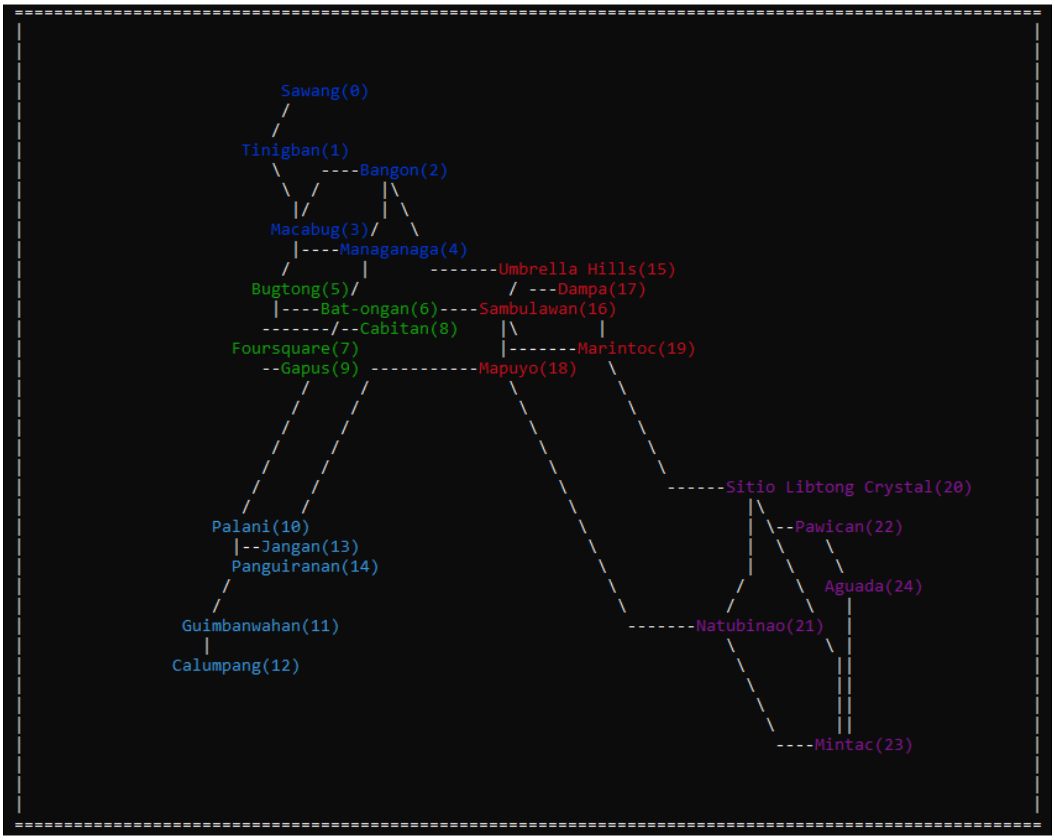
8. If the user pressed **[F6] View Supply**
   - The option says as it is, it simply displays the list of supplies.



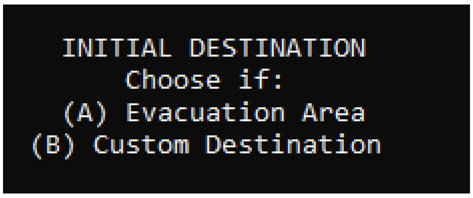
```
===============================================================
|                        SUPPLIES                             |
===============================================================
|                                                             |
|      NAME                 AMOUNT            PER PERSON      |
|                                                             |
|  Bottled Water             419                  1           |
|  Rice Pack                 196                  1           |
|  Pack Of Bread             86                   1           |
|  Instant Noodles...        188                  3           |
|  Canned Sardines...        188                  3           |
|  Canned Meat               188                  3           |
|  Canned Fruits             138                  3           |
|  Vitamins                  242                  2           |
|  Blanket                   196                  1           |
|  Trashbag                  42                   2           |
|  First Aid Kits            76                   1           |
|  Toiletries                46                   1           |
|  Sleeping Mats             242                  2           |
|  Crackers                  192                  2           |
|  Instant Coffee             9                  10           |
|  Medicine                  72                   2           |
|  Detergent Powde...        46                   1           |
|  Extra Batteries...        29                   1           |
|  Cutlery                   192                  2           |
|  Plastic Plate &...        200                  0           |
|                                                             |
```

   - The user will then be instructed to press a key of their choice in **Step 1**.

9. If the user pressed **[F7] Location Finder**
   - The user has presented a map of the island of their choice.

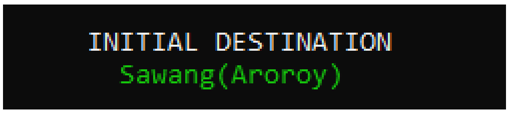


- The user has to choose for the initial destination either the evacuation area or a destination of their choice.



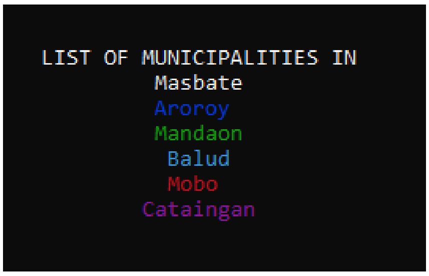
```
  INITIAL DESTINATION
      Choose if:
  (A) Evacuation Area
(B) Custom Destination
```

- If the user chooses the evacuation area:
    - The program will automatically assign the evacuation area available on the map.



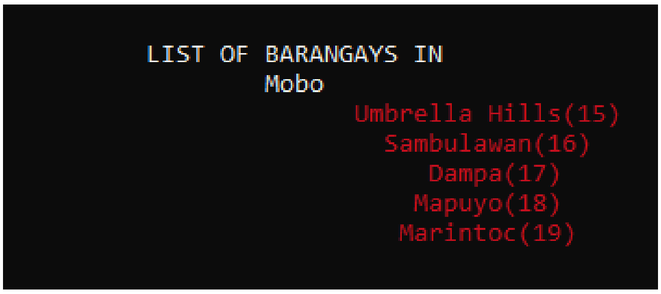
```
INITIAL DESTINATION
  Sawang(Aroroy)
```

- If the user chooses a custom destination:
    - The program will instruct the user to select the municipality of their choice. The list can be seen by the user below…



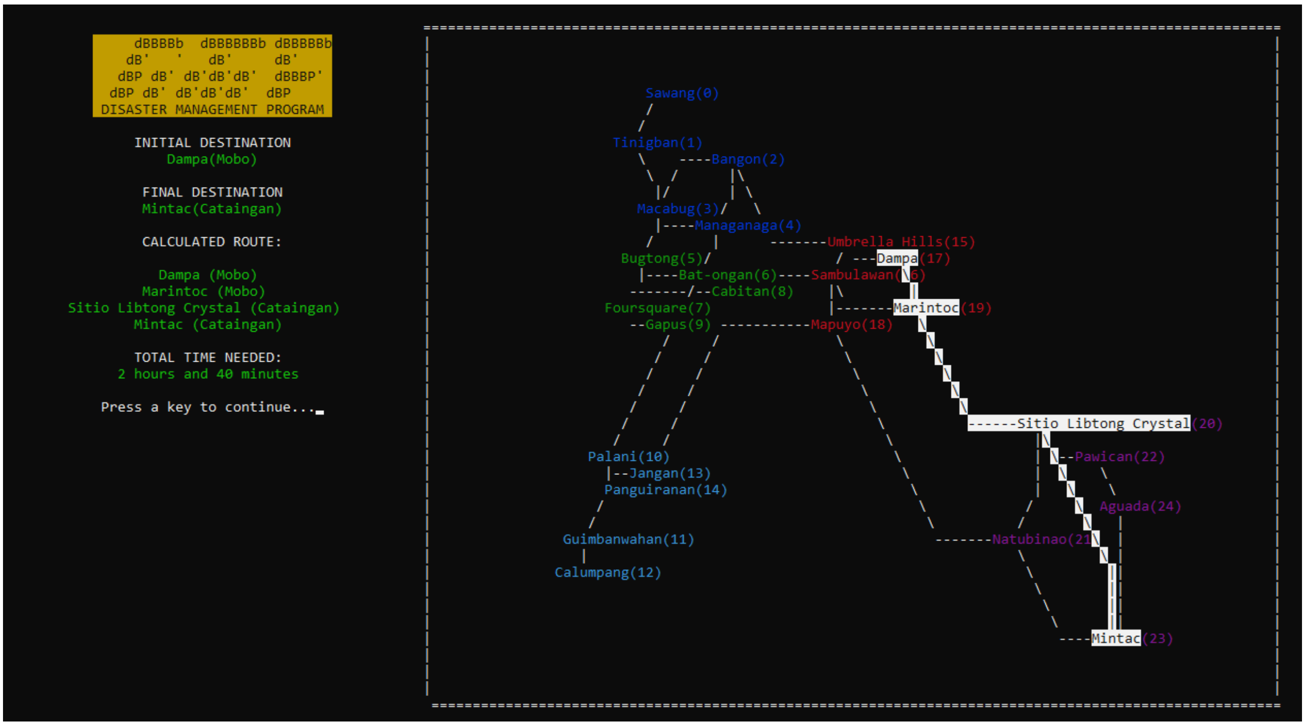
```
LIST OF MUNICIPALITIES IN
        Masbate
        Aroroy
        Mandaon
         Balud
         Mobo
       Cataingan
```

- After selecting a municipality, the user has to select the list of available barangays. Note that for convenience purposes, the user may enter the number associated with it.



```
LIST OF BARANGAYS IN
        Mobo
               Umbrella Hills(15)
                 Sambulawan(16)
                    Dampa(17)
                   Mapuyo(18)
                  Marintoc(19)
```

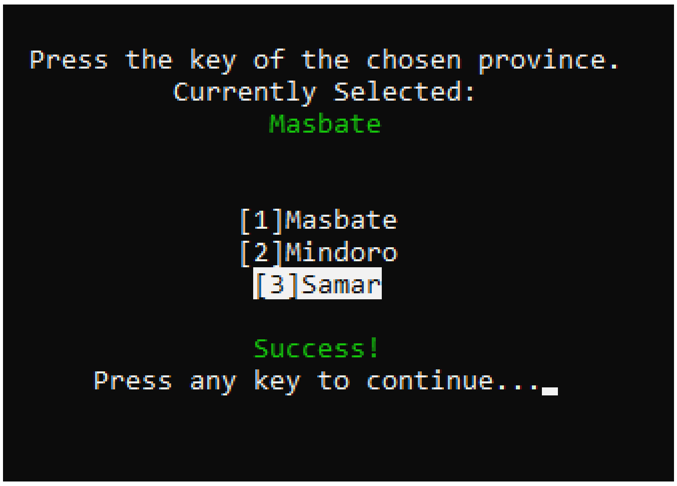
- Then the user will be instructed to choose the final destination. Like in the initial destination, the user can also opt to either choose the evacuation area or a destination of their choice.
- After choosing the initial and final destination, the user is presented the following information:
    - The shortest (and fastest) route available to be traversed from the initial and final destination.
    - The minimum time needed before reaching the final destination (in normal conditions).
    - And the highlighted route (white background).



```
     dBBBBb  dBBBBBBb dBBBBBb
    dB'   '   dB'     dB'
   dBP dB' dB'dB'dB'  dBBBP'
  dBP dB' dB'dB'dB'  dBP
 DISASTER MANAGEMENT PROGRAM

     INITIAL DESTINATION
         Dampa(Mobo)

      FINAL DESTINATION
      Mintac(Cataingan)

      CALCULATED ROUTE:

        Dampa (Mobo)
      Marintoc (Mobo)
Sitio Libtong Crystal (Cataingan)
     Mintac (Cataingan)

     TOTAL TIME NEEDED:
   2 hours and 40 minutes

  Press a key to continue..._
```

- The user will then be instructed to press a key of their choice in **Step 1**.

10. If the user pressed **[F8] Change Location,**
    - The user is instructed to press the key of their chosen province.

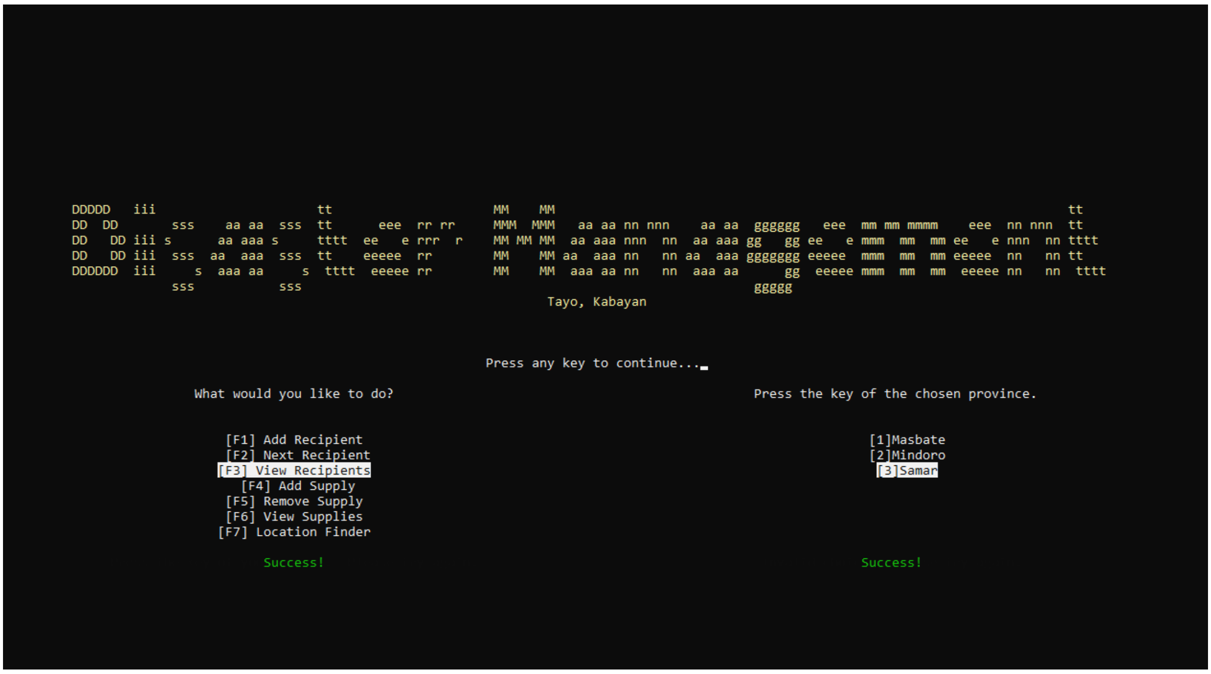


```
Press the key of the chosen province.
          Currently Selected:
                Masbate


              [1]Masbate
              [2]Mindoro
               [3]Samar

               Success!
    Press any key to continue...
```

    - Then the queues and supplies lists will update accordingly.
    - The user will then be instructed to press a key of their choice in **Step 1**.
11. If the user pressed **[F9] Exit the program.**
    - The program will exit accordingly.

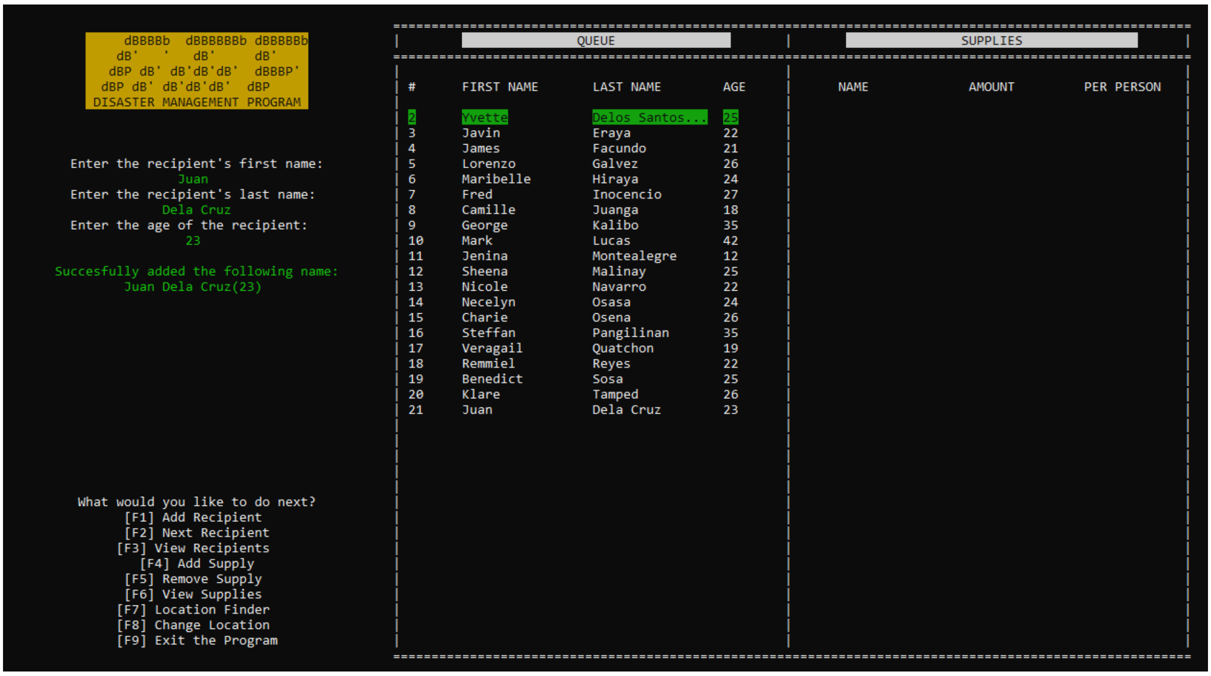
SAMPLE RUNNING AND OUTPUT OF THE PROGRAM

Front Page



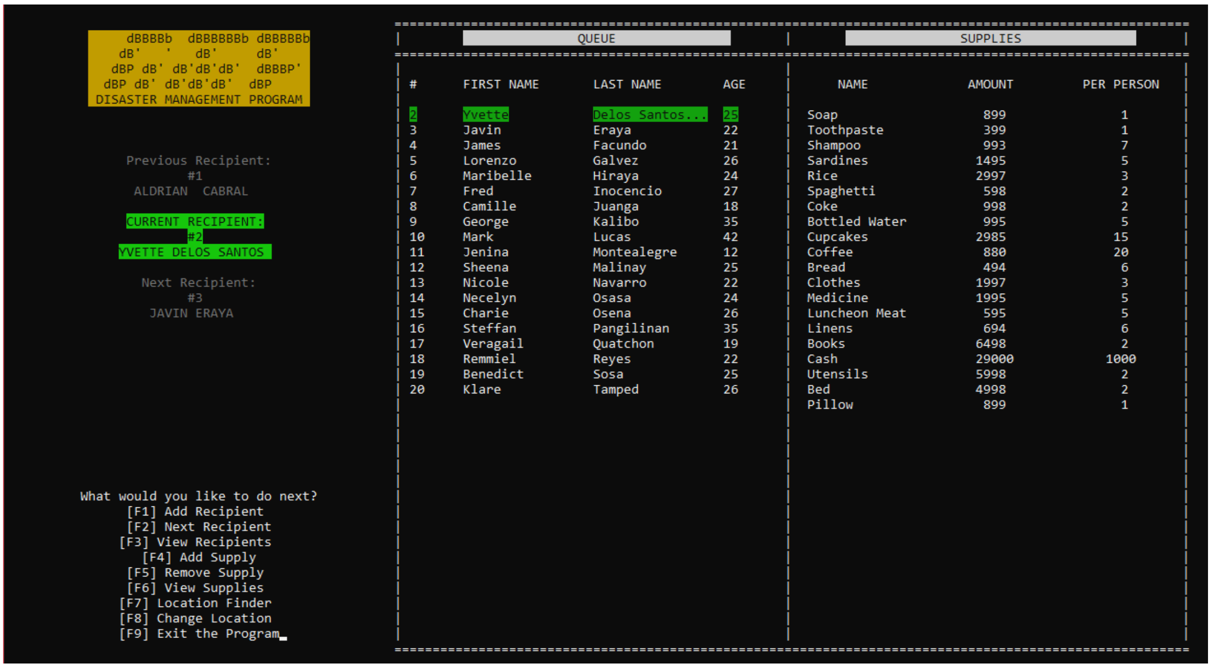
```
DDDDD   iii                    tt                     MM    MM                                                                      tt
DD  DD       sss    aa aa  sss  tt      eee  rr rr     MMM  MMM   aa aa nn nnn    aa aa  gggggg   eee  mm mm mmmm    eee  nn nnn  tt
DD   DD iii s      aa aaa s     tttt  ee   e rrr  r    MM MM MM  aa aaa nnn  nn  aa aaa gg    gg ee   e mmm  mm  mm ee   e nnn  nn tttt
DD   DD iii  sss  aa  aaa  sss  tt    eeeee  rr        MM    MM aa  aaa nn   nn aa  aaa ggggggg eeeee  mmm  mm  mm eeeee  nn   nn tt
DDDDDD  iii     s  aaa aa     s  tttt  eeeee rr        MM    MM  aaa aa nn   nn  aaa aa      gg  eeeee mmm  mm  mm  eeeee nn   nn  tttt
             sss           sss                                                           ggggg
                                                                 Tayo, Kabayan


                                                          Press any key to continue..._

               What would you like to do?                                           Press the key of the chosen province.


                    [F1] Add Recipient                                                         [1]Masbate
                    [F2] Next Recipient                                                        [2]Mindoro
                   [F3] View Recipients                                                         [3]Samar
                      [F4] Add Supply
                    [F5] Remove Supply
                    [F6] View Supplies
                   [F7] Location Finder

                          Success!                                                              Success!
```

Add Recipient



```
     dBBBBb  dBBBBBBb dBBBBBb   ==================================================================================================
    dB'   '   dB'      dB'      |        QUEUE                               |              SUPPLIES                         |
   dBP dB' dB'dB'dB'  dBBBP'    ==================================================================================================
  dBP dB' dB'dB'dB'  dBP        |                                            |                                                |
 DISASTER MANAGEMENT PROGRAM    | #    FIRST NAME      LAST NAME       AGE   |     NAME            AMOUNT          PER PERSON  |
                                |                                            |                                                |
                                | 2    Yvette          Delos Santos... 25    |                                                |
                                | 3    Javin           Eraya           22    |                                                |
                                | 4    James           Facundo         21    |                                                |
  Enter the recipient's first name:  | 5    Lorenzo         Galvez          26    |                                                |
                Juan            | 6    Maribelle       Hiraya          24    |                                                |
  Enter the recipient's last name:   | 7    Fred            Inocencio       27    |                                                |
              Dela Cruz         | 8    Camille         Juanga          18    |                                                |
  Enter the age of the recipient:    | 9    George          Kalibo          35    |                                                |
                 23             | 10   Mark            Lucas           42    |                                                |
                                | 11   Jenina          Montealegre     12    |                                                |
Succesfully added the following name: | 12   Sheena          Malinay         25    |                                                |
          Juan Dela Cruz(23)    | 13   Nicole          Navarro         22    |                                                |
                                | 14   Necelyn         Osasa           24    |                                                |
                                | 15   Charie          Osena           26    |                                                |
                                | 16   Steffan         Pangilinan      35    |                                                |
                                | 17   Veragail        Quatchon        19    |                                                |
                                | 18   Remmiel         Reyes           22    |                                                |
                                | 19   Benedict        Sosa            25    |                                                |
                                | 20   Klare           Tamped          26    |                                                |
                                | 21   Juan            Dela Cruz       23    |                                                |
                                |                                            |                                                |
                                |                                            |                                                |
                                |                                            |                                                |
                                |                                            |                                                |
   What would you like to do next?   |                                            |                                                |
         [F1] Add Recipient     |                                            |                                                |
         [F2] Next Recipient    |                                            |                                                |
        [F3] View Recipients    |                                            |                                                |
           [F4] Add Supply      |                                            |                                                |
         [F5] Remove Supply     |                                            |                                                |
         [F6] View Supplies     |                                            |                                                |
        [F7] Location Finder    |                                            |                                                |
        [F8] Change Location    |                                            |                                                |
        [F9] Exit the Program   |                                            |                                                |
                                ==================================================================================================
```

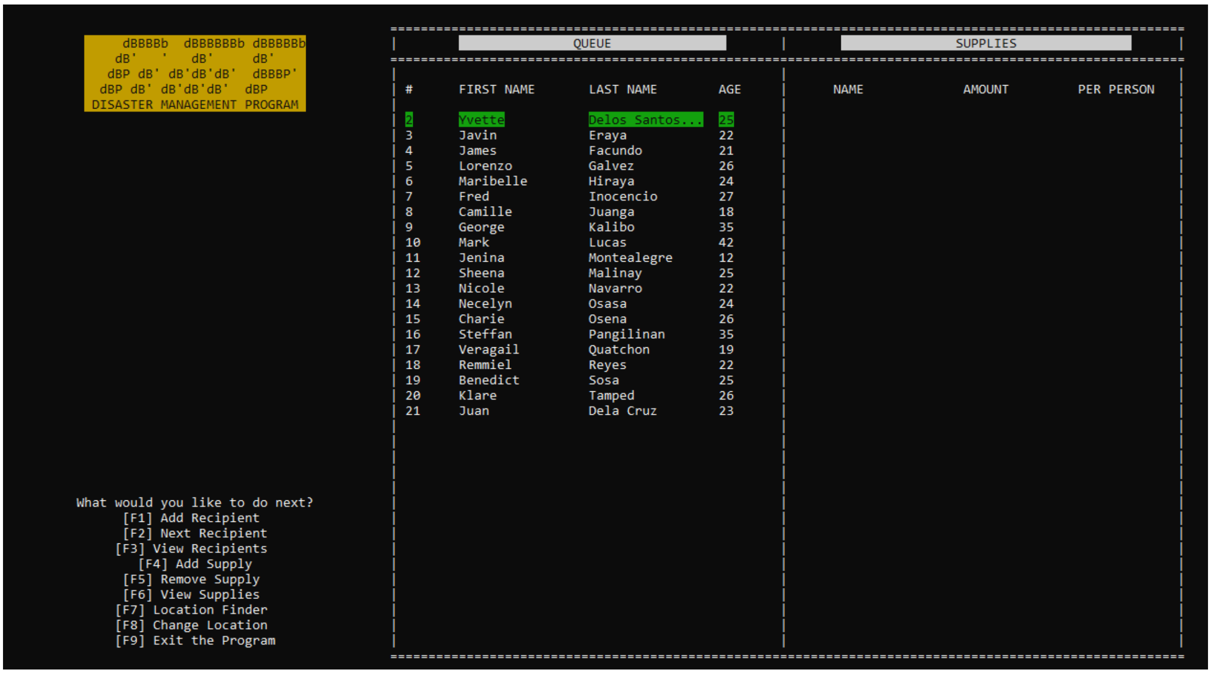
Next Recipient



```
     dBBBBb  dBBBBBBb dBBBBBb
    dB'   '   dB'      dB'
   dBP dB' dB'dB'dB'  dBBBP'
  dBP dB' dB'dB'dB'  dBP
  DISASTER MANAGEMENT PROGRAM


     Previous Recipient:
             #1
      ALDRIAN  CABRAL

     CURRENT RECIPIENT:
             #2
    YVETTE DELOS SANTOS

       Next Recipient:
             #3
         JAVIN ERAYA


What would you like to do next?
      [F1] Add Recipient
      [F2] Next Recipient
     [F3] View Recipients
        [F4] Add Supply
      [F5] Remove Supply
      [F6] View Supplies
     [F7] Location Finder
     [F8] Change Location
     [F9] Exit the Program
```

```
====================================================================================================
|           QUEUE                            |                   SUPPLIES                          |
====================================================================================================
|                                            |                                                     |
| #    FIRST NAME     LAST NAME        AGE   |   NAME                 AMOUNT          PER PERSON   |
|                                            |                                                     |
| 2    Yvette         Delos Santos...  25    |   Soap                  899               1         |
| 3    Javin          Eraya            22    |   Toothpaste            399               1         |
| 4    James          Facundo          21    |   Shampoo               993               7         |
| 5    Lorenzo        Galvez           26    |   Sardines             1495               5         |
| 6    Maribelle      Hiraya           24    |   Rice                 2997               3         |
| 7    Fred           Inocencio        27    |   Spaghetti             598               2         |
| 8    Camille        Juanga           18    |   Coke                  998               2         |
| 9    George         Kalibo           35    |   Bottled Water         995               5         |
| 10   Mark           Lucas            42    |   Cupcakes             2985              15         |
| 11   Jenina         Montealegre      12    |   Coffee                880              20         |
| 12   Sheena         Malinay          25    |   Bread                 494               6         |
| 13   Nicole         Navarro          22    |   Clothes              1997               3         |
| 14   Necelyn        Osasa            24    |   Medicine             1995               5         |
| 15   Charie         Osena            26    |   Luncheon Meat         595               5         |
| 16   Steffan        Pangilinan       35    |   Linens                694               6         |
| 17   Veragail       Quatchon         19    |   Books                6498               2         |
| 18   Remmiel        Reyes            22    |   Cash                29000            1000         |
| 19   Benedict       Sosa             25    |   Utensils             5998               2         |
| 20   Klare          Tamped           26    |   Bed                  4998               2         |
|                                            |   Pillow                899               1         |
|                                            |                                                     |
====================================================================================================
```

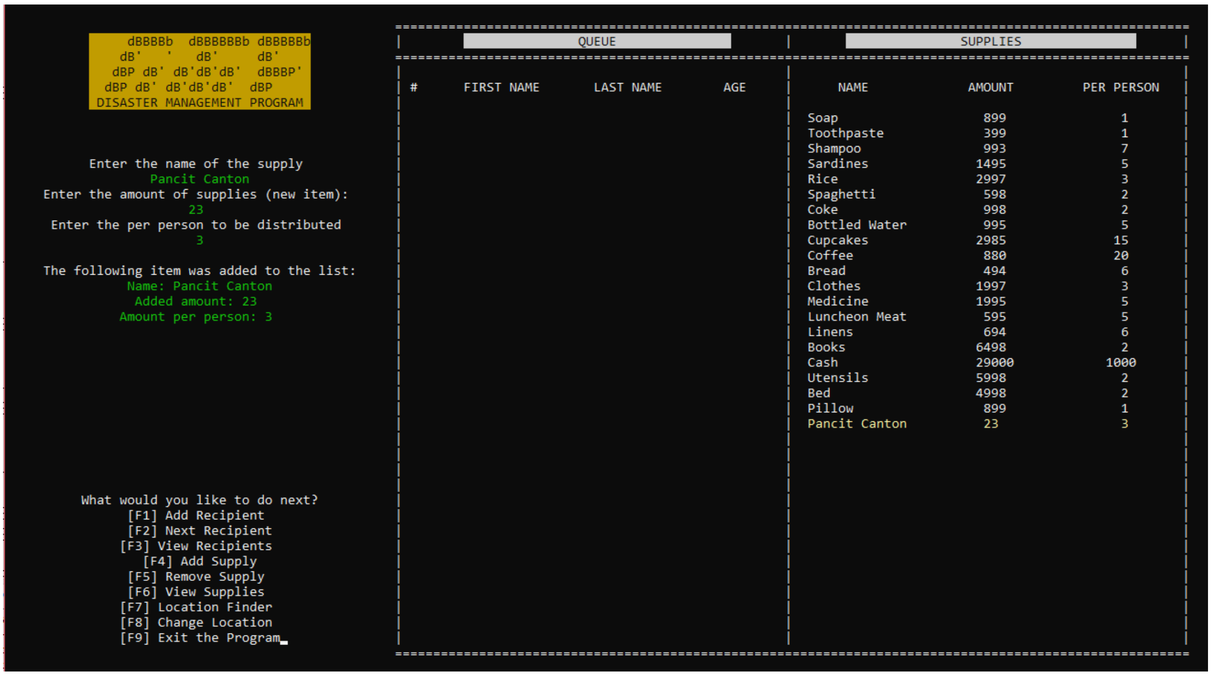
View Recipients



```
     dBBBBb  dBBBBBBb dBBBBBb
    dB'   '   dB'      dB'
   dBP dB' dB'dB'dB'  dBBBP'
  dBP dB' dB'dB'dB'  dBP
  DISASTER MANAGEMENT PROGRAM


What would you like to do next?
      [F1] Add Recipient
      [F2] Next Recipient
     [F3] View Recipients
        [F4] Add Supply
      [F5] Remove Supply
      [F6] View Supplies
     [F7] Location Finder
     [F8] Change Location
     [F9] Exit the Program
```

```
====================================================================================================
|           QUEUE                            |                   SUPPLIES                          |
====================================================================================================
|                                            |                                                     |
| #    FIRST NAME     LAST NAME        AGE   |   NAME                 AMOUNT          PER PERSON   |
|                                            |                                                     |
| 2    Yvette         Delos Santos...  25    |                                                     |
| 3    Javin          Eraya            22    |                                                     |
| 4    James          Facundo          21    |                                                     |
| 5    Lorenzo        Galvez           26    |                                                     |
| 6    Maribelle      Hiraya           24    |                                                     |
| 7    Fred           Inocencio        27    |                                                     |
| 8    Camille        Juanga           18    |                                                     |
| 9    George         Kalibo           35    |                                                     |
| 10   Mark           Lucas            42    |                                                     |
| 11   Jenina         Montealegre      12    |                                                     |
| 12   Sheena         Malinay          25    |                                                     |
| 13   Nicole         Navarro          22    |                                                     |
| 14   Necelyn        Osasa            24    |                                                     |
| 15   Charie         Osena            26    |                                                     |
| 16   Steffan        Pangilinan       35    |                                                     |
| 17   Veragail       Quatchon         19    |                                                     |
| 18   Remmiel        Reyes            22    |                                                     |
| 19   Benedict       Sosa             25    |                                                     |
| 20   Klare          Tamped           26    |                                                     |
| 21   Juan           Dela Cruz        23    |                                                     |
|                                            |                                                     |
====================================================================================================
```

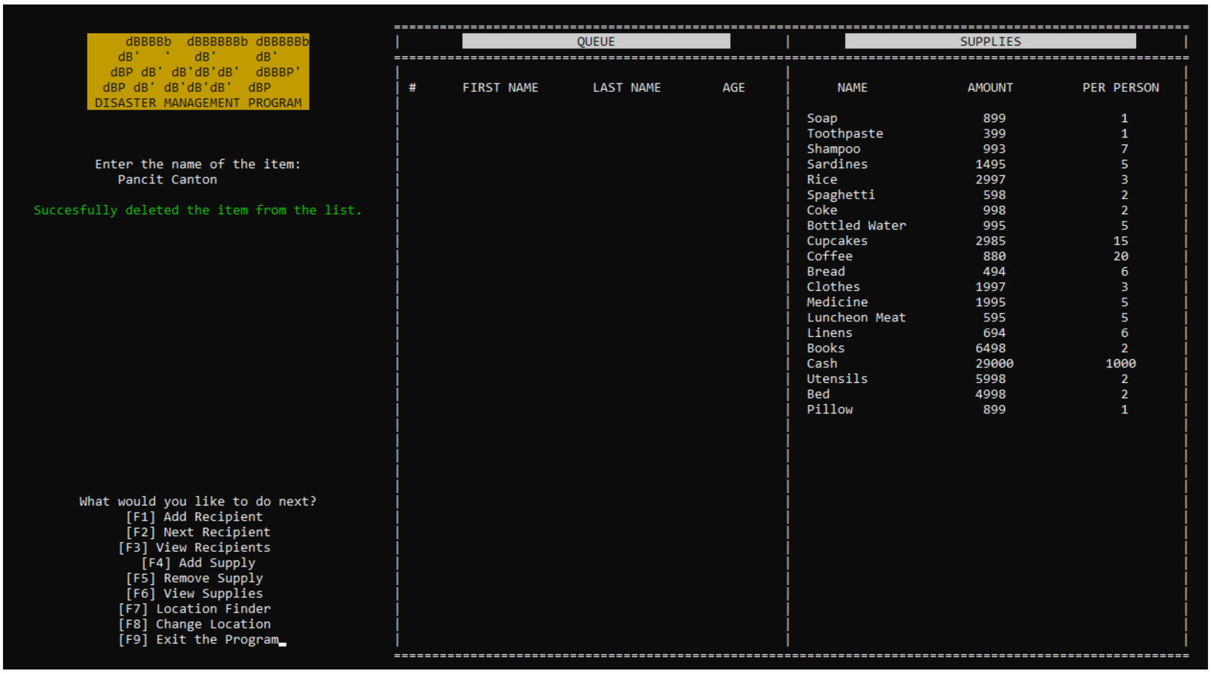
Add Supplies



```
     dBBBBb  dBBBBBBb dBBBBBb
   dB'   '   dB'      dB'
  dBP dB' dB'dB'dB'   dBBBP'
 dBP dB' dB'dB'dB'   dBP
 DISASTER MANAGEMENT PROGRAM


        Enter the name of the supply
                Pancit Canton
   Enter the amount of supplies (new item):
                     23
      Enter the per person to be distributed
                      3

  The following item was added to the list:
              Name: Pancit Canton
               Added amount: 23
            Amount per person: 3


          What would you like to do next?
                [F1] Add Recipient
                [F2] Next Recipient
               [F3] View Recipients
                  [F4] Add Supply
                [F5] Remove Supply
                [F6] View Supplies
               [F7] Location Finder
               [F8] Change Location
               [F9] Exit the Program_
```

```
=========================================================================================================
|            QUEUE                      |                  SUPPLIES                                    |
=========================================================================================================
| #     FIRST NAME     LAST NAME    AGE  |      NAME            AMOUNT          PER PERSON              |
|                                        |  Soap                  899               1                   |
|                                        |  Toothpaste            399               1                   |
|                                        |  Shampoo               993               7                   |
|                                        |  Sardines             1495               5                   |
|                                        |  Rice                 2997               3                   |
|                                        |  Spaghetti             598               2                   |
|                                        |  Coke                  998               2                   |
|                                        |  Bottled Water         995               5                   |
|                                        |  Cupcakes             2985              15                   |
|                                        |  Coffee                880              20                   |
|                                        |  Bread                 494               6                   |
|                                        |  Clothes              1997               3                   |
|                                        |  Medicine             1995               5                   |
|                                        |  Luncheon Meat         595               5                   |
|                                        |  Linens                694               6                   |
|                                        |  Books                6498               2                   |
|                                        |  Cash                29000            1000                   |
|                                        |  Utensils             5998               2                   |
|                                        |  Bed                  4998               2                   |
|                                        |  Pillow                899               1                   |
|                                        |  Pancit Canton          23               3                   |
=========================================================================================================
```

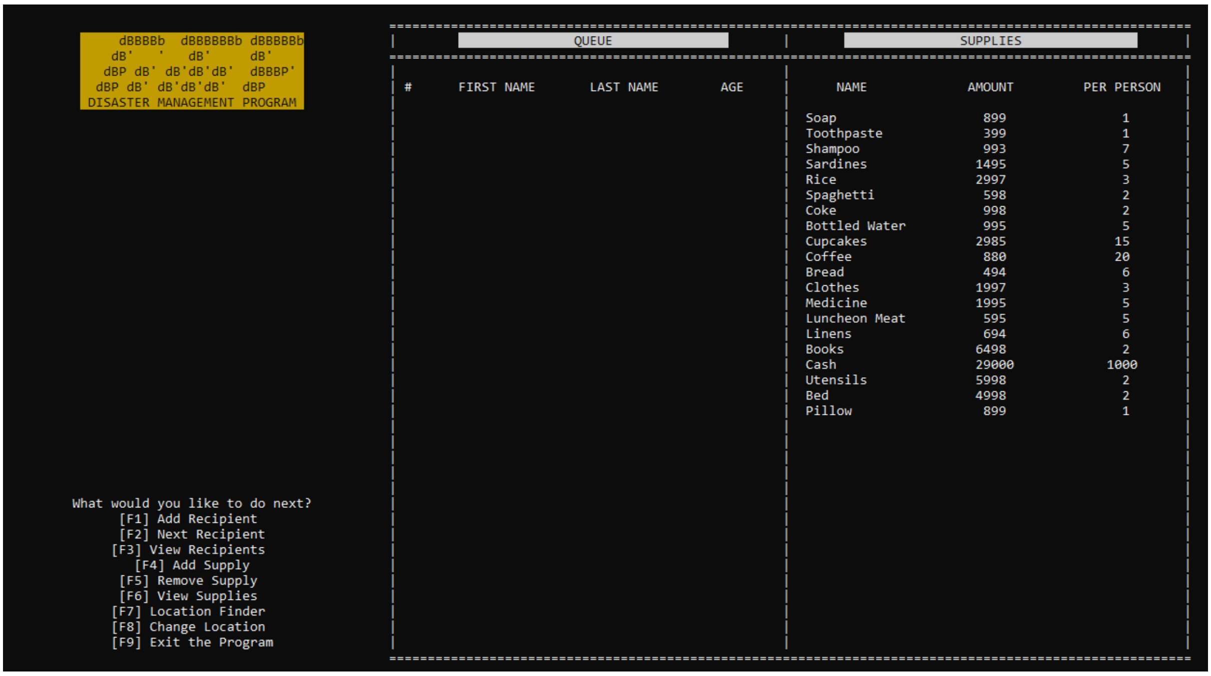
Remove Supply



```
     dBBBBb  dBBBBBBb dBBBBBb
   dB'   '   dB'      dB'
  dBP dB' dB'dB'dB'   dBBBP'
 dBP dB' dB'dB'dB'   dBP
 DISASTER MANAGEMENT PROGRAM


          Enter the name of the item:
                Pancit Canton

    Succesfully deleted the item from the list.


          What would you like to do next?
                [F1] Add Recipient
                [F2] Next Recipient
               [F3] View Recipients
                  [F4] Add Supply
                [F5] Remove Supply
                [F6] View Supplies
               [F7] Location Finder
               [F8] Change Location
               [F9] Exit the Program_
```

```
=========================================================================================================
|            QUEUE                      |                  SUPPLIES                                    |
=========================================================================================================
| #     FIRST NAME     LAST NAME    AGE  |      NAME            AMOUNT          PER PERSON              |
|                                        |  Soap                  899               1                   |
|                                        |  Toothpaste            399               1                   |
|                                        |  Shampoo               993               7                   |
|                                        |  Sardines             1495               5                   |
|                                        |  Rice                 2997               3                   |
|                                        |  Spaghetti             598               2                   |
|                                        |  Coke                  998               2                   |
|                                        |  Bottled Water         995               5                   |
|                                        |  Cupcakes             2985              15                   |
|                                        |  Coffee                880              20                   |
|                                        |  Bread                 494               6                   |
|                                        |  Clothes              1997               3                   |
|                                        |  Medicine             1995               5                   |
|                                        |  Luncheon Meat         595               5                   |
|                                        |  Linens                694               6                   |
|                                        |  Books                6498               2                   |
|                                        |  Cash                29000            1000                   |
|                                        |  Utensils             5998               2                   |
|                                        |  Bed                  4998               2                   |
|                                        |  Pillow                899               1                   |
=========================================================================================================
```

View Supplies

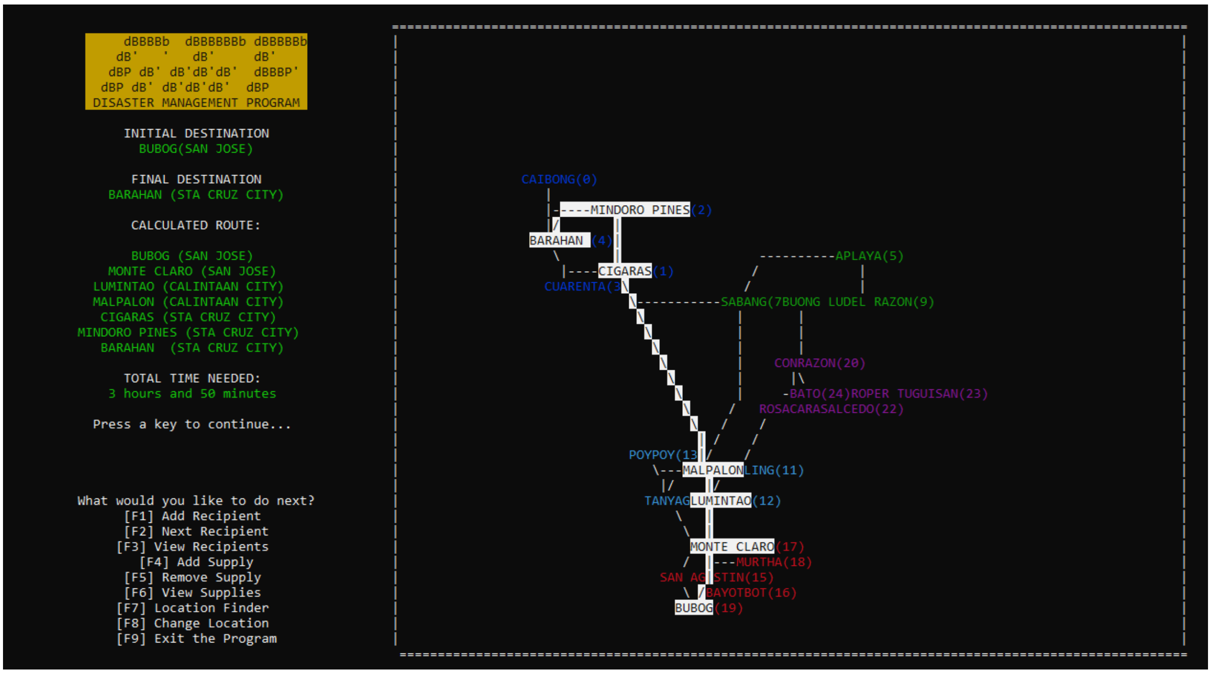


```
  dBBBBb  dBBBBBBb dBBBBBb
 dB'   '    dB'      dB'
dBP dB' dB'dB'dB'  dBBBP'
dBP dB' dB'dB'dB'  dBP
DISASTER MANAGEMENT PROGRAM
```

```
======================================================================================
|                 QUEUE                 |                 SUPPLIES                 |
======================================================================================
|                                       |                                          |
| #    FIRST NAME    LAST NAME    AGE   |      NAME          AMOUNT    PER PERSON  |
|                                       |                                          |
|                                       |  Soap               899           1     |
|                                       |  Toothpaste         399           1     |
|                                       |  Shampoo            993           7     |
|                                       |  Sardines          1495           5     |
|                                       |  Rice              2997           3     |
|                                       |  Spaghetti          598           2     |
|                                       |  Coke               998           2     |
|                                       |  Bottled Water      995           5     |
|                                       |  Cupcakes          2985          15     |
|                                       |  Coffee             880          20     |
|                                       |  Bread              494           6     |
|                                       |  Clothes           1997           3     |
|                                       |  Medicine          1995           5     |
|                                       |  Luncheon Meat      595           5     |
|                                       |  Linens             694           6     |
|                                       |  Books             6498           2     |
|                                       |  Cash             29000        1000     |
|                                       |  Utensils          5998           2     |
|                                       |  Bed               4998           2     |
|                                       |  Pillow             899           1     |
|                                       |                                          |
======================================================================================
```

```
What would you like to do next?
      [F1] Add Recipient
      [F2] Next Recipient
     [F3] View Recipients
        [F4] Add Supply
      [F5] Remove Supply
      [F6] View Supplies
     [F7] Location Finder
     [F8] Change Location
     [F9] Exit the Program
```

Location Finder



```
  dBBBBb  dBBBBBBb dBBBBBb
 dB'   '    dB'      dB'
dBP dB' dB'dB'dB'  dBBBP'
dBP dB' dB'dB'dB'  dBP
DISASTER MANAGEMENT PROGRAM

    INITIAL DESTINATION
      BUBOG(SAN JOSE)

     FINAL DESTINATION
  BARAHAN (STA CRUZ CITY)

     CALCULATED ROUTE:

      BUBOG (SAN JOSE)
   MONTE CLARO (SAN JOSE)
 LUMINTAO (CALINTAAN CITY)
 MALPALON (CALINTAAN CITY)
   CIGARAS (STA CRUZ CITY)
MINDORO PINES (STA CRUZ CITY)
  BARAHAN  (STA CRUZ CITY)

     TOTAL TIME NEEDED:
  3 hours and 50 minutes

   Press a key to continue...


What would you like to do next?
      [F1] Add Recipient
      [F2] Next Recipient
     [F3] View Recipients
        [F4] Add Supply
      [F5] Remove Supply
      [F6] View Supplies
     [F7] Location Finder
     [F8] Change Location
     [F9] Exit the Program
```