WGUPS Routing Program

Scenario:

The Western Governors University Parcel Service (WGUPS) needs to determine an efficient route and delivery distribution for their Daily Local Deliveries (DLD) because packages are not currently being consistently delivered by their promised deadline. The Salt Lake City DLD route has **three trucks**, **two drivers**, and **an average of 40 packages to deliver** each day. Each package has specific criteria and delivery requirements.

Your task is to determine an algorithm, write code, and present a solution where all 40 packages (listed in the attached "WGUPS Package File") will be delivered on time while meeting each package's requirements and **keeping the combined total distance traveled under 140 miles for both trucks**. The specific delivery locations are shown on the attached "Salt Lake City Downtown Map," and distances to each location are given in the attached "WGUPS Distance Table." The intent is to use the program for this specific location and also for many other cities in each state where WGU has a presence. As such, you will need to include detailed comments to make your code easy to follow and to justify the decisions you made while writing your scripts.

Keep in mind that the supervisor should be able to see, at assigned points, the progress of each truck and its packages by any of the variables listed in the "WGUPS Package File," including what has been delivered and at what time the delivery occurred.

Assumptions:

- Each truck can carry a maximum of 16 packages, and the ID number of each package is unique.
- The trucks travel at an average speed of 18 miles per hour and have an infinite amount of gas with no need to stop.
- There are no collisions.
- Three trucks and two drivers are available for deliveries. Each driver stays with the same truck as long as that truck is in service.
- Drivers leave the hub no earlier than 8:00 a.m., with the truck loaded, and can return to the hub for packages if needed.
- The delivery and loading times are instantaneous, i.e., no time passes while at a delivery or when moving packages to a truck at the hub (that time is factored into the calculation of the average speed of the trucks).
- There is up to one special note associated with a package.
- The delivery address for package #9, Third District Juvenile Court, is wrong and will be corrected at 10:20 a.m. WGUPS is aware that the address is incorrect and will be updated at 10:20 a.m. However, WGUPS does not know the correct address (410 S State St., Salt Lake City, UT 84111) until 10:20 a.m.
- The distances provided in the WGUPS Distance Table are equal regardless of the direction traveled.
- The day ends when all 40 packages have been delivered.

**EOD = End of Day

A. Identify a Self-Adjusting Algorithm

I chose the Nearest Neighbor algorithm to help optimize the delivery time by finding the nearest addresses. The algorithm will essentially go through the list of all addresses (starting at Western Governors University as the HUB), compare the distances, and find all the unvisited nearest neighbors. It will repeat this process until all addresses have been visited.

B. Overview of Program

1. Nearest Neighbor Algorithm Logic Through Psuedocode

This program will find the nearest location (based on mileage) to find the quickest route for each truck. A function is created to allow the flexibility to insert data based on each truck.

```
START

Function best path for each truck

    Pass In: Truck dictionary,
             Truck distances,
             Truck csv (DataFrame of truck distances),
             Truck pathway (empty list for addresses),
             Truck address miles (miles between each location)


    Number of addresses:= length of (Truck csv)
    Visited?:= [List of "False"] * Number of addresses
    Path:= [Empty List]
    Distance:= 0
    Current location:= 0

    Current location is added to [Path List]
    Current location in Visited? is TRUE


    WHILE length of (Path) < Number of addresses
        Nearest address is None
        Nearest distance is infinity


        FOR variable X in the range of (Number of addresses)


            IF variable X of Visited? is FALSE
                Distance:= Float(variable X of Current location of Distance)


                IF Distance < Nearest distance
                    Nearest address:= variable X
                    Nearest distance:= Distance

                ENDIF

            ENDIF

        ENDFOR

        Nearest distance is added to [Truck address miles List]
        Current location:= Nearest address
        Current location is added to [Path List]
        Current location in Visited? is TRUE

    ENDWHILE

    Distance:= the sum of Truck address miles rounded to one decimal
    Float(Path's 0 index of Path's last index of Distance) is added to [Truck address miles
List]


    Name of location:= [Empty List]

    FOR Column name of Truck csv's column values
        Column name is added to [Name of location List]

    ENDFOR
```

```
FOR variable X in Path
    Pathway address name:= variable X of Name of location

ENDFOR


FOR both variable X and variable Y of both Path and Pathway address name
    variable Y is added to [Truck pathway List]

ENDFOR


Pass Out: Truck address miles
          Truck pathway

          PRINT "Optimized Truck Path: Path"

          PRINT "Total Distance: Distance"

          PRINT "Best Path for Truck:"
          PRINT "Location of variable X in Path - variable Y of Pathway address name"

Endfunction

END
```

2. Programming Environment for Project

The programming environment I used is Jupyter Notebook as it allows me to split up my code (but still allows it to run properly) and visualize the code I've programmed. It also is very easy to read as either a `.ipynb` or `.pdf`, but can also be transferred and saved as a `.py` file.

3. Evaluate Space-Time Complexity in Entire Program

This will be broken down by each section and then the overall program.

- **Part C: O(n) + O(1) = O(n)**
  - The first section contains the `WGUPS_Package_File.csv` and the `WGUPS_Distance_Table.csv`. The first file `WGUPS_Package_File.csv` time complexity is O(1) due to the fact the variables being assigned are fixed, while `WGUPS_Distance_Table.csv` time complexity is O(n) + O(1), which is O(n) because the operation is repeated with for-loop n times.
  - The second section of Part C is filling in the missing values. The time complexity for this second section is O(n2) because the operation contains a nested for-loop.
- **Part E: O(n) + O(n2) + O(1) + O(n2) + O(n2) = O(n2)**
  - The class Hash Table has functions within that are all O(1) with the exception of the print function. The print function contains a for-loop which means the content within isn't fixed (the variables will change with each iteration). This means that the Hash Table is O(n) + O(1) = O(n)
  - The first part of the second section involves loading the trucks manually, which contains changing variables. This means that manually loading the truck is O(n). The second part contains code for each truck (not a function, but has the ability to be) that takes the Hash Table data, and turns it into a dictionary that is easy to read and pull data from. The code's time complexity is: O(n) + O(n2) + O(n2) + O(n) + O(n) + O(n) = O(n2).
  - The `.csv` files created for each individual truck is O(1) as the variables are fixed.
  - The Nearest Neighbor Algorithm is a function (not the code underneath the image) that is intended to take the length of the truck `.csv` file, then take the indexes of the length and run it through the algorithm to determine the nearest neighbors for each truck. With doing so, the time complexity is O(n2).
  - The function created to get the packages sent out and delivered to each location contains variables that are not fixed, they go through at least two for-loops, which mean the function's time complexity is O(n2).
- **Part F: O(n2)**
  - The look up function relies on the user input to find the package they want. To create this function, it involves a while-loop, a for-loop, and multiple if-else statements. This means that this function is O(n2).
- **Part G: O(n4)**
  - This function is the most complex as it requires taking data from previous functions and extracting a dictionary from a dictionary, and extracting the data from there. This function's time complexity is O(n4).

The overall time complexity of the entire program is **O(n4)**, also known as a Polynomial Time Complexity.

4. Adaptability

Both the self-adjusting algorithm (Nearest Neighbor) and the self-adjusting data structure (Hash Table) are both fairly scalable. The algorithm shouldn't have any issue being able to compile and run additional data as the algorithm takes the location data from the packages to run. The data structure ideally shouldn't have any issues, but it depends on the information of the packages. Truck one takes packages that need to be delivered by 10:30am (more specifically 9:00am and 10:30am), truck two and truck three have the packages divided between them (unless the packages suggest specific trucks) by having truck two contain the rest of the even packages, and truck three containing the odd. Therefore, with the self-adjusting data structure, there may be some trucks that contain a lot more packages than the others.

5. Software Efficiency and Maintainability

The time complexity of the entire program is a Polynomial Time Complexity. For more detail about this, please reference Section 3 above.

The program is also fairly easy to maintain, especially the bottom half where most of the program uses functions that pass in certain variables. However, the upper half of the program may be a bit more difficult as the upper half focuses on separating the packages based on each truck as well as making the package information easier to pull data from; so the upper half of the program does not involve functions. This means that if anything ever has to be repaired, the upper part of the program will need to checked over to ensure everything ties in correctly as compared to the bottom half.

6. Strengths and Weaknesses of Self-Adjusting Data Structures

Strengths:

1. One of the most important strengths of a self-adjusting data structure is that it's self-adjusting. This theoretically means more (or less) data can be integrated with the data structure and will still work regardless as it's able to adjust to the different amount of variables.
2. Both the key, and the value of the data structure can contain different types of data types such as strings, integers, floats, etc., including lists (but lists can only be a value, not key).

Weaknesses:

1. Collisions can occur if there are multiple keys that are the same variable which would cause multiple values to be constantly overwritten until the last key (of the same variable) occurs.
2. If the size of the data structure is too small, multiple variables will be moved into a single bucket causing the efficiency of the self-adjusting data structure to worsen.

C. Write Program to Deliver All Packages

1. Organize and Read Files

```
In [2]:  import pandas as pd
         pd.set_option('display.max_colwidth', 0)

         import re
         import math
         import datetime
         import itertools
         import copy
         from dateutil import parser
```

WGUPS Package File

```
In [3]:  package_file = pd.read_csv('WGUPS_Package_File.csv')
         package_file.head(10)
```

Out[3]:

	Unnamed: 0	Unnamed: 1	Unnamed: 2	Unnamed: 3	Unnamed: 4	Unnamed: 5	Unnamed: 6	Unnamed: 7	Unnamed: 8	Unnamed: 9	Unnam
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
1	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
2	WGUPS Package File	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
3	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
4	NHP1 : WGUPS Routing Program	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
5	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	
6	Package\nID	Address	City	State	Zip	Delivery\nDeadline	Mass\nKILO	page 1 of 1PageSpecial Notes	NaN	NaN	
7	1	195 W Oakland Ave	Salt Lake City	UT	84115	10:30 AM	21	NaN	NaN	NaN	
8	2	2530 S 500 E	Salt Lake City	UT	84106	EOD	44	NaN	NaN	NaN	
9	3	233 Canyon Rd	Salt Lake City	UT	84103	EOD	2	Can only be on truck 2	NaN	NaN	

When viewing `WGUPS_Package_File.csv`, it is completely unorganized and untidy. Therefore, the `.csv` needs to be fixed so the data can be used properly.

- Remove unnecessary titles.
- Replace column names from NaN.
- Remove columns titled as NaN (but not all columns that contain NaN).
- Rename columns so `\n` is removed.

In [4]:
```python
#remove unnecessary titles
new_package_file = package_file.iloc[6:]
new_package_file = new_package_file.reset_index(drop = True)

#replace column names from NaN
new_package_file.columns = new_package_file.iloc[0]
```

In [5]:
```python
new_package_file = new_package_file.iloc[1:]
```

In [6]:
```python
#remove columns titled as NaN
new_package_file = new_package_file.dropna(axis = 1, how = 'all')

#rename columns
new_package_file = new_package_file.rename(columns = {'Package\nID': 'Package ID',
                              'Delivery\nDeadline': 'Delivery Deadline',
                              'Mass\nKILO': 'Mass KILO',
                              'page 1 of 1PageSpecial Notes': 'Special Notes'})

#remove any whitespace
new_package_file.columns = new_package_file.columns.str.strip()
```

In [7]:
```python
#organized WGUPS_Package_File.csv
new_package_file.head(40)
```

Out[7]:

	Package ID	Address	City	State	Zip	Delivery Deadline	Mass KILO	Special Notes
1	1	195 W Oakland Ave	Salt Lake City	UT	84115	10:30 AM	21	NaN
2	2	2530 S 500 E	Salt Lake City	UT	84106	EOD	44	NaN
3	3	233 Canyon Rd	Salt Lake City	UT	84103	EOD	2	Can only be on truck 2
4	4	380 W 2880 S	Salt Lake City	UT	84115	EOD	4	NaN
5	5	410 S State St	Salt Lake City	UT	84111	EOD	5	NaN
6	6	3060 Lester St	West Valley City	UT	84119	10:30 AM	88	Delayed on flight---will not arrive to depot until 9:05 am
7	7	1330 2100 S	Salt Lake City	UT	84106	EOD	8	NaN
8	8	300 State St	Salt Lake City	UT	84103	EOD	9	NaN
9	9	300 State St	Salt Lake City	UT	84103	EOD	2	Wrong address listed
10	10	600 E 900 South	Salt Lake City	UT	84105	EOD	1	NaN
11	11	2600 Taylorsville Blvd	Salt Lake City	UT	84118	EOD	1	NaN
12	12	3575 W Valley Central Station bus Loop	West Valley City	UT	84119	EOD	1	NaN
13	13	2010 W 500 S	Salt Lake City	UT	84104	10:30 AM	2	NaN
14	14	4300 S 1300 E	Millcreek	UT	84117	10:30 AM	88	Must be delivered with 15, 19
15	15	4580 S 2300 E	Holladay	UT	84117	9:00 AM	4	NaN
16	16	4580 S 2300 E	Holladay	UT	84117	10:30 AM	88	Must be delivered with 13, 19
17	17	3148 S 1100 W	Salt Lake City	UT	84119	EOD	2	NaN
18	18	1488 4800 S	Salt Lake City	UT	84123	EOD	6	Can only be on truck 2
19	19	177 W Price Ave	Salt Lake City	UT	84115	EOD	37	NaN
20	20	3595 Main St	Salt Lake City	UT	84115	10:30 AM	37	Must be delivered with 13, 15
21	21	3595 Main St	Salt Lake City	UT	84115	EOD	3	NaN
22	22	6351 South 900 East	Murray	UT	84121	EOD	2	NaN
23	23	5100 South 2700 West	Salt Lake City	UT	84118	EOD	5	NaN
24	24	5025 State St	Murray	UT	84107	EOD	7	NaN
25	25	5383 South 900 East #104	Salt Lake City	UT	84117	10:30 AM	7	Delayed on flight---will not arrive to depot until 9:05 am
26	26	5383 South 900 East #104	Salt Lake City	UT	84117	EOD	25	NaN
27	27	1060 Dalton Ave S	Salt Lake City	UT	84104	EOD	5	NaN
28	28	2835 Main St	Salt Lake City	UT	84115	EOD	7	Delayed on flight---will not arrive to depot until 9:05 am
29	29	1330 2100 S	Salt Lake City	UT	84106	10:30 AM	2	NaN
30	30	300 State St	Salt Lake City	UT	84103	10:30 AM	1	NaN
31	31	3365 S 900 W	Salt Lake City	UT	84119	10:30 AM	1	NaN
32	32	3365 S 900 W	Salt Lake City	UT	84119	EOD	1	Delayed on flight---will not arrive to depot until 9:05 am
33	33	2530 S 500 E	Salt Lake City	UT	84106	EOD	1	NaN
34	34	4580 S 2300 E	Holladay	UT	84117	10:30 AM	2	NaN
35	35	1060 Dalton Ave S	Salt Lake City	UT	84104	EOD	88	NaN
36	36	2300 Parkway Blvd	West Valley City	UT	84119	EOD	88	Can only be on truck 2
37	37	410 S State St	Salt Lake City	UT	84111	10:30 AM	2	NaN

	Package ID	Address	City	State	Zip	Delivery Deadline	Mass KILO	Special Notes
38	38	410 S State St	Salt Lake City	UT	84111	EOD	9	Can only be on truck 2
39	39	2010 W 500 S	Salt Lake City	UT	84104	EOD	9	NaN
40	40	380 W 2880 S	Salt Lake City	UT	84115	10:30 AM	45	NaN

WGUPS Distance File

```
In [8]:  distance_file = pd.read_csv('WGUPS_Distance_Table.csv')
         distance_file.head(10)
```

Out[8]:

	Unnamed: 0	Unnamed: 1	Unnamed: 2	Unnamed: 3	Unnamed: 4	Unnamed: 5	Unnamed: 6	Unnamed: 7	Unnamed: 8	Unnamed: 9	...
0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...
1	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...
2	NaN	NaN	WGUPS Distance Table	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...
3	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...
4	NaN	NaN	NHP1 : WGUPS Routing Program	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...
5	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...
6	DISTANCE BETWEEN HUBS IN MILES	NaN	Western Governors University\n4001 South 700 East, \nSalt Lake City, UT 84107	International Peace Gardens\n 1060 Dalton Ave S	Sugar House Park\n 1330 2100 S	Taylorsville-Bennion Heritage City Gov Off\n 1488 4800 S	Salt Lake City Division of Health Services \n 177 W Price Ave	South Salt Lake Public Works\n 195 W Oakland Ave	Salt Lake City Streets and Sanitation\n 2010 W 500 S	Deker Lake\n 2300 Parkway Blvd	...
7	Western Governors University\n4001 South 700 East, \nSalt Lake City, UT 84107	HUB	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...
8	International Peace Gardens\n 1060 Dalton Ave S	1060 Dalton Ave S\n(84104)	7.2	0.0	NaN	NaN	NaN	NaN	NaN	NaN	...
9	Sugar House Park\n 1330 2100 S	1330 2100 S\n(84106)	3.8	7.1	0.0	NaN	NaN	NaN	NaN	NaN	...

10 rows × 29 columns

The `WGUPS_Distance_Table.csv` is unorganized (similar to `WGUPS_Package_File.csv`), and needs to be cleaned and organized.

- Remove unnecessary titles.
- Replace column names from NaN.
- Remove NaN column (2nd column).
- Remove columns titled as NaN (but not all columns that contain NaN).
- Rename columns and rows so `\n` is removed.

```python
In [9]:  #remove unnecessary titles
         new_distance_file = distance_file.iloc[6:]
         new_distance_file = new_distance_file.reset_index(drop = True)

         #replace column names from NaN
         new_distance_file.columns = new_distance_file.iloc[0]
         new_distance_file = new_distance_file.iloc[1:]
```

```python
In [10]: #remove second column
         new_distance_file = new_distance_file.drop(new_distance_file.columns[1], axis = 1)
```

```python
In [11]: new_distance_file.head()
```

Out[11]:

	DISTANCE BETWEEN HUBS IN MILES	Western Governors University\n4001 South 700 East, \nSalt Lake City, UT 84107	International Peace Gardens\n 1060 Dalton Ave S	Sugar House Park\n 1330 2100 S	Taylorsville-Bennion Heritage City Gov Off\n 1488 4800 S	Salt Lake City Division of Health Services \n 177 W Price Ave	South Salt Lake Public Works\n 195 W Oakland Ave	Salt Lake City Streets and Sanitation\n 2010 W 500 S	Deker Lake\n 2300 Parkway Blvd	Salt Lake City Ottinger Hall\n 233 Canyon Rd	...	Housi Autha Salt La County 35 Main
1	Western Governors University\n4001 South 700 East, \nSalt Lake City, UT 84107	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	N
2	International Peace Gardens\n 1060 Dalton Ave S	7.2	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	N
3	Sugar House Park\n 1330 2100 S	3.8	7.1	0.0	NaN	NaN	NaN	NaN	NaN	NaN	...	N
4	Taylorsville-Bennion Heritage City Gov Off\n 1488 4800 S	11.0	6.4	9.2	0.0	NaN	NaN	NaN	NaN	NaN	...	N
5	Salt Lake City Division of Health Services \n 177 W Price Ave	2.2	6.0	4.4	5.6	0.0	NaN	NaN	NaN	NaN	...	N

5 rows × 28 columns

```python
In [12]: column_names = list(new_distance_file.columns.values)
         new_column_names = []

         #O(n) + O(1)
         for names in column_names:
             if "\n " in names:
                 new_column_names.append(names.replace("\n ", " "))
             else:
                 new_column_names.append(names.replace("\n", " "))
         print(new_column_names)
```

```
['DISTANCE BETWEEN HUBS IN MILES', 'Western Governors University 4001 South 700 East,  Salt Lake City, UT 84107',
 'International Peace Gardens 1060 Dalton Ave S', 'Sugar House Park 1330 2100 S', 'Taylorsville-Bennion Heritage Ci
ty Gov Off 1488 4800 S', 'Salt Lake City Division of Health Services  177 W Price Ave', 'South Salt Lake Public Wo
rks 195 W Oakland Ave', 'Salt Lake City Streets and Sanitation 2010 W 500 S', 'Deker Lake 2300 Parkway Blvd', 'Sal
t Lake City Ottinger Hall 233 Canyon Rd', 'Columbus Library 2530 S 500 E', 'Taylorsville City Hall 2600 Taylorsvil
le Blvd', 'South Salt Lake Police 2835 Main St', 'Council Hall 300 State St', 'Redwood Park 3060 Lester St', 'Salt
Lake County Mental Health 3148 S 1100 W', 'Salt Lake County/United Police Dept 3365 S 900 W', 'West Valley Prosecu
tor 3575 W Valley Central Sta bus Loop', 'Housing Auth. of Salt Lake County 3595 Main St', 'Utah DMV Administrativ
e Office 380 W 2880 S', 'Third District Juvenile Court 410 S State St', 'Cottonwood Regional Softball Complex 4300
S 1300 E', 'Holiday City Office 4580 S 2300 E', 'Murray City Museum 5025 State St', 'Valley Regional Softball Comp
lex 5100 South 2700 West', 'City Center of Rock Springs 5383 South 900 East #104', 'Rice Terrace Pavilion Park 600
E 900 South', 'Wheeler Historic Farm  6351 South 900 East']
```

In [13]:
```python
#rename columns so `\n` is removed
new_distance_file.columns = new_column_names
```

In [14]:
```python
new_distance_file = new_distance_file.rename(columns = {'Western Governors University 4001 South 700 East,  Salt La
                                                        'Western Governors University 4001 South 700 East'})
```

In [15]:
```python
#rename rows so `\n` is removed
row_names = list(new_distance_file['DISTANCE BETWEEN HUBS IN MILES'])
new_row_names = []

#O(n) + O(1)
for names in row_names:
    if "\n " in names:
        new_row_names.append(names.replace("\n ", " "))
    else:
        new_row_names.append(names.replace("\n", " "))
print(new_row_names)
```

```
['Western Governors University 4001 South 700 East,  Salt Lake City, UT 84107', 'International Peace Gardens 1060
Dalton Ave S', 'Sugar House Park 1330 2100 S', 'Taylorsville-Bennion Heritage City Gov Off 1488 4800 S', 'Salt Lak
e City Division of Health Services  177 W Price Ave', 'South Salt Lake Public Works 195 W Oakland Ave', 'Salt Lake
City Streets and Sanitation 2010 W 500 S', 'Deker Lake 2300 Parkway Blvd', 'Salt Lake City Ottinger Hall 233 Canyo
n Rd', 'Columbus Library 2530 S 500 E', 'Taylorsville City Hall 2600 Taylorsville Blvd', 'South Salt Lake Police 2
835 Main St', 'Council Hall 300 State St', 'Redwood Park 3060 Lester St', 'Salt Lake County Mental Health 3148 S 1
100 W', 'Salt Lake County/United Police Dept 3365 S 900 W', 'West Valley Prosecutor 3575 W Valley Central Sta bus
Loop', 'Housing Auth. of Salt Lake County 3595 Main St', 'Utah DMV Administrative Office 380 W 2880 S', 'Third Dis
trict Juvenile Court 410 S State St', 'Cottonwood Regional Softball Complex 4300 S 1300 E', 'Holiday City Office 4
580 S 2300 E', 'Murray City Museum 5025 State St', 'Valley Regional Softball Complex 5100 South 2700 West', 'City
Center of Rock Springs 5383 South 900 East #104', 'Rice Terrace Pavilion Park 600 E 900 South', 'Wheeler Historic
Farm  6351 South 900 East']
```

In [16]:
```python
new_distance_file['DISTANCE BETWEEN HUBS IN MILES'] = new_row_names
```

In [17]:
```python
new_distance_file['DISTANCE BETWEEN HUBS IN MILES'].replace({'Western Governors University 4001 South 700 East,  Sa
                                                             'Western Governors University 4001 South 700 East'}, inplac
```

In [18]:
```python
new_distance_file = new_distance_file.set_index(['DISTANCE BETWEEN HUBS IN MILES'])
```

In [19]:
```python
new_distance_file.head()
```

Out[19]:

	Western Governors University 4001 South 700 East	International Peace Gardens 1060 Dalton Ave S	Sugar House Park 1330 2100 S	Taylorsville-Bennion Heritage City Gov Off 1488 4800 S	Salt Lake City Division of Health Services 177 W Price Ave	South Salt Lake Public Works 195 W Oakland Ave	Salt Lake City Streets and Sanitation 2010 W 500 S	Deker Lake 2300 Parkway Blvd	Salt Lake City Ottinger Hall 233 Canyon Rd	Columbus Library 2530 S 500 E	...	Housing Auth. of Salt Lake County 3595 Main St
DISTANCE BETWEEN HUBS IN MILES												
Western Governors University 4001 South 700 East	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN
International Peace Gardens 1060 Dalton Ave S	7.2	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN
Sugar House Park 1330 2100 S	3.8	7.1	0.0	NaN	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN
Taylorsville-Bennion Heritage City Gov Off 1488 4800 S	11.0	6.4	9.2	0.0	NaN	NaN	NaN	NaN	NaN	NaN	...	NaN
Salt Lake City Division of Health Services 177 W Price Ave	2.2	6.0	4.4	5.6	0.0	NaN	NaN	NaN	NaN	NaN	...	NaN

5 rows × 27 columns

In [20]:
```python
distance_file_csv = new_distance_file
```

In [21]:
```python
new_distance_file = new_distance_file.to_numpy()
```

2. Fill in the `NaN` and Replace Values

In [22]:
```python
print(new_distance_file)
```

```
[['0.0' nan nan nan nan nan nan nan nan nan nan nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan]
 ['7.2' '0.0' nan nan nan nan nan nan nan nan nan nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan]
 ['3.8' '7.1' '0.0' nan nan nan nan nan nan nan nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan]
 ['11.0' '6.4' '9.2' '0.0' nan nan nan nan nan nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan nan]
 ['2.2' '6.0' '4.4' '5.6' '0.0' nan nan nan nan nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan]
 ['3.5' '4.8' '2.8' '6.9' '1.9' '0.0' nan nan nan nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan]
 ['10.9' '1.6' '8.6' '8.6' '7.9' '6.3' '0.0' nan nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan]
 ['8.6' '2.8' '6.3' '4.0' '5.1' '4.3' '4.0' '0.0' nan nan nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan]
 ['7.6' '4.8' '5.3' '11.1' '7.5' '4.5' '4.2' '7.7' '0.0' nan nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan nan nan]
 ['2.8' '6.3' '1.6' '7.3' '2.6' '1.5' '8.0' '9.3' '4.8' '0.0' nan nan nan
  nan nan nan nan nan nan nan nan nan nan nan nan nan]
 ['6.4' '7.3' '10.4' '1.0' '6.5' '8.7' '8.6' '4.6' '11.9' '9.4' '0.0' nan
  nan nan nan nan nan nan nan nan nan nan nan nan nan nan]
 ['3.2' '5.3' '3.0' '6.4' '1.5' '0.8' '6.9' '4.8' '4.7' '1.1' '7.3' '0.0'
  nan nan nan nan nan nan nan nan nan nan nan nan nan nan]
 ['7.6' '4.8' '5.3' '11.1' '7.5' '4.5' '4.2' '7.7' '0.6' '5.1' '12.0'
  '4.7' '0.0' nan nan nan nan nan nan nan nan nan nan nan nan nan]
 ['5.2' '3.0' '6.5' '3.9' '3.2' '3.9' '4.2' '1.6' '7.6' '4.6' '4.9' '3.5'
  '7.3' '0.0' nan nan nan nan nan nan nan nan nan nan nan]
 ['4.4' '4.6' '5.6' '4.3' '2.4' '3.0' '8.0' '3.3' '7.8' '3.7' '5.2' '2.6'
  '7.8' '1.3' '0.0' nan nan nan nan nan nan nan nan nan nan nan]
 ['3.7' '4.5' '5.8' '4.4' '2.7' '3.8' '5.8' '3.4' '6.6' '4.0' '5.4' '2.9'
  '6.6' '1.5' '0.6' '0.0' nan nan nan nan nan nan nan nan nan nan]
 ['7.6' '7.4' '5.7' '7.2' '1.4' '5.7' '7.2' '3.1' '7.2' '6.7' '8.1' '6.3'
  '7.2' '4.0' '6.4' '5.6' '0.0' nan nan nan nan nan nan nan nan nan]
 ['2.0' '6.0' '4.1' '5.3' '0.5' '1.9' '7.7' '5.1' '5.9' '2.3' '6.2' '1.2'
  '5.9' '3.2' '2.4' '1.6' '7.1' '0.0' nan nan nan nan nan nan nan nan]
 ['3.6' '5.0' '3.6' '6.0' '1.7' '1.1' '6.6' '4.6' '5.4' '1.8' '6.9' '1.0'
  '5.4' '3.0' '2.2' '1.7' '6.1' '1.6' '0.0' nan nan nan nan nan nan nan
  nan]
 ['6.5' '4.8' '4.3' '10.6' '6.5' '3.5' '3.2' '6.7' '1.0' '4.1' '11.5'
  '3.7' '1.0' '6.9' '6.8' '6.4' '7.2' '4.9' '4.4' '0.0' nan nan nan nan
  nan nan nan]
 ['1.9' '9.5' '3.3' '5.9' '3.2' '4.9' '11.2' '8.1' '8.5' '3.8' '6.9'
  '4.1' '8.5' '6.2' '5.3' '4.9' '10.6' '3.0' '4.6' '7.5' '0.0' nan nan
  nan nan nan nan]
 ['3.4' '10.9' '5.0' '7.4' '5.2' '6.9' '12.7' '10.4' '10.3' '5.8' '8.3'
  '6.2' '10.3' '8.2' '7.4' '6.9' '12.0' '5.0' '6.6' '9.3' '2.0' '0.0' nan
  nan nan nan nan]
 ['2.4' '8.3' '6.1' '4.7' '2.5' '4.2' '10.0' '7.8' '7.8' '4.3' '4.1'
  '3.4' '7.8' '5.5' '4.6' '4.2' '9.4' '2.3' '3.9' '6.8' '2.9' '4.4' '0.0'
  nan nan nan nan]
 ['6.4' '6.9' '9.7' '0.6' '6.0' '9.0' '8.2' '4.2' '11.5' '7.8' '0.4'
  '6.9' '11.5' '4.4' '4.8' '5.6' '7.5' '5.5' '6.5' '11.4' '6.4' '7.9'
  '4.5' '0.0' nan nan nan]
 ['2.4' '10.0' '6.1' '6.4' '4.2' '5.9' '11.7' '9.5' '9.5' '4.8' '4.9'
  '5.2' '9.5' '7.2' '6.3' '5.9' '11.1' '4.0' '5.6' '8.5' '2.8' '3.4'
  '1.7' '5.4' '0.0' nan nan]
 ['5.0' '4.4' '2.8' '10.1' '5.4' '3.5' '5.1' '6.2' '2.8' '3.2' '11.0'
  '3.7' '2.8' '6.4' '6.5' '5.7' '6.2' '5.1' '4.3' '1.8' '6.0' '7.9' '6.8'
  '10.6' '7.0' '0.0' nan]
 ['3.6' '13.0' '7.4' '10.1' '5.5' '7.2' '14.2' '10.7' '14.1' '6.0' '6.8'
  '6.4' '14.1' '10.5' '8.8' '8.4' '13.6' '5.2' '6.9' '13.1' '4.1' '4.7'
  '3.1' '7.8' '1.3' '8.3' '0.0']]
```

```python
In [23]: new_row = []

         #O(n^2)
         #goes through each list in new_distance_file (total of 27)
         for i in range(0, len(new_distance_file)):
             #print(i)
             #goes through each number in each list and adds to new_row list
             for row in new_distance_file:
                 new_row.append(row[i])
             #each list will become the new_row list, and then the new_row list is cleared so it's empty for the next loop
             new_distance_file[i] = new_row
             new_row.clear()

In [24]: print(new_distance_file)
```

```
[['0.0' '7.2' '3.8' '11.0' '2.2' '3.5' '10.9' '8.6' '7.6' '2.8' '6.4'
  '3.2' '7.6' '5.2' '4.4' '3.7' '7.6' '2.0' '3.6' '6.5' '1.9' '3.4' '2.4'
  '6.4' '2.4' '5.0' '3.6']
 ['7.2' '0.0' '7.1' '6.4' '6.0' '4.8' '1.6' '2.8' '4.8' '6.3' '7.3' '5.3'
  '4.8' '3.0' '4.6' '4.5' '7.4' '6.0' '5.0' '4.8' '9.5' '10.9' '8.3'
  '6.9' '10.0' '4.4' '13.0']
 ['3.8' '7.1' '0.0' '9.2' '4.4' '2.8' '8.6' '6.3' '5.3' '1.6' '10.4'
  '3.0' '5.3' '6.5' '5.6' '5.8' '5.7' '4.1' '3.6' '4.3' '3.3' '5.0' '6.1'
  '9.7' '6.1' '2.8' '7.4']
 ['11.0' '6.4' '9.2' '0.0' '5.6' '6.9' '8.6' '4.0' '11.1' '7.3' '1.0'
  '6.4' '11.1' '3.9' '4.3' '4.4' '7.2' '5.3' '6.0' '10.6' '5.9' '7.4'
  '4.7' '0.6' '6.4' '10.1' '10.1']
 ['2.2' '6.0' '4.4' '5.6' '0.0' '1.9' '7.9' '5.1' '7.5' '2.6' '6.5' '1.5'
  '7.5' '3.2' '2.4' '2.7' '1.4' '0.5' '1.7' '6.5' '3.2' '5.2' '2.5' '6.0'
  '4.2' '5.4' '5.5']
 ['3.5' '4.8' '2.8' '6.9' '1.9' '0.0' '6.3' '4.3' '4.5' '1.5' '8.7' '0.8'
  '4.5' '3.9' '3.0' '3.8' '5.7' '1.9' '1.1' '3.5' '4.9' '6.9' '4.2' '9.0'
  '5.9' '3.5' '7.2']
 ['10.9' '1.6' '8.6' '8.6' '7.9' '6.3' '0.0' '4.0' '4.2' '8.0' '8.6'
  '6.9' '4.2' '4.2' '8.0' '5.8' '7.2' '7.7' '6.6' '3.2' '11.2' '12.7'
  '10.0' '8.2' '11.7' '5.1' '14.2']
 ['8.6' '2.8' '6.3' '4.0' '5.1' '4.3' '4.0' '0.0' '7.7' '9.3' '4.6' '4.8'
  '7.7' '1.6' '3.3' '3.4' '3.1' '5.1' '4.6' '6.7' '8.1' '10.4' '7.8'
  '4.2' '9.5' '6.2' '10.7']
 ['7.6' '4.8' '5.3' '11.1' '7.5' '4.5' '4.2' '7.7' '0.0' '4.8' '11.9'
  '4.7' '0.6' '7.6' '7.8' '6.6' '7.2' '5.9' '5.4' '1.0' '8.5' '10.3'
  '7.8' '11.5' '9.5' '2.8' '14.1']
 ['2.8' '6.3' '1.6' '7.3' '2.6' '1.5' '8.0' '9.3' '4.8' '0.0' '9.4' '1.1'
  '5.1' '4.6' '3.7' '4.0' '6.7' '2.3' '1.8' '4.1' '3.8' '5.8' '4.3' '7.8'
  '4.8' '3.2' '6.0']
 ['6.4' '7.3' '10.4' '1.0' '6.5' '8.7' '8.6' '4.6' '11.9' '9.4' '0.0'
  '7.3' '12.0' '4.9' '5.2' '5.4' '8.1' '6.2' '6.9' '11.5' '6.9' '8.3'
  '4.1' '0.4' '4.9' '11.0' '6.8']
 ['3.2' '5.3' '3.0' '6.4' '1.5' '0.8' '6.9' '4.8' '4.7' '1.1' '7.3' '0.0'
  '4.7' '3.5' '2.6' '2.9' '6.3' '1.2' '1.0' '3.7' '4.1' '6.2' '3.4' '6.9'
  '5.2' '3.7' '6.4']
 ['7.6' '4.8' '5.3' '11.1' '7.5' '4.5' '4.2' '7.7' '0.6' '5.1' '12.0'
  '4.7' '0.0' '7.3' '7.8' '6.6' '7.2' '5.9' '5.4' '1.0' '8.5' '10.3'
  '7.8' '11.5' '9.5' '2.8' '14.1']
 ['5.2' '3.0' '6.5' '3.9' '3.2' '3.9' '4.2' '1.6' '7.6' '4.6' '4.9' '3.5'
  '7.3' '0.0' '1.3' '1.5' '4.0' '3.2' '3.0' '6.9' '6.2' '8.2' '5.5' '4.4'
  '7.2' '6.4' '10.5']
 ['4.4' '4.6' '5.6' '4.3' '2.4' '3.0' '8.0' '3.3' '7.8' '3.7' '5.2' '2.6'
  '7.8' '1.3' '0.0' '0.6' '6.4' '2.4' '2.2' '6.8' '5.3' '7.4' '4.6' '4.8'
  '6.3' '6.5' '8.8']
 ['3.7' '4.5' '5.8' '4.4' '2.7' '3.8' '5.8' '3.4' '6.6' '4.0' '5.4' '2.9'
  '6.6' '1.5' '0.6' '0.0' '5.6' '1.6' '1.7' '6.4' '4.9' '6.9' '4.2' '5.6'
  '5.9' '5.7' '8.4']
 ['7.6' '7.4' '5.7' '7.2' '1.4' '5.7' '7.2' '3.1' '7.2' '6.7' '8.1' '6.3'
  '7.2' '4.0' '6.4' '5.6' '0.0' '7.1' '6.1' '7.2' '10.6' '12.0' '9.4'
  '7.5' '11.1' '6.2' '13.6']
 ['2.0' '6.0' '4.1' '5.3' '0.5' '1.9' '7.7' '5.1' '5.9' '2.3' '6.2' '1.2'
  '5.9' '3.2' '2.4' '1.6' '7.1' '0.0' '1.6' '4.9' '3.0' '5.0' '2.3' '5.5'
  '4.0' '5.1' '5.2']
 ['3.6' '5.0' '3.6' '6.0' '1.7' '1.1' '6.6' '4.6' '5.4' '1.8' '6.9' '1.0'
  '5.4' '3.0' '2.2' '1.7' '6.1' '1.6' '0.0' '4.4' '4.6' '6.6' '3.9' '6.5'
  '5.6' '4.3' '6.9']
 ['6.5' '4.8' '4.3' '10.6' '6.5' '3.5' '3.2' '6.7' '1.0' '4.1' '11.5'
  '3.7' '1.0' '6.9' '6.8' '6.4' '7.2' '4.9' '4.4' '0.0' '7.5' '9.3' '6.8'
  '11.4' '8.5' '1.8' '13.1']
 ['1.9' '9.5' '3.3' '5.9' '3.2' '4.9' '11.2' '8.1' '8.5' '3.8' '6.9'
  '4.1' '8.5' '6.2' '5.3' '4.9' '10.6' '3.0' '4.6' '7.5' '0.0' '2.0'
  '2.9' '6.4' '2.8' '6.0' '4.1']
 ['3.4' '10.9' '5.0' '7.4' '5.2' '6.9' '12.7' '10.4' '10.3' '5.8' '8.3'
  '6.2' '10.3' '8.2' '7.4' '6.9' '12.0' '5.0' '6.6' '9.3' '2.0' '0.0'
  '4.4' '7.9' '3.4' '7.9' '4.7']
 ['2.4' '8.3' '6.1' '4.7' '2.5' '4.2' '10.0' '7.8' '7.8' '4.3' '4.1'
  '3.4' '7.8' '5.5' '4.6' '4.2' '9.4' '2.3' '3.9' '6.8' '2.9' '4.4' '0.0'
  '4.5' '1.7' '6.8' '3.1']
 ['6.4' '6.9' '9.7' '0.6' '6.0' '9.0' '8.2' '4.2' '11.5' '7.8' '0.4'
  '6.9' '11.5' '4.4' '4.8' '5.6' '7.5' '5.5' '6.5' '11.4' '6.4' '7.9'
  '4.5' '0.0' '5.4' '10.6' '7.8']
```

```
 ['2.4' '10.0' '6.1' '6.4' '4.2' '5.9' '11.7' '9.5' '9.5' '4.8' '4.9'
  '5.2' '9.5' '7.2' '6.3' '5.9' '11.1' '4.0' '5.6' '8.5' '2.8' '3.4'
  '1.7' '5.4' '0.0' '7.0' '1.3']
 ['5.0' '4.4' '2.8' '10.1' '5.4' '3.5' '5.1' '6.2' '2.8' '3.2' '11.0'
  '3.7' '2.8' '6.4' '6.5' '5.7' '6.2' '5.1' '4.3' '1.8' '6.0' '7.9' '6.8'
  '10.6' '7.0' '0.0' '8.3']
 ['3.6' '13.0' '7.4' '10.1' '5.5' '7.2' '14.2' '10.7' '14.1' '6.0' '6.8'
  '6.4' '14.1' '10.5' '8.8' '8.4' '13.6' '5.2' '6.9' '13.1' '4.1' '4.7'
  '3.1' '7.8' '1.3' '8.3' '0.0']]
```

In [25]: `distance_file_csv[:] = new_distance_file`

In [26]: `distance_file_csv.head()`

Out[26]:

DISTANCE BETWEEN HUBS IN MILES	Western Governors University 4001 South 700 East	International Peace Gardens 1060 Dalton Ave S	Sugar House Park 1330 2100 S	Taylorsville-Bennion Heritage City Gov Off 1488 4800 S	Salt Lake City Division of Health Services 177 W Price Ave	South Salt Lake Public Works 195 W Oakland Ave	Salt Lake City Streets and Sanitation 2010 W 500 S	Deker Lake 2300 Parkway Blvd	Salt Lake City Ottinger Hall 233 Canyon Rd	Columbus Library 2530 S 500 E	...	Housing Auth. of Salt Lake County 3595 Main St
Western Governors University 4001 South 700 East	0.0	7.2	3.8	11.0	2.2	3.5	10.9	8.6	7.6	2.8	...	2.0
International Peace Gardens 1060 Dalton Ave S	7.2	0.0	7.1	6.4	6.0	4.8	1.6	2.8	4.8	6.3	...	6.0
Sugar House Park 1330 2100 S	3.8	7.1	0.0	9.2	4.4	2.8	8.6	6.3	5.3	1.6	...	4.1
Taylorsville-Bennion Heritage City Gov Off 1488 4800 S	11.0	6.4	9.2	0.0	5.6	6.9	8.6	4.0	11.1	7.3	...	5.3
Salt Lake City Division of Health Services 177 W Price Ave	2.2	6.0	4.4	5.6	0.0	1.9	7.9	5.1	7.5	2.6	...	0.5

5 rows × 27 columns

D. Identify a Self-Adjusting Data Structure

I chose to create a hash table for creating the packages (key), and the information that comes with it (value). However, after separating and loading the packages into the different trucks, I created dictionaries and loaded the package ID as the key and the rest of the information as a list, which was the value. The dictionaries I used for each truck were then used for the Nearest Neighbor Algorithm.

1. Explain the Data Structure

The Hash Table is able to store the package information by adding it to a bucket using a calculated index (there may be multiple packages in a bucket, but it depends on the size of the array). The `key` is the first value, and `value` is the second value after choosing an object.

```
hashtable = HashTable()
hashtable.add(key, value)
```

In this program, the key and value of the Hash Table houses the package information. The package ID is the key, and the rest of the data is put into a list for the value. Each truck was also created as an object to house the Hash Table for the packages, which are manually loaded onto each truck.

```
truckone = HashTable()
trucktwo = HashTable()
truckthree = HashTable()
```

The Hash Table gives the option of printing the data, or searching for the data. Due to the size of the array used, there were multiple packages in one bucket (or essentially a list within a list). The print function doesn't pass in anything, so it's easier to view the packages. For example, by printing `item[x][y][z]` when there are three lists within a list would allow each package to be viewed.

The search function essentially does the same thing as the print function, but passes in the package's ID (i.e 20, 1, 5) as the key. However, the difference from printing is that it doesn't look as nice when printed out, so the code after manually loading the truck is able to take the information from the Hash Table and organize it into a form that is easy to read and pull data from. Essentially the Hash Table simply holds the data until it is transformed and placed into a readable data structure.

E. Hash Table

1. Create the Hash Table & Package Class

In [27]:
```python
class Package:

    #initialize the Truck
    def __init__(self, ID, address, delivery_deadline, weight_in_kilo, status, loaded_at, delivered_at):
        self.ID = ID
        self.address = address
        self.delivery_deadline = delivery_deadline
        self.weight_in_kilo = weight_in_kilo
        self.status = status
        self.loaded_at = loaded_at
        self.delivered_at = delivered_at

    def __repr__(self):
        return "%s, %s, %s, %s, %s, %s" % (self.address, self.delivery_deadline, self.weight_in_kilo,
                                           self.status, self.loaded_at, self.delivered_at)
```

```python
#NEED TO FIX

class HashTable:

    #initialize the hashtable
    def __init__(self):
        #size of the array
        self.size = 48
        #array, sets each cell to [None]
        self.map = [None] * self.size


    #calculates index of key
    def _get_hash(self, key):
        hash = 0

        for character in str(key):
            #ord() is the unicode of the character(s) in the key
            hash = hash + ord(character)
        #returns the index
        return hash % self.size


    def add(self, key, value):
        key_index = self._get_hash(key)
        key_value = [key, value]

        #adds to the list if empty
        if self.map[key_index] is None:
            #at the index, the key, value pair is added
            self.map[key_index] = list([key_value])
            return True
        #if the list isn't empty
        else:
            #check if key already exists
            for pair in self.map[key_index]:
                #if key exists, update the value
                if pair[0] == key:
                    pair[1] = value
                    return True
            #if the key doesn't exist, add the new key, value pair to list
            self.map[key_index].append([key_value])
            return True


    #gets the value of the key that was searched
    def search_value(self, key):
        key_index = self._get_hash(key)

        #locate the cell of list/array when not empty
        if self.map[key_index] is not None:
            #for pair in self.map[key_index]:
                #finds the value that matches the key
                #if pair[0] == key:
                    #return pair[1]

            if len(self.map[key_index]) == 1:
                return self.map[key_index][0][1]
            elif len(self.map[key_index]) == 2:
                return [self.map[key_index][0][1], self.map[key_index][1][0][1]]
            else:
                return [self.map[key_index][0][1], self.map[key_index][1][0][1], self.map[key_index][2][0][1]]

        #if the cell is empty, return None
        return None


     #gets the key that was searched
    def search_key(self, key):
        key_index = self._get_hash(key)

        if self.map[key_index] is not None:
```

```python
        if len(self.map[key_index]) == 1:
            return self.map[key_index][0][0]
        elif len(self.map[key_index]) == 2:
            return [self.map[key_index][0][0], self.map[key_index][1][0][0]]
        else:
            return [self.map[key_index][0][0], self.map[key_index][1][0][0], self.map[key_index][2][0][0]]


        #for i in range(len(self.map[key_index])):
            #return self.map[key_index][i]

        #if len(self.map[key_index]) == 1:
        #    for i in range(len(self.map[key_index])):
         #       return self.map[key_index][i][0]
            #return self.map[key_index][0][0]

        #elif len(self.map[key_index]) == 2: #[1] is replacing [0] data, need to make it so when returning,
                                     #[1] doesn't replace [0]
          #  for i in range(len(self.map[key_index])):
           #     if self.map[key_index][i][0] == self.map[key_index][1][0]:
             #       continue
            #    else:
              #      return self.map[key_index][1][0][0]
        #else:
          #  for i in range(len(self.map[key_index])):
           #     if self.map[key_index][0]:
            #        return self.map[key_index][0][0]
             #   elif self.map[key_index][1]:
              #      return self.map[key_index][1][0][0]
               #   else:
                #      return self.map[key_index][2][0][0]


        return None



    def print(self):
        #prints out every cell that isn't empty
        #O(n)
        for item in self.map:
            if item is not None:
                if len(item) == 1:
                    print(str(item[0]))
                    print()
                elif len(item) == 2:
                    print(str(item[0]))
                    print(str(item[1][0]))
                    print()
                else:
                    print(str(item[0]))
                    print(str(item[1][0]))
                    print(str(item[2][0]))
                    print()
```

After creating a HashMap (in this case a HashTable), the data from the `WGUPS_Package_File.csv` can be added into the HashTable to organize the data based on key, value sets. For this program, the "Package ID" will be the key, while the rest of the data: `["Address", "City", "State", "Zip", "Delivery Deadline", "Mass KILO"]` will be the value due to the `Package` class.

**"Delivery Status" will be added to the Package class

```
In [29]:  hashtable = HashTable()

          #O(n)
          for index, row in new_package_file.iterrows():
              p_ID = row['Package ID']
              p_address = row['Address']
              p_delivery_deadline = row['Delivery Deadline']
              p_weight = row['Mass KILO']
              p_status = 'LOADED ON TRUCK - IN HUB'
              p_loaded_at = datetime.time(8)
              p_delivered_at = datetime.time(0)

              p = Package(p_ID, p_address, p_delivery_deadline, p_weight, p_status, p_loaded_at, p_delivered_at)
              #print(p)

              hashtable.add(p_ID, p)
          hashtable.print()
```

```
['1', 195 W Oakland Ave, 10:30 AM, 21, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['10', 600 E 900 South, EOD, 1, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['2', 2530 S 500 E, EOD, 44, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['11', 2600 Taylorsville Blvd, EOD, 1, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['20', 3595 Main St, 10:30 AM, 37, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['3', 233 Canyon Rd, EOD, 2, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['12', 3575 W Valley Central Station bus Loop, EOD, 1, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['21', 3595 Main St, EOD, 3, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['4', 380 W 2880 S, EOD, 4, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['13', 2010 W 500 S, 10:30 AM, 2, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['22', 6351 South 900 East, EOD, 2, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['5', 410 S State St, EOD, 5, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['14', 4300 S 1300 E, 10:30 AM, 88, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['23', 5100 South 2700 West, EOD, 5, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['6', 3060 Lester St, 10:30 AM, 88, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['15', 4580 S 2300 E, 9:00 AM, 4, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['24', 5025 State St, EOD, 7, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['7', 1330 2100 S, EOD, 8, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['16', 4580 S 2300 E, 10:30 AM, 88, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['25', 5383 South 900 East #104, 10:30 AM, 7, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['8', 300 State St, EOD, 9, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['17', 3148 S 1100 W, EOD, 2, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['26', 5383 South 900 East #104, EOD, 25, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['9', 300 State St, EOD, 2, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['18', 1488 4800 S, EOD, 6, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['27', 1060 Dalton Ave S, EOD, 5, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['19', 177 W Price Ave, EOD, 37, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['28', 2835 Main St, EOD, 7, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['37', 410 S State St, 10:30 AM, 2, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['29', 1330 2100 S, 10:30 AM, 2, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
['38', 410 S State St, EOD, 9, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]

['39', 2010 W 500 S, EOD, 9, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]
```

2. Load the Trucks

Now that the HashTable function works properly, the trucks can now be loaded manually with the data. Let's separate the boxes by putting 20 boxes in one truck, and 20 boxes in the other truck.

Remember the assumptions:

- Each truck can carry a maximum of 16 packages, and the ID number of each package is unique.
- The trucks travel at an average speed of 18 miles per hour and have an infinite amount of gas with no need to stop.
- There are no collisions.
- Three trucks and two drivers are available for deliveries. Each driver stays with the same truck as long as that truck is in service.
- Drivers leave the hub no earlier than 8:00 a.m., with the truck loaded, and can return to the hub for packages if needed.
- The delivery and loading times are instantaneous, i.e., no time passes while at a delivery or when moving packages to a truck at the hub (that time is factored into the calculation of the average speed of the trucks).
- There is up to one special note associated with a package.
- The delivery address for package #9, Third District Juvenile Court, is wrong and will be corrected at 10:20 a.m. WGUPS is aware that the address is incorrect and will be updated at 10:20 a.m. However, WGUPS does not know the correct address (410 S State St., Salt Lake City, UT 84111) until 10:20 a.m.
- The distances provided in the WGUPS Distance Table are equal regardless of the direction traveled.
- The day ends when all 40 packages have been delivered.

Also, remember the Special Notes:

In [30]:
```python
for index, row in new_package_file.iterrows():
    if str(row['Special Notes']) != "nan":
        print("Package " + str(row['Package ID']) + ": " + str(row['Special Notes']))
```

```
Package 3: Can only be on truck 2
Package 6: Delayed on flight---will not arrive to depot until 9:05 am
Package 9: Wrong address listed
Package 14: Must be delivered with 15, 19
Package 16: Must be delivered with 13, 19
Package 18: Can only be on truck 2
Package 20: Must be delivered with 13, 15
Package 25: Delayed on flight---will not arrive to depot until 9:05 am
Package 28: Delayed on flight---will not arrive to depot until 9:05 am
Package 32: Delayed on flight---will not arrive to depot until 9:05 am
Package 36: Can only be on truck 2
Package 38: Can only be on truck 2
```

In [31]:
```python
for index, row in new_package_file.iterrows():
    print("Package " + str(row['Package ID']) + ": " + str(row['Delivery Deadline']))
```

```
Package 1: 10:30 AM
Package 2: EOD
Package 3: EOD
Package 4: EOD
Package 5: EOD
Package 6: 10:30 AM
Package 7: EOD
Package 8: EOD
Package 9: EOD
Package 10: EOD
Package 11: EOD
Package 12: EOD
Package 13: 10:30 AM
Package 14: 10:30 AM
Package 15: 9:00 AM
Package 16: 10:30 AM
Package 17: EOD
Package 18: EOD
Package 19: EOD
Package 20: 10:30 AM
Package 21: EOD
Package 22: EOD
Package 23: EOD
Package 24: EOD
Package 25: 10:30 AM
Package 26: EOD
Package 27: EOD
Package 28: EOD
Package 29: 10:30 AM
Package 30: 10:30 AM
Package 31: 10:30 AM
Package 32: EOD
Package 33: EOD
Package 34: 10:30 AM
Package 35: EOD
Package 36: EOD
Package 37: 10:30 AM
Package 38: EOD
Package 39: EOD
Package 40: 10:30 AM
```

```python
In [32]:  #separate the boxes and add them into the separate trucks (hashtables)
          truck_one = HashTable()
          truck_two = HashTable()
          truck_three = HashTable()

          #O(n)
          #range needs to start at 1 and end at 40 since package ID goes from 1-40
          for i in range(1, len(new_package_file) + 1):
              new_package_file['Package ID'][i] = int(new_package_file['Package ID'][i])

              p_ID = new_package_file['Package ID'][i]
              p_address = new_package_file['Address'][i]
              p_delivery_deadline = new_package_file['Delivery Deadline'][i]
              p_weight = new_package_file['Mass KILO'][i]
              p_status = 'LOADED ON TRUCK - IN HUB'
              p_loaded_at = datetime.time(8)
              p_delivered_at = datetime.time(0)

              p = Package(p_ID, p_address, p_delivery_deadline, p_weight, p_status, p_loaded_at, p_delivered_at)
              #print(p)

              if new_package_file['Delivery Deadline'][i] == "10:30 AM" or new_package_file['Delivery Deadline'][i] == "9:00

                  np_ID = new_package_file['Package ID'][i]
                  np_address = new_package_file['Address'][i]
                  np_delivery_deadline = new_package_file['Delivery Deadline'][i]
                  np_weight = new_package_file['Mass KILO'][i]
                  np_status = "LOADED ON TRUCK - IN HUB"
                  np_loaded_at = datetime.time(9, 5)
                  np_delivered_at = datetime.time(0)

                  np = Package(np_ID, np_address, np_delivery_deadline, np_weight, np_status, np_loaded_at, np_delivered_at)


                  if new_package_file['Package ID'][i] == 6 or new_package_file['Package ID'][i] == 25:
                      truck_three.add(np_ID, np)

                  else:
                      truck_one.add(p_ID, p)

              else:
                  if new_package_file['Package ID'][i] != truck_one.search_key(i):

                      np_ID = new_package_file['Package ID'][i]
                      np_address = new_package_file['Address'][i]
                      np_delivery_deadline = new_package_file['Delivery Deadline'][i]
                      np_weight = new_package_file['Mass KILO'][i]
                      np_status = "LOADED ON TRUCK - IN HUB"
                      np_loaded_at = datetime.time(9, 5)
                      np_delivered_at = datetime.time(0)

                      np = Package(np_ID, np_address, np_delivery_deadline, np_weight, np_status, np_loaded_at, np_delivered_

                      if new_package_file['Package ID'][i] == 9:
                          truck_three.add(np_ID, np)
                      elif new_package_file['Package ID'][i] == 25:
                          truck_three.add(np_ID, np)
                      elif new_package_file['Package ID'][i] == 28:
                          truck_three.add(np_ID, np)
                      elif new_package_file['Package ID'][i] == 30:
                          truck_three.add(np_ID, np)
                      elif new_package_file['Package ID'][i] == 31:
                          truck_three.add(np_ID, np)
                      elif new_package_file['Package ID'][i] == 32:
                          truck_three.add(np_ID, np)
                      elif new_package_file['Package ID'][i] == 3:
                          truck_two.add(p_ID, p)
                      elif new_package_file['Package ID'][i] == 18:
                          truck_two.add(p_ID, p)
                      elif new_package_file['Package ID'][i] == 36:
                          truck_two.add(p_ID, p)
                      elif new_package_file['Package ID'][i] == 38:
```

```
                truck_two.add(p_ID, p)
            elif new_package_file['Package ID'][i] == 19:
                truck_one.add(p_ID, p)
            else:
                if new_package_file['Package ID'][i] % 2 == 0:
                    truck_two.add(p_ID, p)
                else:
                    truck_three.add(p_ID, p)
```

Create a dictionary for each truck to make it easier to keep track of the packages. The key of the packages will be the Package ID, while the values will be a list of the different information.

Truck One

In [33]:
```python
truck_one_key = []
truck_one_values = []

#O(n)
for i in range(40):
    #print(truck_one.search_key(i))
    #print(truck_one.search_value(i))
    truck_one_key.append(truck_one.search_key(i))
    truck_one_values.append(truck_one.search_value(i))
```

In [34]:
```python
truck_one_key_list = []

#O(n2)
for i in range(len(truck_one_key)):
    if truck_one_key[i] != None:
        #checks that truck_one_key[i] is a list
        if isinstance(truck_one_key[i], list):
            #print(truck_one_key[i])
            for j in range(len(truck_one_key[i])):
                #print(truck_one_key[i][j])
                if truck_one_key[i][j] not in truck_one_key_list:
                    truck_one_key_list.append(truck_one_key[i][j])
        else:
            #print(truck_one_key[i])
            if truck_one_key[i] not in truck_one_key_list:
                truck_one_key_list.append(truck_one_key[i])

#print(truck_one_key_list)
```

In [35]:
```python
truck_one_values_list = []

#O(n2)
for i in range(len(truck_one_values)):
    if truck_one_values[i] != None:
        #checks that truck_one_values[i] is a list
        if isinstance(truck_one_values[i], list):
            #print(truck_one_values[i])
            for j in range(len(truck_one_values[i])):
                #print(truck_one_values[i][j])
                if truck_one_values[i][j] not in truck_one_values_list:
                    truck_one_values_list.append(truck_one_values[i][j])
        else:
            #print(truck_one_values[i])
            if truck_one_values[i] not in truck_one_values_list:
                truck_one_values_list.append(truck_one_values[i])

#print(truck_one_values_list)
```

```python
In [36]: new_truck_one_values_list = []

         #O(n)
         for i in range(len(truck_one_values_list)):
             #print(truck_one_values_list[i])
             truck_one_values_list[i] = str(truck_one_values_list[i]).split(", ")
             new_truck_one_values_list.append(truck_one_values_list[i])
             #print(new_truck_one_values_list[i])
```

```python
In [37]: truck_one_dict = {}

         #O(n)
         for i in range(len(truck_one_values_list)):
             truck_one_dict[truck_one_key_list[i]] = new_truck_one_values_list[i]

         #O(n)
         for key, value in truck_one_dict.items():
             print(key, value)

         truck_one_dict_copy = copy.deepcopy(truck_one_dict)
```

```
1 ['195 W Oakland Ave', '10:30 AM', '21', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
20 ['3595 Main St', '10:30 AM', '37', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
30 ['300 State St', '10:30 AM', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
13 ['2010 W 500 S', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
31 ['3365 S 900 W', '10:30 AM', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
40 ['380 W 2880 S', '10:30 AM', '45', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
14 ['4300 S 1300 E', '10:30 AM', '88', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
15 ['4580 S 2300 E', '9:00 AM', '4', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
16 ['4580 S 2300 E', '10:30 AM', '88', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
34 ['4580 S 2300 E', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
19 ['177 W Price Ave', 'EOD', '37', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
37 ['410 S State St', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
29 ['1330 2100 S', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
```

```python
In [38]: #truck_one.print()
```

Truck Two

```python
In [39]: #Truck Two

         truck_two_key = []
         truck_two_values = []

         for i in range(40):
             #print(truck_two.search_key(i))
             #print(truck_two.search_value(i))
             truck_two_key.append(truck_two.search_key(i))
             truck_two_values.append(truck_two.search_value(i))
```

```python
In [40]: truck_two_key_list = []

         for i in range(len(truck_two_key)):
             if truck_two_key[i] != None:
                 if isinstance(truck_two_key[i], list):
                     #print(truck_two_key[i])
                     for j in range(len(truck_two_key[i])):
                         #print(truck_two_key[i][j])
                         if truck_two_key[i][j] not in truck_two_key_list:
                             truck_two_key_list.append(truck_two_key[i][j])
                 else:
                     #print(truck_two_key[i])
                     if truck_two_key[i] not in truck_two_key_list:
                         truck_two_key_list.append(truck_two_key[i])

         #print(truck_two_key_list)
```

```python
In [41]: truck_two_values_list = []

         for i in range(len(truck_two_values)):
             if truck_two_values[i] != None:
                 if isinstance(truck_two_values[i], list):
                     #print(truck_two_values[i])
                     for j in range(len(truck_two_values[i])):
                         #print(truck_two_values[i][j])
                         if truck_two_values[i][j] not in truck_two_values_list:
                             truck_two_values_list.append(truck_two_values[i][j])
                 else:
                     #print(truck_two_values[i])
                     if truck_two_values[i] not in truck_two_values_list:
                         truck_two_values_list.append(truck_two_values[i])

         #print(truck_two_values_list)
```

```python
In [42]: new_truck_two_values_list = []

         for i in range(len(truck_two_values_list)):
             #print(truck_two_values_list[i])
             truck_two_values_list[i] = str(truck_two_values_list[i]).split(", ")
             new_truck_two_values_list.append(truck_two_values_list[i])
             #print(new_truck_two_values_list[i])
```

```python
In [43]: truck_two_dict = {}

         for i in range(len(truck_two_values_list)):
             truck_two_dict[truck_two_key_list[i]] = new_truck_two_values_list[i]

         for key, value in truck_two_dict.items():
             print(key, value)

         truck_two_dict_copy = copy.deepcopy(truck_two_dict)
```

```
10 ['600 E 900 South', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
2 ['2530 S 500 E', 'EOD', '44', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
3 ['233 Canyon Rd', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
12 ['3575 W Valley Central Station bus Loop', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
4 ['380 W 2880 S', 'EOD', '4', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
22 ['6351 South 900 East', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
24 ['5025 State St', 'EOD', '7', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
8 ['300 State St', 'EOD', '9', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
26 ['5383 South 900 East #104', 'EOD', '25', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
18 ['1488 4800 S', 'EOD', '6', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
36 ['2300 Parkway Blvd', 'EOD', '88', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
38 ['410 S State St', 'EOD', '9', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
```

```python
In [44]: #truck_two.print()
```

Truck Three

```python
In [45]: #Truck Three

         truck_three_key = []
         truck_three_values = []

         for i in range(40):
             #print(truck_three.search_key(i))
             #print(truck_three.search_value(i))
             truck_three_key.append(truck_three.search_key(i))
             truck_three_values.append(truck_three.search_value(i))
```

```
In [46]: truck_three_key_list = []

         for i in range(len(truck_three_key)):
             if truck_three_key[i] != None:
                 if isinstance(truck_three_key[i], list):
                     #print(truck_three_key[i])
                     for j in range(len(truck_three_key[i])):
                         if truck_three_key[i][j] not in truck_three_key_list:
                             #print(truck_three_key[i][j])
                             truck_three_key_list.append(truck_three_key[i][j])
                 else:
                     #print(truck_three_key[i])
                     if truck_three_key[i] not in truck_three_key_list:
                         truck_three_key_list.append(truck_three_key[i])

         #print(truck_three_key_list)
```

```
In [47]: truck_three_values_list = []

         for i in range(len(truck_three_values)):
             if truck_three_values[i] != None:
                 if isinstance(truck_three_values[i], list):
                     #print(truck_three_values[i])
                     for j in range(len(truck_three_values[i])):
                         if truck_three_values[i][j] not in truck_three_values_list:
                             #print(truck_three_values[i][j])
                             truck_three_values_list.append(truck_three_values[i][j])
                 else:
                     #print(truck_three_key[i])
                     if truck_three_values[i] not in truck_three_values_list:
                         truck_three_values_list.append(truck_three_values[i])

         #print(truck_three_values_list)
```

```
In [48]: new_truck_three_values_list = []

         for i in range(len(truck_three_values_list)):
             #print(truck_three_values_list[i])
             truck_three_values_list[i] = str(truck_three_values_list[i]).split(", ")
             new_truck_three_values_list.append(truck_three_values_list[i])
             #print(new_truck_three_values_list[i])
```

```
In [49]: truck_three_dict = {}

         for i in range(len(truck_three_values_list)):
             truck_three_dict[truck_three_key_list[i]] = new_truck_three_values_list[i]

         for key, value in truck_three_dict.items():
             value[4] = "10:00:00"
             print(key, value)

         truck_three_dict_copy = copy.deepcopy(truck_three_dict)
```

```
         11 ['2600 Taylorsville Blvd', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         21 ['3595 Main St', 'EOD', '3', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         5 ['410 S State St', 'EOD', '5', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         23 ['5100 South 2700 West', 'EOD', '5', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         32 ['3365 S 900 W', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         6 ['3060 Lester St', '10:30 AM', '88', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         33 ['2530 S 500 E', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         7 ['1330 2100 S', 'EOD', '8', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         25 ['5383 South 900 East #104', '10:30 AM', '7', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         17 ['3148 S 1100 W', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         35 ['1060 Dalton Ave S', 'EOD', '88', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         9 ['300 State St', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         27 ['1060 Dalton Ave S', 'EOD', '5', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         28 ['2835 Main St', 'EOD', '7', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
         39 ['2010 W 500 S', 'EOD', '9', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
```

```
In [50]: #truck_three.print()
```
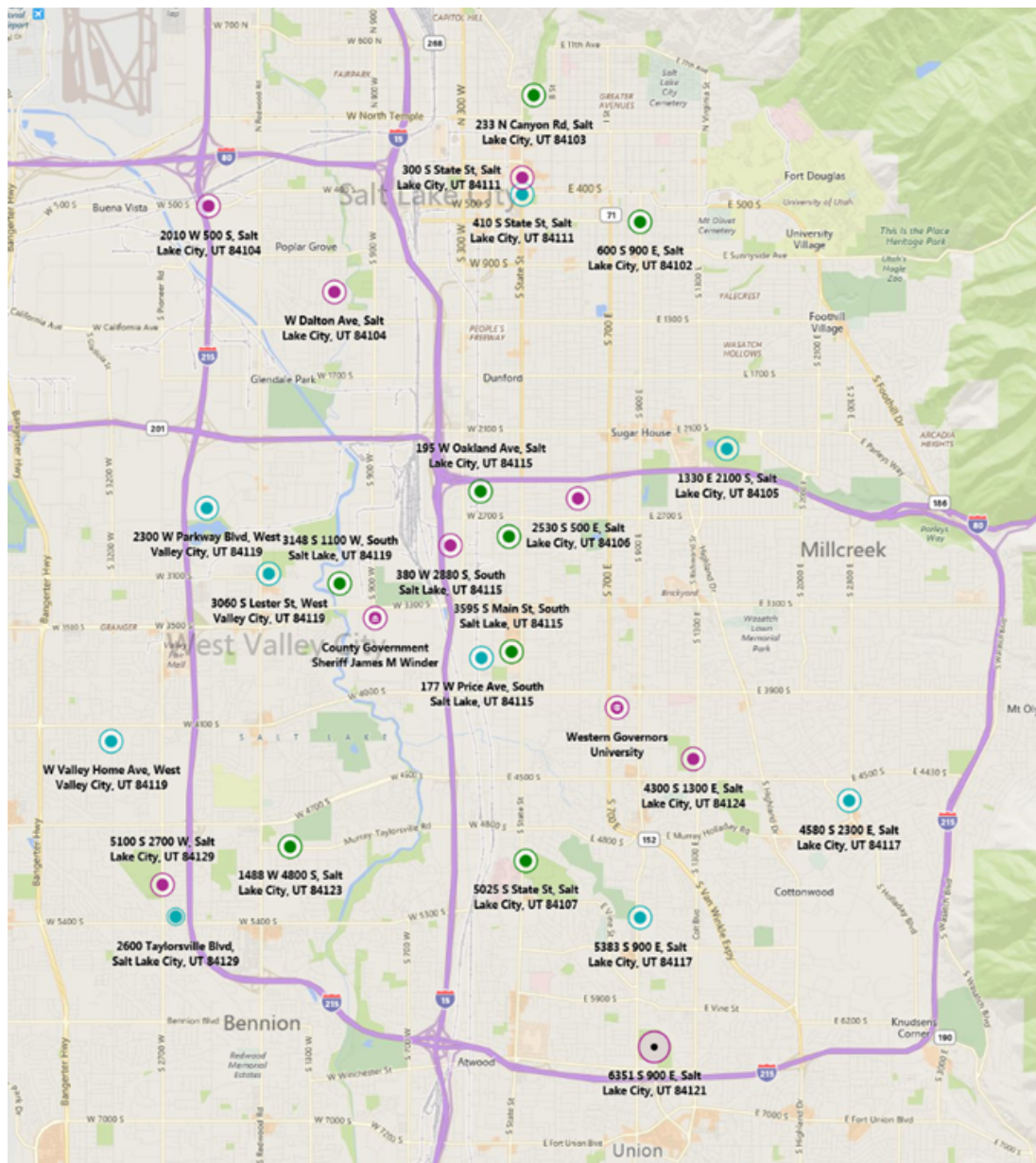
All Trucks

```
In [51]: truck_dict = truck_one_dict | truck_two_dict | truck_three_dict
```

```
In [52]: for key, value in truck_dict.items():
             print(key, value)
```

```
1 ['195 W Oakland Ave', '10:30 AM', '21', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
20 ['3595 Main St', '10:30 AM', '37', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
30 ['300 State St', '10:30 AM', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
13 ['2010 W 500 S', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
31 ['3365 S 900 W', '10:30 AM', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
40 ['380 W 2880 S', '10:30 AM', '45', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
14 ['4300 S 1300 E', '10:30 AM', '88', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
15 ['4580 S 2300 E', '9:00 AM', '4', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
16 ['4580 S 2300 E', '10:30 AM', '88', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
34 ['4580 S 2300 E', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
19 ['177 W Price Ave', 'EOD', '37', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
37 ['410 S State St', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
29 ['1330 2100 S', '10:30 AM', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
10 ['600 E 900 South', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
2 ['2530 S 500 E', 'EOD', '44', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
3 ['233 Canyon Rd', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
12 ['3575 W Valley Central Station bus Loop', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
4 ['380 W 2880 S', 'EOD', '4', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
22 ['6351 South 900 East', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
24 ['5025 State St', 'EOD', '7', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
8 ['300 State St', 'EOD', '9', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
26 ['5383 South 900 East #104', 'EOD', '25', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
18 ['1488 4800 S', 'EOD', '6', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
36 ['2300 Parkway Blvd', 'EOD', '88', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
38 ['410 S State St', 'EOD', '9', 'LOADED ON TRUCK - IN HUB', '08:00:00', '00:00:00']
11 ['2600 Taylorsville Blvd', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
21 ['3595 Main St', 'EOD', '3', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
5 ['410 S State St', 'EOD', '5', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
23 ['5100 South 2700 West', 'EOD', '5', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
32 ['3365 S 900 W', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
6 ['3060 Lester St', '10:30 AM', '88', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
33 ['2530 S 500 E', 'EOD', '1', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
7 ['1330 2100 S', 'EOD', '8', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
25 ['5383 South 900 East #104', '10:30 AM', '7', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
17 ['3148 S 1100 W', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
35 ['1060 Dalton Ave S', 'EOD', '88', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
9 ['300 State St', 'EOD', '2', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
27 ['1060 Dalton Ave S', 'EOD', '5', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
28 ['2835 Main St', 'EOD', '7', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
39 ['2010 W 500 S', 'EOD', '9', 'LOADED ON TRUCK - IN HUB', '10:00:00', '00:00:00']
```

3. Create a Nearest Neighbor Algorithm

After creating the hash table, the optimized path of all locations need to be figured out. The Nearest Neighbor Algorithm (similar Greedy Algorithm) can find the unvisited nearest neighbor and go through the list of addresses until they are all visited. However, because we have two trucks that have packages to different addresses, the optimized path of each truck (based on the package's addresses) will need to be optimized and the total path will need to be less than 140 miles.

```
In [53]: #number of addresses
         num_address = len(new_distance_file)
         #print(num_address) #it's actually 26 because 'DISTANCE BETWEEN HUBS IN MILES' is considered a column but doesn't d

         visited = [False] * num_address
         destination_opt = []
         total_distance = 0
```

```
In [54]:  #start at the first address = WGU
          current_address = 0
          destination_opt.append(current_address)
          visited[current_address] = True

          #find the nearest unvisited address and repeat until all addresses have been visited
          while len(destination_opt) < num_address:
              nearest_address = None
              nearest_distance = math.inf

              #find the nearest unvisited address
              for a in range(num_address):
                  if not visited[a]:
                      distance = float(new_distance_file[current_address][a])
                      if distance < nearest_distance:
                          nearest_address = a
                          nearest_distance = distance

              #move to nearest address
              current_address = nearest_address
              destination_opt.append(current_address)
              visited[current_address] = True
              total_distance = total_distance + nearest_distance

          #complete the series by returning back to start address
          #destination_opt.append(0)
          total_distance = total_distance + float(new_distance_file[current_address][0])
```

```
In [55]:  #print("Optimized Path: " + str(destination_opt)) #will need to add 0 (WGU) at the end since we want to go back go
          #print("Total Distance: " + str(total_distance) + " miles")
```

```
In [56]:  address_name = []
          for column_name in distance_file_csv.columns.values:
              address_name.append(column_name)

          #for i in range(len(address_name)):
              #print("Node " + str(i) + " - " + address_name[i])
```

```
In [57]:  ## order the addresses based on the optimized list
          opt_address = [address_name[i] for i in destination_opt]
          #print(opt_address)
```

```
In [58]:  #print("Optimized Path + Locations: \n")

          #for (opt, a) in zip(destination_opt, opt_address):
              #print("Node " + str(opt) + " - " + a)
```

This would be the optimized path if there was just one truck, but that would take to much time and we wouldn't be able to get all the packages delivered by EOD.

Now we can work on optimizing the path for all three trucks: Truck One, Truck Two, and Truck Three, since we can see that the Nearest Neighbor Algorithm works properly. In order to do this, each truck variable will be a copy of the `distance_file_csv`, and from there remove any columns (addresses) that are not in the specific variable's dictionary.

Truck One Data

```
In [59]:  truck_one_csv = distance_file_csv.copy()
          #truck_one_csv.head()
```

```
In [60]:  truck_one_csv.drop(truck_one_csv.columns[[1, 3, 7, 8, 9]], axis = 1, inplace=True)
          truck_one_csv = truck_one_csv.drop(truck_one_csv.index[[1, 3, 7, 8, 9]])
```

```
In [61]:  truck_one_csv.drop(truck_one_csv.columns[[5, 6, 8, 9]], axis = 1, inplace=True)
          truck_one_csv = truck_one_csv.drop(truck_one_csv.index[[5, 6, 8, 9]])
```

```
In [62]:  truck_one_csv.drop(truck_one_csv.columns[[7, 13, 14, 15, 16, 17]], axis = 1, inplace=True)
          truck_one_csv = truck_one_csv.drop(truck_one_csv.index[[7, 13, 14, 15, 16, 17]])
```

```
In [63]:  truck_one_csv.head(40)
```

Out[63]:

	Western Governors University 4001 South 700 East	Sugar House Park 1330 2100 S	Salt Lake City Division of Health Services 177 W Price Ave	South Salt Lake Public Works 195 W Oakland Ave	Salt Lake City Streets and Sanitation 2010 W 500 S	Council Hall 300 State St	Salt Lake County/United Police Dept 3365 S 900 W	Housing Auth. of Salt Lake County 3595 Main St	Utah DMV Administrative Office 380 W 2880 S	Third District Juvenile Court 410 S State St	Cottonwood Regional Softball Complex 4300 S 130
DISTANCE BETWEEN HUBS IN MILES											
Western Governors University 4001 South 700 East	0.0	3.8	2.2	3.5	10.9	7.6	3.7	2.0	3.6	6.5	1
Sugar House Park 1330 2100 S	3.8	0.0	4.4	2.8	8.6	5.3	5.8	4.1	3.6	4.3	3
Salt Lake City Division of Health Services 177 W Price Ave	2.2	4.4	0.0	1.9	7.9	7.5	2.7	0.5	1.7	6.5	3
South Salt Lake Public Works 195 W Oakland Ave	3.5	2.8	1.9	0.0	6.3	4.5	3.8	1.9	1.1	3.5	4
Salt Lake City Streets and Sanitation 2010 W 500 S	10.9	8.6	7.9	6.3	0.0	4.2	5.8	7.7	6.6	3.2	11
Council Hall 300 State St	7.6	5.3	7.5	4.5	4.2	0.0	6.6	5.9	5.4	1.0	8
Salt Lake County/United Police Dept 3365 S 900 W	3.7	5.8	2.7	3.8	5.8	6.6	0.0	1.6	1.7	6.4	4
Housing Auth. of Salt Lake County 3595 Main St	2.0	4.1	0.5	1.9	7.7	5.9	1.6	0.0	1.6	4.9	3
Utah DMV Administrative Office 380 W 2880 S	3.6	3.6	1.7	1.1	6.6	5.4	1.7	1.6	0.0	4.4	4
Third District Juvenile Court 410 S State St	6.5	4.3	6.5	3.5	3.2	1.0	6.4	4.9	4.4	0.0	7
Cottonwood Regional Softball Complex 4300 S 1300 E	1.9	3.3	3.2	4.9	11.2	8.5	4.9	3.0	4.6	7.5	0
Holiday City Office 4580 S 2300 E	3.4	5.0	5.2	6.9	12.7	10.3	6.9	5.0	6.6	9.3	2

```
In [64]:   truck_one_distances = truck_one_csv.to_numpy()
           #print(truck_one_distances)
```

```
In [65]:   truck_one_address = []

           for value in truck_one_dict.values():
               if value[0] not in truck_one_address:
                   truck_one_address.append(value[0])

           #print(truck_one_address)
```

Truck Two Data

```
In [66]:   truck_two_csv = distance_file_csv.copy()
           #truck_two_csv.head()
```

```
In [67]:   truck_two_csv.drop(truck_two_csv.columns[[1, 2, 4, 5, 6]], axis = 1, inplace=True)
           truck_two_csv = truck_two_csv.drop(truck_two_csv.index[[1, 2, 4, 5, 6]])
```

```
In [68]:   truck_two_csv.drop(truck_two_csv.columns[[5, 6, 8, 9]], axis = 1, inplace=True)
           truck_two_csv = truck_two_csv.drop(truck_two_csv.index[[5, 6, 8, 9]])
```

```
In [69]:   truck_two_csv.drop(truck_two_csv.columns[[6, 8, 11, 12, 14]], axis = 1, inplace=True)
           truck_two_csv = truck_two_csv.drop(truck_two_csv.index[[6, 8, 11, 12, 14]])
```

```
In [70]: truck_two_csv.head()
```

Out[70]:

DISTANCE BETWEEN HUBS IN MILES	Western Governors University 4001 South 700 East	Taylorsville-Bennion Heritage City Gov Off 1488 4800 S	Deker Lake 2300 Parkway Blvd	Salt Lake City Ottinger Hall 233 Canyon Rd	Columbus Library 2530 S 500 E	Council Hall 300 State St	West Valley Prosecutor 3575 W Valley Central Sta bus Loop	Utah DMV Administrative Office 380 W 2880 S	Third District Juvenile Court 410 S State St	Murray City Museum 5025 State St	City Center of Rock Springs 5383 South 900 East #104	T P
Western Governors University 4001 South 700 East	0.0	11.0	8.6	7.6	2.8	7.6	7.6	3.6	6.5	2.4	2.4	
Taylorsville-Bennion Heritage City Gov Off 1488 4800 S	11.0	0.0	4.0	11.1	7.3	11.1	7.2	6.0	10.6	4.7	6.4	
Deker Lake 2300 Parkway Blvd	8.6	4.0	0.0	7.7	9.3	7.7	3.1	4.6	6.7	7.8	9.5	
Salt Lake City Ottinger Hall 233 Canyon Rd	7.6	11.1	7.7	0.0	4.8	0.6	7.2	5.4	1.0	7.8	9.5	
Columbus Library 2530 S 500 E	2.8	7.3	9.3	4.8	0.0	5.1	6.7	1.8	4.1	4.3	4.8	

```
In [71]: truck_two_distances = truck_two_csv.to_numpy()
         #print(truck_two_distances)
```

```
In [72]: truck_two_address = []

         for value in truck_two_dict.values():
             #print(value[0])
             if value[0] not in truck_two_address:
                 truck_two_address.append(value[0])

         #print(truck_two_address)
```

Truck Three Data

```
In [73]: truck_three_csv = distance_file_csv.copy()
         #truck_three_csv.head()
```

```
In [74]: truck_three_csv.drop(truck_three_csv.columns[[3, 4, 5, 8]], axis = 1, inplace=True)
         truck_three_csv = truck_three_csv.drop(truck_three_csv.index[[3, 4, 5, 8]])
```

```
In [75]: truck_three_csv.drop(truck_three_csv.columns[[12, 14, 16, 17, 18, 21, 22]], axis = 1, inplace=True)
         truck_three_csv = truck_three_csv.drop(truck_three_csv.index[[12, 14, 16, 17, 18, 21, 22]])
```

```
In [76]: pd.set_option('display.max_columns', None)
         truck_three_csv.head(7)
```

Out[76]:

	Western Governors University 4001 South 700 East	International Peace Gardens 1060 Dalton Ave S	Sugar House Park 1330 2100 S	Salt Lake City Streets and Sanitation 2010 W 500 S	Deker Lake 2300 Parkway Blvd	Columbus Library 2530 S 500 E	Taylorsville City Hall 2600 Taylorsville Blvd	South Salt Lake Police 2835 Main St	Council Hall 300 State St	Redwood Park 3060 Lester St	Salt Lake County Mental Health 3148 S 1100 W	Sa County/ Polic 3365 S
DISTANCE BETWEEN HUBS IN MILES												
Western Governors University 4001 South 700 East	0.0	7.2	3.8	10.9	8.6	2.8	6.4	3.2	7.6	5.2	4.4	
International Peace Gardens 1060 Dalton Ave S	7.2	0.0	7.1	1.6	2.8	6.3	7.3	5.3	4.8	3.0	4.6	
Sugar House Park 1330 2100 S	3.8	7.1	0.0	8.6	6.3	1.6	10.4	3.0	5.3	6.5	5.6	
Salt Lake City Streets and Sanitation 2010 W 500 S	10.9	1.6	8.6	0.0	4.0	8.0	8.6	6.9	4.2	4.2	8.0	
Deker Lake 2300 Parkway Blvd	8.6	2.8	6.3	4.0	0.0	9.3	4.6	4.8	7.7	1.6	3.3	
Columbus Library 2530 S 500 E	2.8	6.3	1.6	8.0	9.3	0.0	9.4	1.1	5.1	4.6	3.7	
Taylorsville City Hall 2600 Taylorsville Blvd	6.4	7.3	10.4	8.6	4.6	9.4	0.0	7.3	12.0	4.9	5.2	

```
In [77]: truck_three_distances = truck_three_csv.to_numpy()
         #print(truck_three_distances)
         #print(truck_three_distances[14])
```

```
In [78]: truck_three_address = []

         for value in truck_three_dict.values():
             #print(value[0])
             if value[0] not in truck_three_address:
                 truck_three_address.append(value[0])

         #print(truck_three_address)
```

Nearest Neighbor Algorithm

```python
#notes on this algorithm are seen above in the practice code if there was only one truck
def truck_best_path(truck_dict, truck_distances, truck_csv, truck_pathway, truck_location_miles):
    truck_num_address = len(truck_csv)
    truck_visited = [False] * truck_num_address
    truck_path = []
    truck_distance = 0

    truck_current_location = 0
    truck_path.append(truck_current_location)
    truck_visited[truck_current_location] = True

    if truck_dict == truck_three_dict:
        truck_current_location = 9
        truck_path.append(truck_current_location)
        truck_visited[truck_current_location] = True


    #O(n2)
    while len(truck_path) < truck_num_address:
        truck_nearest_address = None
        truck_nearest_distance = math.inf

        for x in range(truck_num_address):
            if truck_visited[x] == False:
                truck_distance = float(truck_distances[truck_current_location][x])
                if truck_distance < truck_nearest_distance:
                    truck_nearest_address = x
                    truck_nearest_distance = truck_distance


        truck_location_miles.append(truck_nearest_distance)
        truck_current_location = truck_nearest_address
        truck_path.append(truck_current_location)
        truck_visited[truck_current_location] = True

    truck_distance = round(sum(truck_location_miles), 2)


    if truck_dict == truck_three_dict:
        truck_distance = 0
        truck_location_miles.clear()
        for i in range(len(truck_path)):
            if truck_path[i + 1] == truck_path[-1]:
                truck_location_miles.append(float(truck_three_distances[truck_path[i]][truck_path[i+1]]))
                break
            else:
                truck_location_miles.append(float(truck_three_distances[truck_path[i]][truck_path[i+1]]))
        #print(truck_location_miles)

        truck_distance = round(sum(truck_location_miles), 2)


    truck_location_miles.append(float(truck_distances[truck_path[-1]][truck_path[0]]))



    print("Optimized Truck Path: " + str(truck_path))
    print("Total Distance: " + str(truck_distance) + " miles\n")


    #O(n)
    address_name = []
    for column_name in truck_csv.columns.values:
        address_name.append(column_name)


    truck_best_path = [address_name[i] for i in truck_path]
    print("Best Path for Truck:")

    #O(n)
    for (path, x) in zip(truck_path, truck_best_path):
        truck_pathway.append(x)
```

```
                print("Location " + str(path) + " - " + x)
```

Truck One

In [80]:
```
#truck one
#need to add western governors back in to figure out the time for truck three to leave
truck_one_pathway = []
truck_one_location_miles = []
truck_best_path(truck_one_dict, truck_one_distances,
               truck_one_csv, truck_one_pathway, truck_one_location_miles)

#order of location # is based on truck_one_csv columns
```

```
Optimized Truck Path: [0, 10, 11, 1, 3, 8, 7, 2, 6, 4, 9, 5]
Total Distance: 27.6 miles

Best Path for Truck:
Location 0 - Western Governors University 4001 South 700 East
Location 10 - Cottonwood Regional Softball Complex 4300 S 1300 E
Location 11 - Holiday City Office 4580 S 2300 E
Location 1 - Sugar House Park 1330 2100 S
Location 3 - South Salt Lake Public Works 195 W Oakland Ave
Location 8 - Utah DMV Administrative Office 380 W 2880 S
Location 7 - Housing Auth. of Salt Lake County 3595 Main St
Location 2 - Salt Lake City Division of Health Services  177 W Price Ave
Location 6 - Salt Lake County/United Police Dept 3365 S 900 W
Location 4 - Salt Lake City Streets and Sanitation 2010 W 500 S
Location 9 - Third District Juvenile Court 410 S State St
Location 5 - Council Hall 300 State St
```

Truck Two

In [81]:
```
#truck two
truck_two_pathway = []
truck_two_location_miles = []
truck_best_path(truck_two_dict, truck_two_distances,
               truck_two_csv, truck_two_pathway, truck_two_location_miles)
```

```
Optimized Truck Path: [0, 9, 10, 12, 4, 7, 11, 8, 3, 5, 6, 2, 1]
Total Distance: 35.2 miles

Best Path for Truck:
Location 0 - Western Governors University 4001 South 700 East
Location 9 - Murray City Museum 5025 State St
Location 10 - City Center of Rock Springs 5383 South 900 East #104
Location 12 - Wheeler Historic Farm  6351 South 900 East
Location 4 - Columbus Library 2530 S 500 E
Location 7 - Utah DMV Administrative Office 380 W 2880 S
Location 11 - Rice Terrace Pavilion Park 600 E 900 South
Location 8 - Third District Juvenile Court 410 S State St
Location 3 - Salt Lake City Ottinger Hall 233 Canyon Rd
Location 5 - Council Hall 300 State St
Location 6 - West Valley Prosecutor 3575 W Valley Central Sta bus Loop
Location 2 - Deker Lake 2300 Parkway Blvd
Location 1 - Taylorsville-Bennion Heritage City Gov Off 1488 4800 S
```

Truck Three

In [82]:
```
#truck three
#location 9 (3060 Lester St) needs to be the first location as package 11 must be delivered by 10:30
truck_three_pathway = []
truck_three_location_miles = []
truck_best_path(truck_three_dict, truck_three_distances,
               truck_three_csv, truck_three_pathway, truck_three_location_miles)
```

```
Optimized Truck Path: [0, 9, 10, 11, 12, 7, 5, 2, 13, 8, 3, 1, 4, 14, 6, 15]
Total Distance: 36.0 miles

Best Path for Truck:
Location 0 - Western Governors University 4001 South 700 East
Location 9 - Redwood Park 3060 Lester St
Location 10 - Salt Lake County Mental Health 3148 S 1100 W
Location 11 - Salt Lake County/United Police Dept 3365 S 900 W
Location 12 - Housing Auth. of Salt Lake County 3595 Main St
Location 7 - South Salt Lake Police 2835 Main St
Location 5 - Columbus Library 2530 S 500 E
Location 2 - Sugar House Park 1330 2100 S
Location 13 - Third District Juvenile Court 410 S State St
Location 8 - Council Hall 300 State St
Location 3 - Salt Lake City Streets and Sanitation 2010 W 500 S
Location 1 - International Peace Gardens 1060 Dalton Ave S
Location 4 - Deker Lake 2300 Parkway Blvd
Location 14 - Valley Regional Softball Complex 5100 South 2700 West
Location 6 - Taylorsville City Hall 2600 Taylorsville Blvd
Location 15 - City Center of Rock Springs 5383 South 900 East #104
```

All Truck Total Mileage

In [83]:
```python
all_truck_mileage = truck_one_location_miles + truck_two_location_miles + truck_three_location_miles
all_truck_total_mileage = round(sum(all_truck_mileage), 2)
```

In [84]:
```python
print("Total Distance Between All Trucks: " + str(all_truck_total_mileage) + " mi")
```

```
Total Distance Between All Trucks: 119.8 mi
```

4. Get Packages Sent Out!

Remember:

- The trucks travel at an average speed of 18 miles per hour and have an infinite amount of gas with no need to stop.
- There are no collisions.
- Three trucks and two drivers are available for deliveries. Each driver stays with the same truck as long as that truck is in service.
- Drivers leave the hub no earlier than 8:00 a.m., with the truck loaded, and can return to the hub for packages if needed.
- The delivery and loading times are instantaneous, i.e., no time passes while at a delivery or when moving packages to a truck at the hub (that time is factored into the calculation of the average speed of the trucks).
- The delivery address for package #9, Third District Juvenile Court, is wrong and will be corrected at 10:20 a.m. WGUPS is aware that the address is incorrect and will be updated at 10:20 a.m. However, WGUPS does not know the correct address (410 S State St., Salt Lake City, UT 84111) until 10:20 a.m.
- Keep the combined total distance traveled under 140 miles.

$$time = \frac{distance}{speed(mph)} x 60 min$$

```python
In [103...  def send_packages(truck_pathway, truck_location_miles, truck_number_dict, time, truck_packages):

                #O(n2)
                #changes the third index of value to 'EN ROUTE'
                #also creates a new dictionary with the delivery time being the key and the value being a dictionary of all tru
                for key, value in truck_number_dict.items():
                    value[3] = 'EN ROUTE'
                    truck_packages[value[5]] = truck_dict

                current_time = time
                #this changes package 9's address to "410 S State St" at 10:20
                if truck_number_dict == truck_three_dict:
                    for key, value in truck_three_dict.items():
                        if key == 9:
                            if str(current_time) == "10:20:00":
                                value[0] = "410 S State St"


                if truck_number_dict == truck_two_dict:
                    for key, value in truck_two_dict.items():
                        if key == 12:
                            value[0] = "3575 W"


                #O(n2)
                for i in range(len(truck_pathway)):
                    #starts the delivery, shows the current time
                    if truck_pathway[i] == truck_pathway[0]:
                        print("-------- Out For Delivery --------")
                        print("       | Current Time: " + str(current_time) + " |        \n")

                    #when truck_pathway[i] isn't the beginning address
                    if truck_pathway[i] != truck_pathway[0]:
                        for key, value in truck_number_dict.items():
                            if key == 9:
                                if current_time >= datetime.time(10, 20):
                                    value[0] = "410 S State St"
                                #since package 9 was changed, no packages will be delivered to "300 State St"
                                if truck_pathway == truck_three_pathway:
                                    if "300 State St" in truck_pathway[i]:
                                        print("\tNo packages to deliver here!")
                                        break
                            #prints the package and the time it was delivered
                            #also sets the third value to 'DELIVERED'
                            if value[0] in truck_pathway[i]:
                                print("\tPackage " + str(key) + " has been delivered at " + str(current_time))
                                value[4] = str(time)
                                value[3] = "DELIVERED"
                                value[5] = str(current_time)

                        print()
                        print("----------------------------------------------------------------------------------------------")
                        print()


                    #updating the time using the time equation (time = (distance/speed) * 60)
                    time_in_min = int((truck_location_miles[i] / 18) * 60)
                    #print(time_in_min)

                    #if the minutes is less than 60
                    if (current_time.minute + time_in_min) < 60:
                        current_time = datetime.time(current_time.hour, current_time.minute + time_in_min)
                    #when the minutes is more than 60, it will add an hour and find the difference to determine the minutes
                    else:
                        current_time = datetime.time(current_time.hour + 1, abs((current_time.minute) - (60 - time_in_min)))


                    #when truck_pathway[i] is the last variable
                    if truck_pathway[i] == truck_pathway[-1]:
                        print()
                        print(str(truck_pathway[i]) + " ---> " + str(truck_pathway[0]) + ": " + str(truck_location_miles[i]) +
                        print()
```

```
            print("-------- Arrived @ " + truck_pathway[0] + " --------")
            print("         | Current Time: " + str(current_time) + " |          \n")
            break
        else:
            #shows the current truck_pathway going to the upcoming truck_pathway and shows the miles between the tw
            print(str(truck_pathway[i]) + " ---> " + str(truck_pathway[i + 1]) + ": " + str(truck_location_miles[i]
        print("\n\n")

        print("-------- Arrived @ " + truck_pathway[i + 1] + " --------")
        print("         | Current Time: " + str(current_time) + " |          \n")
```

Truck One

In [104…
```
truck_one_packages = {}
send_packages(truck_one_pathway, truck_one_location_miles, truck_one_dict, datetime.time(8,0), truck_one_packages)
```

```
-------- Out For Delivery --------
        | Current Time: 08:00:00 |

Western Governors University 4001 South 700 East ---> Cottonwood Regional Softball Complex 4300 S 1300 E: 1.9 mi



-------- Arrived @ Cottonwood Regional Softball Complex 4300 S 1300 E --------
          | Current Time: 08:06:00 |

        Package 14 has been delivered at 08:06:00

-------------------------------------------------------------------------------------------

Cottonwood Regional Softball Complex 4300 S 1300 E ---> Holiday City Office 4580 S 2300 E: 2.0 mi



-------- Arrived @ Holiday City Office 4580 S 2300 E --------
          | Current Time: 08:12:00 |

        Package 15 has been delivered at 08:12:00
        Package 16 has been delivered at 08:12:00
        Package 34 has been delivered at 08:12:00

-------------------------------------------------------------------------------------------

Holiday City Office 4580 S 2300 E ---> Sugar House Park 1330 2100 S: 5.0 mi



-------- Arrived @ Sugar House Park 1330 2100 S --------
          | Current Time: 08:28:00 |

        Package 29 has been delivered at 08:28:00

-------------------------------------------------------------------------------------------

Sugar House Park 1330 2100 S ---> South Salt Lake Public Works 195 W Oakland Ave: 2.8 mi



-------- Arrived @ South Salt Lake Public Works 195 W Oakland Ave --------
          | Current Time: 08:37:00 |

        Package 1 has been delivered at 08:37:00

-------------------------------------------------------------------------------------------

South Salt Lake Public Works 195 W Oakland Ave ---> Utah DMV Administrative Office 380 W 2880 S: 1.1 mi



-------- Arrived @ Utah DMV Administrative Office 380 W 2880 S --------
          | Current Time: 08:40:00 |

        Package 40 has been delivered at 08:40:00

-------------------------------------------------------------------------------------------

Utah DMV Administrative Office 380 W 2880 S ---> Housing Auth. of Salt Lake County 3595 Main St: 1.6 mi



-------- Arrived @ Housing Auth. of Salt Lake County 3595 Main St --------
          | Current Time: 08:45:00 |

        Package 20 has been delivered at 08:45:00

-------------------------------------------------------------------------------------------

Housing Auth. of Salt Lake County 3595 Main St ---> Salt Lake City Division of Health Services  177 W Price Ave:
```

```
      0.5 mi



      -------- Arrived @ Salt Lake City Division of Health Services  177 W Price Ave --------
             | Current Time: 08:46:00 |

             Package 19 has been delivered at 08:46:00

      --------------------------------------------------------------------------------------

      Salt Lake City Division of Health Services  177 W Price Ave ---> Salt Lake County/United Police Dept 3365 S 900 W:
      2.7 mi



      -------- Arrived @ Salt Lake County/United Police Dept 3365 S 900 W --------
             | Current Time: 08:55:00 |

             Package 31 has been delivered at 08:55:00

      --------------------------------------------------------------------------------------

      Salt Lake County/United Police Dept 3365 S 900 W ---> Salt Lake City Streets and Sanitation 2010 W 500 S: 5.8 mi



      -------- Arrived @ Salt Lake City Streets and Sanitation 2010 W 500 S --------
             | Current Time: 09:14:00 |

             Package 13 has been delivered at 09:14:00

      --------------------------------------------------------------------------------------

      Salt Lake City Streets and Sanitation 2010 W 500 S ---> Third District Juvenile Court 410 S State St: 3.2 mi



      -------- Arrived @ Third District Juvenile Court 410 S State St --------
             | Current Time: 09:24:00 |

             Package 37 has been delivered at 09:24:00

      --------------------------------------------------------------------------------------

      Third District Juvenile Court 410 S State St ---> Council Hall 300 State St: 1.0 mi



      -------- Arrived @ Council Hall 300 State St --------
             | Current Time: 09:27:00 |

             Package 30 has been delivered at 09:27:00

      --------------------------------------------------------------------------------------

      Council Hall 300 State St ---> Western Governors University 4001 South 700 East: 7.6 mi

      -------- Arrived @ Western Governors University 4001 South 700 East --------
             | Current Time: 09:52:00 |
```

In [105… `truck_one_packages_sorted = dict(sorted(truck_one_packages.items()))`

Truck Two

In [106…
```
truck_two_packages = {}
send_packages(truck_two_pathway, truck_two_location_miles, truck_two_dict, datetime.time(8,0), truck_two_packages)
```

```
-------- Out For Delivery --------
        | Current Time: 08:00:00 |

Western Governors University 4001 South 700 East ---> Murray City Museum 5025 State St: 2.4 mi



-------- Arrived @ Murray City Museum 5025 State St --------
        | Current Time: 08:08:00 |

        Package 24 has been delivered at 08:08:00

-------------------------------------------------------------------------------------------

Murray City Museum 5025 State St ---> City Center of Rock Springs 5383 South 900 East #104: 1.7 mi



-------- Arrived @ City Center of Rock Springs 5383 South 900 East #104 --------
        | Current Time: 08:13:00 |

        Package 26 has been delivered at 08:13:00

-------------------------------------------------------------------------------------------

City Center of Rock Springs 5383 South 900 East #104 ---> Wheeler Historic Farm  6351 South 900 East: 1.3 mi



-------- Arrived @ Wheeler Historic Farm  6351 South 900 East --------
        | Current Time: 08:17:00 |

        Package 22 has been delivered at 08:17:00

-------------------------------------------------------------------------------------------

Wheeler Historic Farm  6351 South 900 East ---> Columbus Library 2530 S 500 E: 6.0 mi



-------- Arrived @ Columbus Library 2530 S 500 E --------
        | Current Time: 08:37:00 |

        Package 2 has been delivered at 08:37:00

-------------------------------------------------------------------------------------------

Columbus Library 2530 S 500 E ---> Utah DMV Administrative Office 380 W 2880 S: 1.8 mi



-------- Arrived @ Utah DMV Administrative Office 380 W 2880 S --------
        | Current Time: 08:43:00 |

        Package 4 has been delivered at 08:43:00

-------------------------------------------------------------------------------------------

Utah DMV Administrative Office 380 W 2880 S ---> Rice Terrace Pavilion Park 600 E 900 South: 4.3 mi



-------- Arrived @ Rice Terrace Pavilion Park 600 E 900 South --------
        | Current Time: 08:57:00 |

        Package 10 has been delivered at 08:57:00

-------------------------------------------------------------------------------------------

Rice Terrace Pavilion Park 600 E 900 South ---> Third District Juvenile Court 410 S State St: 1.8 mi
```

```
-------- Arrived @ Third District Juvenile Court 410 S State St --------
        | Current Time: 09:03:00 |

        Package 38 has been delivered at 09:03:00

-----------------------------------------------------------------------------------

Third District Juvenile Court 410 S State St ---> Salt Lake City Ottinger Hall 233 Canyon Rd: 1.0 mi


-------- Arrived @ Salt Lake City Ottinger Hall 233 Canyon Rd --------
        | Current Time: 09:06:00 |

        Package 3 has been delivered at 09:06:00

-----------------------------------------------------------------------------------

Salt Lake City Ottinger Hall 233 Canyon Rd ---> Council Hall 300 State St: 0.6 mi


-------- Arrived @ Council Hall 300 State St --------
        | Current Time: 09:08:00 |

        Package 8 has been delivered at 09:08:00

-----------------------------------------------------------------------------------

Council Hall 300 State St ---> West Valley Prosecutor 3575 W Valley Central Sta bus Loop: 7.2 mi


-------- Arrived @ West Valley Prosecutor 3575 W Valley Central Sta bus Loop --------
        | Current Time: 09:32:00 |

        Package 12 has been delivered at 09:32:00

-----------------------------------------------------------------------------------

West Valley Prosecutor 3575 W Valley Central Sta bus Loop ---> Deker Lake 2300 Parkway Blvd: 3.1 mi


-------- Arrived @ Deker Lake 2300 Parkway Blvd --------
        | Current Time: 09:42:00 |

        Package 36 has been delivered at 09:42:00

-----------------------------------------------------------------------------------

Deker Lake 2300 Parkway Blvd ---> Taylorsville-Bennion Heritage City Gov Off 1488 4800 S: 4.0 mi


-------- Arrived @ Taylorsville-Bennion Heritage City Gov Off 1488 4800 S --------
        | Current Time: 09:55:00 |

        Package 18 has been delivered at 09:55:00

-----------------------------------------------------------------------------------

Taylorsville-Bennion Heritage City Gov Off 1488 4800 S ---> Western Governors University 4001 South 700 East: 11.0
mi

-------- Arrived @ Western Governors University 4001 South 700 East --------
        | Current Time: 10:31:00 |
```

```
In [107… truck_two_packages_sorted = dict(sorted(truck_two_packages.items()))
```

Truck Three

```
truck_three_packages = {}
send_packages(truck_three_pathway, truck_three_location_miles, truck_three_dict, datetime.time(10), truck_three_pac
```

```
-------- Out For Delivery --------
        | Current Time: 10:00:00 |

Western Governors University 4001 South 700 East ---> Redwood Park 3060 Lester St: 5.2 mi



-------- Arrived @ Redwood Park 3060 Lester St --------
        | Current Time: 10:17:00 |

        Package 6 has been delivered at 10:17:00
-------------------------------------------------------------------------------------------
Redwood Park 3060 Lester St ---> Salt Lake County Mental Health 3148 S 1100 W: 1.3 mi



-------- Arrived @ Salt Lake County Mental Health 3148 S 1100 W --------
        | Current Time: 10:21:00 |

        Package 17 has been delivered at 10:21:00
-------------------------------------------------------------------------------------------
Salt Lake County Mental Health 3148 S 1100 W ---> Salt Lake County/United Police Dept 3365 S 900 W: 0.6 mi



-------- Arrived @ Salt Lake County/United Police Dept 3365 S 900 W --------
        | Current Time: 10:23:00 |

        Package 32 has been delivered at 10:23:00
-------------------------------------------------------------------------------------------
Salt Lake County/United Police Dept 3365 S 900 W ---> Housing Auth. of Salt Lake County 3595 Main St: 1.6 mi



-------- Arrived @ Housing Auth. of Salt Lake County 3595 Main St --------
        | Current Time: 10:28:00 |

        Package 21 has been delivered at 10:28:00
-------------------------------------------------------------------------------------------
Housing Auth. of Salt Lake County 3595 Main St ---> South Salt Lake Police 2835 Main St: 1.2 mi



-------- Arrived @ South Salt Lake Police 2835 Main St --------
        | Current Time: 10:32:00 |

        Package 28 has been delivered at 10:32:00
-------------------------------------------------------------------------------------------
South Salt Lake Police 2835 Main St ---> Columbus Library 2530 S 500 E: 1.1 mi



-------- Arrived @ Columbus Library 2530 S 500 E --------
        | Current Time: 10:35:00 |

        Package 33 has been delivered at 10:35:00
-------------------------------------------------------------------------------------------
Columbus Library 2530 S 500 E ---> Sugar House Park 1330 2100 S: 1.6 mi
```

```
-------- Arrived @ Sugar House Park 1330 2100 S --------
        | Current Time: 10:40:00 |

        Package 7 has been delivered at 10:40:00

-----------------------------------------------------------------------------------------

Sugar House Park 1330 2100 S ---> Third District Juvenile Court 410 S State St: 4.3 mi



-------- Arrived @ Third District Juvenile Court 410 S State St --------
        | Current Time: 10:54:00 |

        Package 5 has been delivered at 10:54:00
        Package 9 has been delivered at 10:54:00

-----------------------------------------------------------------------------------------

Third District Juvenile Court 410 S State St ---> Council Hall 300 State St: 1.0 mi



-------- Arrived @ Council Hall 300 State St --------
        | Current Time: 10:57:00 |

        No packages to deliver here!

-----------------------------------------------------------------------------------------

Council Hall 300 State St ---> Salt Lake City Streets and Sanitation 2010 W 500 S: 4.2 mi



-------- Arrived @ Salt Lake City Streets and Sanitation 2010 W 500 S --------
        | Current Time: 11:11:00 |

        Package 39 has been delivered at 11:11:00

-----------------------------------------------------------------------------------------

Salt Lake City Streets and Sanitation 2010 W 500 S ---> International Peace Gardens 1060 Dalton Ave S: 1.6 mi



-------- Arrived @ International Peace Gardens 1060 Dalton Ave S --------
        | Current Time: 11:16:00 |

        Package 35 has been delivered at 11:16:00
        Package 27 has been delivered at 11:16:00

-----------------------------------------------------------------------------------------

International Peace Gardens 1060 Dalton Ave S ---> Deker Lake 2300 Parkway Blvd: 2.8 mi



-------- Arrived @ Deker Lake 2300 Parkway Blvd --------
        | Current Time: 11:25:00 |


-----------------------------------------------------------------------------------------

Deker Lake 2300 Parkway Blvd ---> Valley Regional Softball Complex 5100 South 2700 West: 4.2 mi



-------- Arrived @ Valley Regional Softball Complex 5100 South 2700 West --------
        | Current Time: 11:39:00 |

        Package 23 has been delivered at 11:39:00
```

```
    ------------------------------------------------------------------------------------------

    Valley Regional Softball Complex 5100 South 2700 West ---> Taylorsville City Hall 2600 Taylorsville Blvd: 0.4 mi


    -------- Arrived @ Taylorsville City Hall 2600 Taylorsville Blvd --------
            | Current Time: 11:40:00 |

         Package 11 has been delivered at 11:40:00

    ------------------------------------------------------------------------------------------

    Taylorsville City Hall 2600 Taylorsville Blvd ---> City Center of Rock Springs 5383 South 900 East #104: 4.9 mi


    -------- Arrived @ City Center of Rock Springs 5383 South 900 East #104 --------
            | Current Time: 11:56:00 |

         Package 25 has been delivered at 11:56:00

    ------------------------------------------------------------------------------------------

    City Center of Rock Springs 5383 South 900 East #104 ---> Western Governors University 4001 South 700 East: 2.4 mi

    -------- Arrived @ Western Governors University 4001 South 700 East --------
            | Current Time: 12:04:00 |
```

In [109… `truck_three_packages_sorted = dict(sorted(truck_three_packages.items()))`

All Trucks

In [110… `all_truck_packages = truck_one_packages_sorted | truck_two_packages_sorted | truck_three_packages_sorted`

In [111… `all_truck_packages_sorted = dict(sorted(all_truck_packages.items()))`

In [112…
```
#for key, value in all_truck_packages_sorted.items():
    #print(key, value)
    #print()
```

F. Look-Up Function

The look-up function will be pulling information from the Hash Table created previously in order to view the specifications of the packages. First the data from the Hash Table needs to be pulled from each truck and combine them together before inputting them into the function.

Now that the data has been created, we can ask the user for input to look up the specific packages.

```python
In [95]: def look_up_package(truck_dict, user_input):
             #O(n2)
             while user_input != "":
                 if user_input.isnumeric():
                     #while the input is in between 1 and 40 since the packages go from 1-40
                     if int(user_input) <= 40 and int(user_input) >= 1:
                         for key, value in sorted(truck_dict.items()):
                             if int(user_input) == key:
                                 print(value)
                                 print()
                                 exit_input = str(input("Are you finished searching for packages? [y/n] ")).lower()
                                 if exit_input == "n" or exit_input == "y":
                                     if exit_input == "y":
                                         return
                                     else:
                                         user_input = str(input("\nWhat package are you looking for? Package #"))
                                 else:
                                     print("Invalid, please enter choose [y/n] ")
                                     exit_input = str(input("Are you finished searching for packages? [y/n] ")).lower()
                                     if exit_input == "y":
                                         return
                                     elif exit_input == "n":
                                         user_input = str(input("\nWhat package are you looking for? Package #"))
                                         print(value)
                                         exit_input = str(input("Are you finished searching for packages? [y/n] ")).lower()
                             else:
                                 print("Invalid, please enter a package number from 1 - 40.")
                                 user_input = str(input("\nWhat package are you looking for? Package #")).lower()

                     else:
                         print("Invalid, please enter a package number from 1 - 40.")
                         user_input = str(input("What package are you looking for? Package #")).lower()
```

```python
In [96]: print("--------------------------- Look Up a Package ---------------------------\n")
         user_input = str(input("What package are you looking for? Package #"))

         look_up_package(truck_dict, user_input)
```

```
--------------------------- Look Up a Package ---------------------------

What package are you looking for? Package #10
['600 E 900 South', 'EOD', '1', 'DELIVERED', '08:00:00', '08:57:00']

Are you finished searching for packages? [y/n] y
```

G. Create an Interface to View Status and Info of Package

This interface will provide the user to view the status and information of any package at any time. The function will be based on the time so we can see if it's been delayed, loaded, enroute, or delivered.

```python
In [113… truck_pathway = truck_one_pathway + truck_two_pathway + truck_three_pathway
```

```python
In [114… truck_packages_copy_key = []
         truck_packages_copy_values = []
```

```python
#print("Please enter a start time: ")
#start_hour_input = str(input("Hour: "))
#start_minute_input = str(input("Minute(s): "))
#start_time = datetime.time(int(start_hour_input), int(start_minute_input))
#print(str(start_time))

#print("\nPlease enter an end time: ")
#end_hour_input = str(input("Hour: "))
#end_minute_input = str(input("Minute(s): "))
#end_time = datetime.time(int(end_hour_input), int(end_minute_input))
#print(str(end_time))


def view_package_by_time(start_time, end_time):

    print("\n----------------------------------------------------------------------------

    #O(n)
    for key, value in all_truck_packages_sorted.items():
        truck_packages_copy_key.append(key)
        truck_packages_copy_values.append(value)

        #O(n)
        for i in range(len(truck_pathway)):
            if truck_pathway[i] != truck_pathway[0]:
                #O(n)
                for j in range(len(truck_packages_copy_values)):
                    #O(n)
                    #Looks at the key and value of the dictionaries truck_packages_copy_values[j]
                    for k, v in truck_packages_copy_values[j].items():
                        #if the delivery time is greater than the key in truck_packages_copy_key[j] it's en route
                        if v[5] > truck_packages_copy_key[j]:
                            v[3] = 'EN ROUTE'
                        #if the delivery time is less than or equal to truck_packages_copy_key[j] it's delivered
                        if v[5] <= truck_packages_copy_key[j]:
                            v[3] = 'DELIVERED'
                        #if the start time is 10:00 (only truck three)
                        if v[4] == "10:00:00":
                            #if the start time is greater than truck_packages_copy_key[j] the packages are at the h
                            #until 10:00, then it will either be en route or delivered
                            if v[4] > truck_packages_copy_key[j]:
                                v[3] = "LOADED ON TRUCK - AT HUB"


        #print(key, value)
        #print()
        if str(key) >= str(start_time) and str(key) <= str(end_time):
            print(key)
            #goes through the key and value within the value within the all_truck_packages_sorted
            for k, v in value.items():
                for key_one, value_one in truck_one_dict.items():
                    if k == key_one:
                        if v[3] == 'DELIVERED':
                            print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + s
                                ", Delivered at " + str(v[5]))
                        else:
                            print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + s
                for key_two, value_two in truck_two_dict.items():
                    if k == key_two:
                        if v[3] == 'DELIVERED':
                            print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + s
                                ", Delivered at " + str(v[5]))
                        else:
                            print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + s
                for key_three, value_three in truck_three_dict.items():
                    if k == key_three:
                        if v[3] == 'DELIVERED':
                            print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + s
                                ", Delivered at " + str(v[5]))
                        else:
                            print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + s
            print()
```

```python
#each individual truck combined together; works properly but unable to sort the keys in order of time
#for key, value in truck_one_packages_sorted.items():
    #truck_packages_copy_key.append(key)
    #truck_packages_copy_values.append(value)

    #for i in range(len(truck_pathway)):
        #if truck_pathway[i] != truck_pathway[0]:
            #for j in range(len(truck_packages_copy_values)):
                #for k, v in truck_packages_copy_values[j].items():
                    #if v[5] > truck_packages_copy_key[j]:
                        #v[3] = 'EN ROUTE'
                    #if v[0] in truck_pathway[i]:
                        #v[3] = "EN ROUTE"
                    #if truck_packages_copy_key[j] == v[5]:
                        #v[3] = 'DELIVERED'
                    #if v[5] <= truck_packages_copy_key[j]:
                        #v[3] = 'DELIVERED'

    #print(key, value)
    #print()
    #if str(key) >= str(start_time) and str(key) <= str(end_time):
        #print(key)
        #for k, v in value.items():
            #for key_one, value_one in truck_one_dict.items():
                #if k == key_one:
                    #if v[3] == 'DELIVERED':
                        #print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                              #", Delivered at " + str(v[5]))
                    #else:
                        #print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
            #for key_two, value_two in truck_two_dict.items():
                #if k == key_two:
                    #if v[3] == 'DELIVERED':
                        #print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                              #", Delivered at " + str(v[5]))
                    #else:
                        #print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
            #for key_three, value_three in truck_three_dict.items():
                #if k == key_three:
                    #if value_three[4] == '10:00:00':
                        #v[3] = 'LOADED ON TRUCK - AT HUB'
                    #if v[3] == 'DELIVERED':
                        #print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                              #", Delivered at " + str(v[5]))
                    #else:
                        #print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
        #print()


#for key, value in truck_two_packages_sorted.items():
    #truck_packages_copy_key.append(key)
    #truck_packages_copy_values.append(value)

    #for i in range(len(truck_pathway)):
        #if truck_pathway[i] != truck_pathway[0]:
            #for j in range(len(truck_packages_copy_values)):
                #for k, v in truck_packages_copy_values[j].items():
                    #if v[5] > truck_packages_copy_key[j]:
                        #v[3] = 'EN ROUTE'
                    #if v[0] in truck_pathway[i]:
                        #v[3] = "EN ROUTE"
                    #if truck_packages_copy_key[j] == v[5]:
                        #v[3] = 'DELIVERED'
                    #if v[5] <= truck_packages_copy_key[j]:
                        #v[3] = 'DELIVERED'

    #print(key, value)
    #print()
    #if str(key) >= str(start_time) and str(key) <= str(end_time):
        #print(key)
        #for k, v in value.items():
```

```
                #for key_one, value_one in truck_one_dict.items():
                    #if k == key_one:
                        #if v[3] == 'DELIVERED':
                            #print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                                #", Delivered at " + str(v[5]))
                        #else:
                            #print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                #for key_two, value_two in truck_two_dict.items():
                    #if k == key_two:
                        #if v[3] == 'DELIVERED':
                            #print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                                #", Delivered at " + str(v[5]))
                        #else:
                            #print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                #for key_three, value_three in truck_three_dict.items():
                    #if k == key_three:
                        #if value_three[4] == '10:00:00':
                            #v[3] = 'LOADED ON TRUCK - AT HUB'
                        #if v[3] == 'DELIVERED':
                            #print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                                #", Delivered at " + str(v[5]))
                        #else:
                            #print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
        #print()


#for key, value in truck_three_packages_sorted.items():
    #truck_packages_copy_key.append(key)
    #truck_packages_copy_values.append(value)

    #for i in range(len(truck_pathway)):
        #if truck_pathway[i] != truck_pathway[0]:
            #for j in range(len(truck_packages_copy_values)):
                #for k, v in truck_packages_copy_values[j].items():
                    #if v[5] > truck_packages_copy_key[j]:
                        #v[3] = 'EN ROUTE'
                    #if v[0] in truck_pathway[i]:
                        #v[3] = "EN ROUTE"
                    #if truck_packages_copy_key[j] == v[5]:
                        #v[3] = 'DELIVERED'
                    #if v[5] <= truck_packages_copy_key[j]:
                        #v[3] = 'DELIVERED'

    #print(key, value)
    #print()
    #if str(key) >= str(start_time) and str(key) <= str(end_time):
        #print(key)
        #for k, v in value.items():
            #for key_one, value_one in truck_one_dict.items():
                #if k == key_one:
                    #if v[3] == 'DELIVERED':
                        #print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                            #", Delivered at " + str(v[5]))
                    #else:
                        #print("Truck: 1, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
            #for key_two, value_two in truck_two_dict.items():
                #if k == key_two:
                    #if v[3] == 'DELIVERED':
                        #print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                            #", Delivered at " + str(v[5]))
                    #else:
                        #print("Truck: 2, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
            #for key_three, value_three in truck_three_dict.items():
                #if k == key_three:
                    #if v[3] == 'DELIVERED':
                        #print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
                            #", Delivered at " + str(v[5]))
                    #else:
                        #print("Truck: 3, Package ID : " + str(k) + ", Address: " + str(v[0]) + ", Status: " + str(
        #print()
```

H. Screenshots from Interface

1. Status of Packages Between 8:35AM and 9:25AM

In [116…

```python
print("Please enter a start time: ")
start_hour_input = str(input("Hour: "))
start_minute_input = str(input("Minute(s): "))
start_time = datetime.time(int(start_hour_input), int(start_minute_input))
print(str(start_time))

print("\nPlease enter an end time: ")
end_hour_input = str(input("Hour: "))
end_minute_input = str(input("Minute(s): "))
end_time = datetime.time(int(end_hour_input), int(end_minute_input))
print(str(end_time))

view_package_by_time(start_time, end_time)
```

```
Please enter a start time:
Hour: 8
Minute(s): 35
08:35:00

Please enter an end time:
Hour: 9
Minute(s): 25
09:25:00


-------------------------------------------------------------------------------------------------------

08:37:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: EN ROUTE
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: EN ROUTE
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: EN ROUTE
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:40:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: EN ROUTE
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
```

```
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: EN ROUTE
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:43:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: EN ROUTE
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:45:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
```

```
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:46:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
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Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:55:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:57:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
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Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:03:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:06:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
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Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:08:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB
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09:14:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


09:24:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
```

```
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB
```

2. Status of Packages Between 9:35AM and 10:25AM

In [117…

```python
print("Please enter a start time: ")
start_hour_input = str(input("Hour: "))
start_minute_input = str(input("Minute(s): "))
start_time = datetime.time(int(start_hour_input), int(start_minute_input))
print(str(start_time))

print("\nPlease enter an end time: ")
end_hour_input = str(input("Hour: "))
end_minute_input = str(input("Minute(s): "))
end_time = datetime.time(int(end_hour_input), int(end_minute_input))
print(str(end_time))

view_package_by_time(start_time, end_time)
```

```
Please enter a start time:
Hour: 9
Minute(s): 35
09:35:00

Please enter an end time:
Hour: 10
Minute(s): 25
10:25:00


-------------------------------------------------------------------------------------------------------

09:42:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


09:55:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
```

```
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


10:17:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: EN ROUTE
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: EN ROUTE
Truck: 3, Package ID : 5, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: EN ROUTE
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: DELIVERED, Delivered at 10:17:00
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: EN ROUTE
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: EN ROUTE
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: EN ROUTE
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: EN ROUTE
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 9, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: EN ROUTE
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: EN ROUTE


10:21:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
```

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Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: EN ROUTE
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: EN ROUTE
Truck: 3, Package ID : 5, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: EN ROUTE
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: DELIVERED, Delivered at 10:17:00
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: EN ROUTE
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: EN ROUTE
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: EN ROUTE
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: DELIVERED, Delivered at 10:21:00
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 9, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: EN ROUTE
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: EN ROUTE


10:23:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: EN ROUTE
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: EN ROUTE
Truck: 3, Package ID : 5, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: EN ROUTE
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 10:23:00
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: DELIVERED, Delivered at 10:17:00
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: EN ROUTE
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: EN ROUTE
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: EN ROUTE
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: DELIVERED, Delivered at 10:21:00
```

```
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 9, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: EN ROUTE
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: EN ROUTE
```

3. Status of Packages Between 12:03PM and 1:12PM

In [102...
```python
print("Please enter a start time: ")
start_hour_input = str(input("Hour: "))
start_minute_input = str(input("Minute(s): "))
start_time = datetime.time(int(start_hour_input), int(start_minute_input))
print(str(start_time))

print("\nPlease enter an end time: ")
end_hour_input = str(input("Hour: "))
end_minute_input = str(input("Minute(s): "))
end_time = datetime.time(int(end_hour_input), int(end_minute_input))
print(str(end_time))

view_package_by_time(start_time, end_time)
```

```
Please enter a start time:
Hour: 12
Minute(s): 3
12:03:00

Please enter an end time:
Hour: 13
Minute(s): 12
13:12:00

----------------------------------------------------------------------------------------------------
```

The output for this status of packages above is empty because all the packages are delivered before 12pm, including the last package from Truck 3 that is delivered at 11:56am.

I. Justify Nearest Neighbor Algorithm

1. Strengths of Nearest Neighbor Algorithm

1. The Nearest Neighbor Algorithm is fairly easy to implement and is able to run quickly as long as the data is in a type of matrix (reference the truck `.csv` files to see examples). The programming actually isn't too complicated and it's easy to gather data from the algorithm.
2. The algorithm is able to adapt very easily. There are very minimal changes that need to be made if there are more or less trucks as long as there is data tied to each truck that is added.

2. Verification of Algorithm

Provide the Total Combined Miles

It must be less than 140 mi.

In [119...
```python
print("Total Distance Between All Trucks: " + str(all_truck_total_mileage) + " mi")
```

```
Total Distance Between All Trucks: 119.8 mi
```

Verification of Packages

1. They were delivered on time.
2. They were delivered according to their delivery specifications.

In [120…
```
send_packages(truck_one_pathway, truck_one_location_miles, truck_one_dict, datetime.time(8,0), truck_one_packages)
```

```
-------- Out For Delivery --------
        | Current Time: 08:00:00 |

Western Governors University 4001 South 700 East ---> Cottonwood Regional Softball Complex 4300 S 1300 E: 1.9 mi



-------- Arrived @ Cottonwood Regional Softball Complex 4300 S 1300 E --------
         | Current Time: 08:06:00 |

        Package 14 has been delivered at 08:06:00

-------------------------------------------------------------------------------------------

Cottonwood Regional Softball Complex 4300 S 1300 E ---> Holiday City Office 4580 S 2300 E: 2.0 mi



-------- Arrived @ Holiday City Office 4580 S 2300 E --------
         | Current Time: 08:12:00 |

        Package 15 has been delivered at 08:12:00
        Package 16 has been delivered at 08:12:00
        Package 34 has been delivered at 08:12:00

-------------------------------------------------------------------------------------------

Holiday City Office 4580 S 2300 E ---> Sugar House Park 1330 2100 S: 5.0 mi



-------- Arrived @ Sugar House Park 1330 2100 S --------
         | Current Time: 08:28:00 |

        Package 29 has been delivered at 08:28:00

-------------------------------------------------------------------------------------------

Sugar House Park 1330 2100 S ---> South Salt Lake Public Works 195 W Oakland Ave: 2.8 mi



-------- Arrived @ South Salt Lake Public Works 195 W Oakland Ave --------
         | Current Time: 08:37:00 |

        Package 1 has been delivered at 08:37:00

-------------------------------------------------------------------------------------------

South Salt Lake Public Works 195 W Oakland Ave ---> Utah DMV Administrative Office 380 W 2880 S: 1.1 mi



-------- Arrived @ Utah DMV Administrative Office 380 W 2880 S --------
         | Current Time: 08:40:00 |

        Package 40 has been delivered at 08:40:00

-------------------------------------------------------------------------------------------

Utah DMV Administrative Office 380 W 2880 S ---> Housing Auth. of Salt Lake County 3595 Main St: 1.6 mi



-------- Arrived @ Housing Auth. of Salt Lake County 3595 Main St --------
         | Current Time: 08:45:00 |

        Package 20 has been delivered at 08:45:00

-------------------------------------------------------------------------------------------

Housing Auth. of Salt Lake County 3595 Main St ---> Salt Lake City Division of Health Services  177 W Price Ave:
```

```
0.5 mi



-------- Arrived @ Salt Lake City Division of Health Services  177 W Price Ave --------
        | Current Time: 08:46:00 |

        Package 19 has been delivered at 08:46:00

----------------------------------------------------------------------------------------

Salt Lake City Division of Health Services  177 W Price Ave ---> Salt Lake County/United Police Dept 3365 S 900 W:
2.7 mi



-------- Arrived @ Salt Lake County/United Police Dept 3365 S 900 W --------
        | Current Time: 08:55:00 |

        Package 31 has been delivered at 08:55:00

----------------------------------------------------------------------------------------

Salt Lake County/United Police Dept 3365 S 900 W ---> Salt Lake City Streets and Sanitation 2010 W 500 S: 5.8 mi



-------- Arrived @ Salt Lake City Streets and Sanitation 2010 W 500 S --------
        | Current Time: 09:14:00 |

        Package 13 has been delivered at 09:14:00

----------------------------------------------------------------------------------------

Salt Lake City Streets and Sanitation 2010 W 500 S ---> Third District Juvenile Court 410 S State St: 3.2 mi



-------- Arrived @ Third District Juvenile Court 410 S State St --------
        | Current Time: 09:24:00 |

        Package 37 has been delivered at 09:24:00

----------------------------------------------------------------------------------------

Third District Juvenile Court 410 S State St ---> Council Hall 300 State St: 1.0 mi



-------- Arrived @ Council Hall 300 State St --------
        | Current Time: 09:27:00 |

        Package 30 has been delivered at 09:27:00

----------------------------------------------------------------------------------------

Council Hall 300 State St ---> Western Governors University 4001 South 700 East: 7.6 mi

-------- Arrived @ Western Governors University 4001 South 700 East --------
        | Current Time: 09:52:00 |
```

In [121… `send_packages(truck_two_pathway, truck_two_location_miles, truck_two_dict, datetime.time(8,0), truck_two_packages)`

```
-------- Out For Delivery --------
        | Current Time: 08:00:00 |

Western Governors University 4001 South 700 East ---> Murray City Museum 5025 State St: 2.4 mi



-------- Arrived @ Murray City Museum 5025 State St --------
          | Current Time: 08:08:00 |

          Package 24 has been delivered at 08:08:00
-------------------------------------------------------------------------------------------
Murray City Museum 5025 State St ---> City Center of Rock Springs 5383 South 900 East #104: 1.7 mi



-------- Arrived @ City Center of Rock Springs 5383 South 900 East #104 --------
          | Current Time: 08:13:00 |

          Package 26 has been delivered at 08:13:00
-------------------------------------------------------------------------------------------
City Center of Rock Springs 5383 South 900 East #104 ---> Wheeler Historic Farm  6351 South 900 East: 1.3 mi



-------- Arrived @ Wheeler Historic Farm  6351 South 900 East --------
          | Current Time: 08:17:00 |

          Package 22 has been delivered at 08:17:00
-------------------------------------------------------------------------------------------
Wheeler Historic Farm  6351 South 900 East ---> Columbus Library 2530 S 500 E: 6.0 mi



-------- Arrived @ Columbus Library 2530 S 500 E --------
          | Current Time: 08:37:00 |

          Package 2 has been delivered at 08:37:00
-------------------------------------------------------------------------------------------
Columbus Library 2530 S 500 E ---> Utah DMV Administrative Office 380 W 2880 S: 1.8 mi



-------- Arrived @ Utah DMV Administrative Office 380 W 2880 S --------
          | Current Time: 08:43:00 |

          Package 4 has been delivered at 08:43:00
-------------------------------------------------------------------------------------------
Utah DMV Administrative Office 380 W 2880 S ---> Rice Terrace Pavilion Park 600 E 900 South: 4.3 mi



-------- Arrived @ Rice Terrace Pavilion Park 600 E 900 South --------
          | Current Time: 08:57:00 |

          Package 10 has been delivered at 08:57:00
-------------------------------------------------------------------------------------------
Rice Terrace Pavilion Park 600 E 900 South ---> Third District Juvenile Court 410 S State St: 1.8 mi
```

```
-------- Arrived @ Third District Juvenile Court 410 S State St --------
        | Current Time: 09:03:00 |

        Package 38 has been delivered at 09:03:00

-----------------------------------------------------------------------------------

Third District Juvenile Court 410 S State St ---> Salt Lake City Ottinger Hall 233 Canyon Rd: 1.0 mi



-------- Arrived @ Salt Lake City Ottinger Hall 233 Canyon Rd --------
        | Current Time: 09:06:00 |

        Package 3 has been delivered at 09:06:00

-----------------------------------------------------------------------------------

Salt Lake City Ottinger Hall 233 Canyon Rd ---> Council Hall 300 State St: 0.6 mi



-------- Arrived @ Council Hall 300 State St --------
        | Current Time: 09:08:00 |

        Package 8 has been delivered at 09:08:00

-----------------------------------------------------------------------------------

Council Hall 300 State St ---> West Valley Prosecutor 3575 W Valley Central Sta bus Loop: 7.2 mi



-------- Arrived @ West Valley Prosecutor 3575 W Valley Central Sta bus Loop --------
        | Current Time: 09:32:00 |

        Package 12 has been delivered at 09:32:00

-----------------------------------------------------------------------------------

West Valley Prosecutor 3575 W Valley Central Sta bus Loop ---> Deker Lake 2300 Parkway Blvd: 3.1 mi



-------- Arrived @ Deker Lake 2300 Parkway Blvd --------
        | Current Time: 09:42:00 |

        Package 36 has been delivered at 09:42:00

-----------------------------------------------------------------------------------

Deker Lake 2300 Parkway Blvd ---> Taylorsville-Bennion Heritage City Gov Off 1488 4800 S: 4.0 mi



-------- Arrived @ Taylorsville-Bennion Heritage City Gov Off 1488 4800 S --------
        | Current Time: 09:55:00 |

        Package 18 has been delivered at 09:55:00

-----------------------------------------------------------------------------------


Taylorsville-Bennion Heritage City Gov Off 1488 4800 S ---> Western Governors University 4001 South 700 East: 11.0
mi

-------- Arrived @ Western Governors University 4001 South 700 East --------
        | Current Time: 10:31:00 |
```

In [122… `send_packages(truck_three_pathway, truck_three_location_miles, truck_three_dict, datetime.time(10), truck_three_pac`

```
-------- Out For Delivery --------
       | Current Time: 10:00:00 |

Western Governors University 4001 South 700 East ---> Redwood Park 3060 Lester St: 5.2 mi


-------- Arrived @ Redwood Park 3060 Lester St --------
        | Current Time: 10:17:00 |

        Package 6 has been delivered at 10:17:00
-------------------------------------------------------------------------------------------

Redwood Park 3060 Lester St ---> Salt Lake County Mental Health 3148 S 1100 W: 1.3 mi


-------- Arrived @ Salt Lake County Mental Health 3148 S 1100 W --------
        | Current Time: 10:21:00 |

        Package 17 has been delivered at 10:21:00
-------------------------------------------------------------------------------------------

Salt Lake County Mental Health 3148 S 1100 W ---> Salt Lake County/United Police Dept 3365 S 900 W: 0.6 mi


-------- Arrived @ Salt Lake County/United Police Dept 3365 S 900 W --------
        | Current Time: 10:23:00 |

        Package 32 has been delivered at 10:23:00
-------------------------------------------------------------------------------------------

Salt Lake County/United Police Dept 3365 S 900 W ---> Housing Auth. of Salt Lake County 3595 Main St: 1.6 mi


-------- Arrived @ Housing Auth. of Salt Lake County 3595 Main St --------
        | Current Time: 10:28:00 |

        Package 21 has been delivered at 10:28:00
-------------------------------------------------------------------------------------------

Housing Auth. of Salt Lake County 3595 Main St ---> South Salt Lake Police 2835 Main St: 1.2 mi


-------- Arrived @ South Salt Lake Police 2835 Main St --------
        | Current Time: 10:32:00 |

        Package 28 has been delivered at 10:32:00
-------------------------------------------------------------------------------------------

South Salt Lake Police 2835 Main St ---> Columbus Library 2530 S 500 E: 1.1 mi


-------- Arrived @ Columbus Library 2530 S 500 E --------
        | Current Time: 10:35:00 |

        Package 33 has been delivered at 10:35:00
-------------------------------------------------------------------------------------------

Columbus Library 2530 S 500 E ---> Sugar House Park 1330 2100 S: 1.6 mi
```

```
-------- Arrived @ Sugar House Park 1330 2100 S --------
        | Current Time: 10:40:00 |

        Package 7 has been delivered at 10:40:00

-------------------------------------------------------------------------------------------

Sugar House Park 1330 2100 S ---> Third District Juvenile Court 410 S State St: 4.3 mi



-------- Arrived @ Third District Juvenile Court 410 S State St --------
        | Current Time: 10:54:00 |

        Package 5 has been delivered at 10:54:00
        Package 9 has been delivered at 10:54:00

-------------------------------------------------------------------------------------------

Third District Juvenile Court 410 S State St ---> Council Hall 300 State St: 1.0 mi



-------- Arrived @ Council Hall 300 State St --------
        | Current Time: 10:57:00 |

        No packages to deliver here!

-------------------------------------------------------------------------------------------

Council Hall 300 State St ---> Salt Lake City Streets and Sanitation 2010 W 500 S: 4.2 mi



-------- Arrived @ Salt Lake City Streets and Sanitation 2010 W 500 S --------
        | Current Time: 11:11:00 |

        Package 39 has been delivered at 11:11:00

-------------------------------------------------------------------------------------------

Salt Lake City Streets and Sanitation 2010 W 500 S ---> International Peace Gardens 1060 Dalton Ave S: 1.6 mi



-------- Arrived @ International Peace Gardens 1060 Dalton Ave S --------
        | Current Time: 11:16:00 |

        Package 35 has been delivered at 11:16:00
        Package 27 has been delivered at 11:16:00

-------------------------------------------------------------------------------------------

International Peace Gardens 1060 Dalton Ave S ---> Deker Lake 2300 Parkway Blvd: 2.8 mi



-------- Arrived @ Deker Lake 2300 Parkway Blvd --------
        | Current Time: 11:25:00 |


-------------------------------------------------------------------------------------------

Deker Lake 2300 Parkway Blvd ---> Valley Regional Softball Complex 5100 South 2700 West: 4.2 mi



-------- Arrived @ Valley Regional Softball Complex 5100 South 2700 West --------
        | Current Time: 11:39:00 |

        Package 23 has been delivered at 11:39:00
```

```
--------------------------------------------------------------------------------------------

Valley Regional Softball Complex 5100 South 2700 West ---> Taylorsville City Hall 2600 Taylorsville Blvd: 0.4 mi


-------- Arrived @ Taylorsville City Hall 2600 Taylorsville Blvd --------
        | Current Time: 11:40:00 |

        Package 11 has been delivered at 11:40:00

--------------------------------------------------------------------------------------------

Taylorsville City Hall 2600 Taylorsville Blvd ---> City Center of Rock Springs 5383 South 900 East #104: 4.9 mi


-------- Arrived @ City Center of Rock Springs 5383 South 900 East #104 --------
        | Current Time: 11:56:00 |

        Package 25 has been delivered at 11:56:00

--------------------------------------------------------------------------------------------

City Center of Rock Springs 5383 South 900 East #104 ---> Western Governors University 4001 South 700 East: 2.4 mi

-------- Arrived @ Western Governors University 4001 South 700 East --------
        | Current Time: 12:04:00 |
```

3. Different Possible Algorithms

Two possible algorithms that would essentially do the same thing as the Nearest Neighbor Algorithm would be:

1. The **Nearest Insertion Algorithm** is very similar to the Nearest Neighbor Algorithm as the insertion algorithm starts with two locations and checks if the next location has been visited or not. It will then add the location to the visited list, but will check to see if there is a shorter distance between the visited locations (and may alter the pathway if there is a shorter distance).
2. The **Random Insertion Algorithm** is just like the Nearest Insertion Algorithm as it starts with two locations, but it randomly chooses locations and checks if it's been visited or not. If it hasn't been visited it will join the visited list and will check to see if there is a shorter distance between the visited locations.

4. Algorithm Differences

1. **Nearest Insertion Algorithm**

   - Since the Nearest Insertion Algorithm is so similar to the Nearest Neighbor Algorithm, it follows the same time complexity: O(n2).
   - An advantage to this algorithm is that it starts with two locations. However, a disadvantage to this algorithm would be that it wouldn't fully optimize the locations and distances as it only finds the nearest ones with the least amount of distance between locations.

2. **Random Insertion Algorithm**

   - Because the Random Insertion Algorithm is very similar to the Nearest Insertion Algorithm, it has the same time complexity: O(n2).
   - A disadvantage to this algorithm is that because it chooses locations at random, it may not be able to find the most optimal locations and distances and may take longer than the rest of the algorithms.

J. Describe What You Would Do Differently

I would only change my program by implementing a Truck class before running the Hash Table so the packages could be manually loaded through the Truck class rather than taking the more difficult and time-consuming path of implementing each truck as a Hash Table, then organizing the data and moving it into a dictionary.

K. Justify the Data Structure in Part D

1. Explaination and Verification

Provide the Total Combined Miles

Must be less than 140 mi.

```
In [123…   print("Total Distance Between All Trucks: " + str(all_truck_total_mileage) + " mi")
```

```
Total Distance Between All Trucks: 119.8 mi
```

Verification of Packages

1. They were delivered on time.
2. They were delivered according to their delivery specifications.

```
In [124…   send_packages(truck_one_pathway, truck_one_location_miles, truck_one_dict, datetime.time(8,0), truck_one_packages)
```

```
-------- Out For Delivery --------
       | Current Time: 08:00:00 |

Western Governors University 4001 South 700 East ---> Cottonwood Regional Softball Complex 4300 S 1300 E: 1.9 mi



-------- Arrived @ Cottonwood Regional Softball Complex 4300 S 1300 E --------
          | Current Time: 08:06:00 |

       Package 14 has been delivered at 08:06:00

-------------------------------------------------------------------------------------------

Cottonwood Regional Softball Complex 4300 S 1300 E ---> Holiday City Office 4580 S 2300 E: 2.0 mi



-------- Arrived @ Holiday City Office 4580 S 2300 E --------
          | Current Time: 08:12:00 |

       Package 15 has been delivered at 08:12:00
       Package 16 has been delivered at 08:12:00
       Package 34 has been delivered at 08:12:00

-------------------------------------------------------------------------------------------

Holiday City Office 4580 S 2300 E ---> Sugar House Park 1330 2100 S: 5.0 mi



-------- Arrived @ Sugar House Park 1330 2100 S --------
          | Current Time: 08:28:00 |

       Package 29 has been delivered at 08:28:00

-------------------------------------------------------------------------------------------

Sugar House Park 1330 2100 S ---> South Salt Lake Public Works 195 W Oakland Ave: 2.8 mi



-------- Arrived @ South Salt Lake Public Works 195 W Oakland Ave --------
          | Current Time: 08:37:00 |

       Package 1 has been delivered at 08:37:00

-------------------------------------------------------------------------------------------

South Salt Lake Public Works 195 W Oakland Ave ---> Utah DMV Administrative Office 380 W 2880 S: 1.1 mi



-------- Arrived @ Utah DMV Administrative Office 380 W 2880 S --------
          | Current Time: 08:40:00 |

       Package 40 has been delivered at 08:40:00

-------------------------------------------------------------------------------------------

Utah DMV Administrative Office 380 W 2880 S ---> Housing Auth. of Salt Lake County 3595 Main St: 1.6 mi



-------- Arrived @ Housing Auth. of Salt Lake County 3595 Main St --------
          | Current Time: 08:45:00 |

       Package 20 has been delivered at 08:45:00

-------------------------------------------------------------------------------------------

Housing Auth. of Salt Lake County 3595 Main St ---> Salt Lake City Division of Health Services  177 W Price Ave:
```

0.5 mi

-------- Arrived @ Salt Lake City Division of Health Services 177 W Price Ave --------
       | Current Time: 08:46:00 |

       Package 19 has been delivered at 08:46:00

Salt Lake City Division of Health Services 177 W Price Ave ---> Salt Lake County/United Police Dept 3365 S 900 W:
2.7 mi

-------- Arrived @ Salt Lake County/United Police Dept 3365 S 900 W --------
       | Current Time: 08:55:00 |

       Package 31 has been delivered at 08:55:00

Salt Lake County/United Police Dept 3365 S 900 W ---> Salt Lake City Streets and Sanitation 2010 W 500 S: 5.8 mi

-------- Arrived @ Salt Lake City Streets and Sanitation 2010 W 500 S --------
       | Current Time: 09:14:00 |

       Package 13 has been delivered at 09:14:00

Salt Lake City Streets and Sanitation 2010 W 500 S ---> Third District Juvenile Court 410 S State St: 3.2 mi

-------- Arrived @ Third District Juvenile Court 410 S State St --------
       | Current Time: 09:24:00 |

       Package 37 has been delivered at 09:24:00

Third District Juvenile Court 410 S State St ---> Council Hall 300 State St: 1.0 mi

-------- Arrived @ Council Hall 300 State St --------
       | Current Time: 09:27:00 |

       Package 30 has been delivered at 09:27:00

Council Hall 300 State St ---> Western Governors University 4001 South 700 East: 7.6 mi

-------- Arrived @ Western Governors University 4001 South 700 East --------
       | Current Time: 09:52:00 |

```
In [125… send_packages(truck_two_pathway, truck_two_location_miles, truck_two_dict, datetime.time(8,0), truck_two_packages)
```

```
-------- Out For Delivery --------
        | Current Time: 08:00:00 |

Western Governors University 4001 South 700 East ---> Murray City Museum 5025 State St: 2.4 mi



-------- Arrived @ Murray City Museum 5025 State St --------
        | Current Time: 08:08:00 |

        Package 24 has been delivered at 08:08:00
---------------------------------------------------------------------------------------------
Murray City Museum 5025 State St ---> City Center of Rock Springs 5383 South 900 East #104: 1.7 mi



-------- Arrived @ City Center of Rock Springs 5383 South 900 East #104 --------
        | Current Time: 08:13:00 |

        Package 26 has been delivered at 08:13:00
---------------------------------------------------------------------------------------------
City Center of Rock Springs 5383 South 900 East #104 ---> Wheeler Historic Farm  6351 South 900 East: 1.3 mi



-------- Arrived @ Wheeler Historic Farm  6351 South 900 East --------
        | Current Time: 08:17:00 |

        Package 22 has been delivered at 08:17:00
---------------------------------------------------------------------------------------------
Wheeler Historic Farm  6351 South 900 East ---> Columbus Library 2530 S 500 E: 6.0 mi



-------- Arrived @ Columbus Library 2530 S 500 E --------
        | Current Time: 08:37:00 |

        Package 2 has been delivered at 08:37:00
---------------------------------------------------------------------------------------------
Columbus Library 2530 S 500 E ---> Utah DMV Administrative Office 380 W 2880 S: 1.8 mi



-------- Arrived @ Utah DMV Administrative Office 380 W 2880 S --------
        | Current Time: 08:43:00 |

        Package 4 has been delivered at 08:43:00
---------------------------------------------------------------------------------------------
Utah DMV Administrative Office 380 W 2880 S ---> Rice Terrace Pavilion Park 600 E 900 South: 4.3 mi



-------- Arrived @ Rice Terrace Pavilion Park 600 E 900 South --------
        | Current Time: 08:57:00 |

        Package 10 has been delivered at 08:57:00
---------------------------------------------------------------------------------------------
Rice Terrace Pavilion Park 600 E 900 South ---> Third District Juvenile Court 410 S State St: 1.8 mi
```

```
-------- Arrived @ Third District Juvenile Court 410 S State St --------
        | Current Time: 09:03:00 |

        Package 38 has been delivered at 09:03:00

---------------------------------------------------------------------------

Third District Juvenile Court 410 S State St ---> Salt Lake City Ottinger Hall 233 Canyon Rd: 1.0 mi


-------- Arrived @ Salt Lake City Ottinger Hall 233 Canyon Rd --------
        | Current Time: 09:06:00 |

        Package 3 has been delivered at 09:06:00

---------------------------------------------------------------------------

Salt Lake City Ottinger Hall 233 Canyon Rd ---> Council Hall 300 State St: 0.6 mi


-------- Arrived @ Council Hall 300 State St --------
        | Current Time: 09:08:00 |

        Package 8 has been delivered at 09:08:00

---------------------------------------------------------------------------

Council Hall 300 State St ---> West Valley Prosecutor 3575 W Valley Central Sta bus Loop: 7.2 mi


-------- Arrived @ West Valley Prosecutor 3575 W Valley Central Sta bus Loop --------
        | Current Time: 09:32:00 |

        Package 12 has been delivered at 09:32:00

---------------------------------------------------------------------------

West Valley Prosecutor 3575 W Valley Central Sta bus Loop ---> Deker Lake 2300 Parkway Blvd: 3.1 mi


-------- Arrived @ Deker Lake 2300 Parkway Blvd --------
        | Current Time: 09:42:00 |

        Package 36 has been delivered at 09:42:00

---------------------------------------------------------------------------

Deker Lake 2300 Parkway Blvd ---> Taylorsville-Bennion Heritage City Gov Off 1488 4800 S: 4.0 mi


-------- Arrived @ Taylorsville-Bennion Heritage City Gov Off 1488 4800 S --------
        | Current Time: 09:55:00 |

        Package 18 has been delivered at 09:55:00

---------------------------------------------------------------------------

Taylorsville-Bennion Heritage City Gov Off 1488 4800 S ---> Western Governors University 4001 South 700 East: 11.0
mi

-------- Arrived @ Western Governors University 4001 South 700 East --------
        | Current Time: 10:31:00 |
```

In [126… `send_packages(truck_three_pathway, truck_three_location_miles, truck_three_dict, datetime.time(10), truck_three_pac`

```
-------- Out For Delivery --------
        | Current Time: 10:00:00 |

Western Governors University 4001 South 700 East ---> Redwood Park 3060 Lester St: 5.2 mi


-------- Arrived @ Redwood Park 3060 Lester St --------
        | Current Time: 10:17:00 |

        Package 6 has been delivered at 10:17:00
-------------------------------------------------------------------------------------------
Redwood Park 3060 Lester St ---> Salt Lake County Mental Health 3148 S 1100 W: 1.3 mi


-------- Arrived @ Salt Lake County Mental Health 3148 S 1100 W --------
        | Current Time: 10:21:00 |

        Package 17 has been delivered at 10:21:00
-------------------------------------------------------------------------------------------
Salt Lake County Mental Health 3148 S 1100 W ---> Salt Lake County/United Police Dept 3365 S 900 W: 0.6 mi


-------- Arrived @ Salt Lake County/United Police Dept 3365 S 900 W --------
        | Current Time: 10:23:00 |

        Package 32 has been delivered at 10:23:00
-------------------------------------------------------------------------------------------
Salt Lake County/United Police Dept 3365 S 900 W ---> Housing Auth. of Salt Lake County 3595 Main St: 1.6 mi


-------- Arrived @ Housing Auth. of Salt Lake County 3595 Main St --------
        | Current Time: 10:28:00 |

        Package 21 has been delivered at 10:28:00
-------------------------------------------------------------------------------------------
Housing Auth. of Salt Lake County 3595 Main St ---> South Salt Lake Police 2835 Main St: 1.2 mi


-------- Arrived @ South Salt Lake Police 2835 Main St --------
        | Current Time: 10:32:00 |

        Package 28 has been delivered at 10:32:00
-------------------------------------------------------------------------------------------
South Salt Lake Police 2835 Main St ---> Columbus Library 2530 S 500 E: 1.1 mi


-------- Arrived @ Columbus Library 2530 S 500 E --------
        | Current Time: 10:35:00 |

        Package 33 has been delivered at 10:35:00
-------------------------------------------------------------------------------------------
Columbus Library 2530 S 500 E ---> Sugar House Park 1330 2100 S: 1.6 mi
```

```
-------- Arrived @ Sugar House Park 1330 2100 S --------
        | Current Time: 10:40:00 |

        Package 7 has been delivered at 10:40:00

-------------------------------------------------------------------------------------------

Sugar House Park 1330 2100 S ---> Third District Juvenile Court 410 S State St: 4.3 mi



-------- Arrived @ Third District Juvenile Court 410 S State St --------
        | Current Time: 10:54:00 |

        Package 5 has been delivered at 10:54:00
        Package 9 has been delivered at 10:54:00

-------------------------------------------------------------------------------------------

Third District Juvenile Court 410 S State St ---> Council Hall 300 State St: 1.0 mi



-------- Arrived @ Council Hall 300 State St --------
        | Current Time: 10:57:00 |

        No packages to deliver here!

-------------------------------------------------------------------------------------------

Council Hall 300 State St ---> Salt Lake City Streets and Sanitation 2010 W 500 S: 4.2 mi



-------- Arrived @ Salt Lake City Streets and Sanitation 2010 W 500 S --------
        | Current Time: 11:11:00 |

        Package 39 has been delivered at 11:11:00

-------------------------------------------------------------------------------------------

Salt Lake City Streets and Sanitation 2010 W 500 S ---> International Peace Gardens 1060 Dalton Ave S: 1.6 mi



-------- Arrived @ International Peace Gardens 1060 Dalton Ave S --------
        | Current Time: 11:16:00 |

        Package 35 has been delivered at 11:16:00
        Package 27 has been delivered at 11:16:00

-------------------------------------------------------------------------------------------

International Peace Gardens 1060 Dalton Ave S ---> Deker Lake 2300 Parkway Blvd: 2.8 mi



-------- Arrived @ Deker Lake 2300 Parkway Blvd --------
        | Current Time: 11:25:00 |


-------------------------------------------------------------------------------------------

Deker Lake 2300 Parkway Blvd ---> Valley Regional Softball Complex 5100 South 2700 West: 4.2 mi



-------- Arrived @ Valley Regional Softball Complex 5100 South 2700 West --------
        | Current Time: 11:39:00 |

        Package 23 has been delivered at 11:39:00
```

```
----------------------------------------------------------------------------------------------

Valley Regional Softball Complex 5100 South 2700 West ---> Taylorsville City Hall 2600 Taylorsville Blvd: 0.4 mi


-------- Arrived @ Taylorsville City Hall 2600 Taylorsville Blvd --------
       | Current Time: 11:40:00 |

       Package 11 has been delivered at 11:40:00

----------------------------------------------------------------------------------------------

Taylorsville City Hall 2600 Taylorsville Blvd ---> City Center of Rock Springs 5383 South 900 East #104: 4.9 mi


-------- Arrived @ City Center of Rock Springs 5383 South 900 East #104 --------
       | Current Time: 11:56:00 |

       Package 25 has been delivered at 11:56:00

----------------------------------------------------------------------------------------------

City Center of Rock Springs 5383 South 900 East #104 ---> Western Governors University 4001 South 700 East: 2.4 mi

-------- Arrived @ Western Governors University 4001 South 700 East --------
       | Current Time: 12:04:00 |
```

Verification of Look-Up Function

```python
print("--------------------------- Look Up a Package ---------------------------\n")
user_input = str(input("What package are you looking for? Package #"))

look_up_package(truck_dict, user_input)
```
```
--------------------------- Look Up a Package ---------------------------

What package are you looking for? Package #4
['380 W 2880 S', 'EOD', '4', 'DELIVERED', '08:00:00', '08:43:00']

Are you finished searching for packages? [y/n] n

What package are you looking for? Package #13
['2010 W 500 S', '10:30 AM', '2', 'DELIVERED', '08:00:00', '09:14:00']

Are you finished searching for packages? [y/n] n

What package are you looking for? Package #21
['3595 Main St', 'EOD', '3', 'DELIVERED', '10:00:00', '10:28:00']

Are you finished searching for packages? [y/n] y
```

Verification of Package Status and Information

```python
print("Please enter a start time: ")
start_hour_input = str(input("Hour: "))
start_minute_input = str(input("Minute(s): "))
start_time = datetime.time(int(start_hour_input), int(start_minute_input))
print(str(start_time))

print("\nPlease enter an end time: ")
end_hour_input = str(input("Hour: "))
end_minute_input = str(input("Minute(s): "))
end_time = datetime.time(int(end_hour_input), int(end_minute_input))
print(str(end_time))

view_package_by_time(start_time, end_time)
```

```
Please enter a start time:
Hour: 8
Minute(s): 30
08:30:00

Please enter an end time:
Hour: 10
Minute(s): 30
10:30:00


-------------------------------------------------------------------------------------------------------------

08:37:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: EN ROUTE
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: EN ROUTE
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: EN ROUTE
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:40:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: EN ROUTE
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
```

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Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: EN ROUTE
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:43:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: EN ROUTE
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:45:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
```

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Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: EN ROUTE
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:46:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
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Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:55:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: EN ROUTE
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


08:57:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
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Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:03:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: EN ROUTE
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:06:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
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Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: EN ROUTE
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:08:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: EN ROUTE
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB
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09:14:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: EN ROUTE
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


09:24:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: EN ROUTE
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
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Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:27:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: EN ROUTE
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB

09:32:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
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Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: EN ROUTE
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


09:42:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: EN ROUTE
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


09:55:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
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Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 5, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 9, Address: 410 S State St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: LOADED ON TRUCK - AT HUB
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: LOADED ON TRUCK - AT HUB


10:17:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: EN ROUTE
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: EN ROUTE
Truck: 3, Package ID : 5, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: EN ROUTE
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: DELIVERED, Delivered at 10:17:00
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: EN ROUTE
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: EN ROUTE
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: EN ROUTE
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: EN ROUTE
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Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 9, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: EN ROUTE
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: EN ROUTE


10:21:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: EN ROUTE
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: EN ROUTE
Truck: 3, Package ID : 5, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: EN ROUTE
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: EN ROUTE
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: DELIVERED, Delivered at 10:17:00
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: EN ROUTE
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: EN ROUTE
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: EN ROUTE
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: DELIVERED, Delivered at 10:21:00
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 9, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: EN ROUTE
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: EN ROUTE


10:23:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
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Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: EN ROUTE
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: EN ROUTE
Truck: 3, Package ID : 5, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: EN ROUTE
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 10:23:00
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: DELIVERED, Delivered at 10:17:00
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: EN ROUTE
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: EN ROUTE
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: EN ROUTE
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: DELIVERED, Delivered at 10:21:00
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 9, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: EN ROUTE
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: EN ROUTE


10:28:00
Truck: 1, Package ID : 1, Address: 195 W Oakland Ave, Status: DELIVERED, Delivered at 08:37:00
Truck: 1, Package ID : 20, Address: 3595 Main St, Status: DELIVERED, Delivered at 08:45:00
Truck: 1, Package ID : 30, Address: 300 State St, Status: DELIVERED, Delivered at 09:27:00
Truck: 1, Package ID : 13, Address: 2010 W 500 S, Status: DELIVERED, Delivered at 09:14:00
Truck: 1, Package ID : 31, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 08:55:00
Truck: 1, Package ID : 40, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:40:00
Truck: 1, Package ID : 14, Address: 4300 S 1300 E, Status: DELIVERED, Delivered at 08:06:00
Truck: 1, Package ID : 15, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 16, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 34, Address: 4580 S 2300 E, Status: DELIVERED, Delivered at 08:12:00
Truck: 1, Package ID : 19, Address: 177 W Price Ave, Status: DELIVERED, Delivered at 08:46:00
Truck: 1, Package ID : 37, Address: 410 S State St, Status: DELIVERED, Delivered at 09:24:00
Truck: 1, Package ID : 29, Address: 1330 2100 S, Status: DELIVERED, Delivered at 08:28:00
Truck: 2, Package ID : 10, Address: 600 E 900 South, Status: DELIVERED, Delivered at 08:57:00
Truck: 2, Package ID : 2, Address: 2530 S 500 E, Status: DELIVERED, Delivered at 08:37:00
Truck: 2, Package ID : 3, Address: 233 Canyon Rd, Status: DELIVERED, Delivered at 09:06:00
Truck: 2, Package ID : 12, Address: 3575 W, Status: DELIVERED, Delivered at 09:32:00
Truck: 2, Package ID : 4, Address: 380 W 2880 S, Status: DELIVERED, Delivered at 08:43:00
Truck: 2, Package ID : 22, Address: 6351 South 900 East, Status: DELIVERED, Delivered at 08:17:00
Truck: 2, Package ID : 24, Address: 5025 State St, Status: DELIVERED, Delivered at 08:08:00
Truck: 2, Package ID : 8, Address: 300 State St, Status: DELIVERED, Delivered at 09:08:00
Truck: 2, Package ID : 26, Address: 5383 South 900 East #104, Status: DELIVERED, Delivered at 08:13:00
Truck: 2, Package ID : 18, Address: 1488 4800 S, Status: DELIVERED, Delivered at 09:55:00
Truck: 2, Package ID : 36, Address: 2300 Parkway Blvd, Status: DELIVERED, Delivered at 09:42:00
Truck: 2, Package ID : 38, Address: 410 S State St, Status: DELIVERED, Delivered at 09:03:00
Truck: 3, Package ID : 11, Address: 2600 Taylorsville Blvd, Status: EN ROUTE
Truck: 3, Package ID : 21, Address: 3595 Main St, Status: DELIVERED, Delivered at 10:28:00
Truck: 3, Package ID : 5, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 23, Address: 5100 South 2700 West, Status: EN ROUTE
Truck: 3, Package ID : 32, Address: 3365 S 900 W, Status: DELIVERED, Delivered at 10:23:00
Truck: 3, Package ID : 6, Address: 3060 Lester St, Status: DELIVERED, Delivered at 10:17:00
Truck: 3, Package ID : 33, Address: 2530 S 500 E, Status: EN ROUTE
Truck: 3, Package ID : 7, Address: 1330 2100 S, Status: EN ROUTE
Truck: 3, Package ID : 25, Address: 5383 South 900 East #104, Status: EN ROUTE
Truck: 3, Package ID : 17, Address: 3148 S 1100 W, Status: DELIVERED, Delivered at 10:21:00
Truck: 3, Package ID : 35, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 9, Address: 410 S State St, Status: EN ROUTE
Truck: 3, Package ID : 27, Address: 1060 Dalton Ave S, Status: EN ROUTE
Truck: 3, Package ID : 28, Address: 2835 Main St, Status: EN ROUTE
Truck: 3, Package ID : 39, Address: 2010 W 500 S, Status: EN ROUTE
```

Efficiency

Adding packages shouldn't directly affect the time needed to complete the look-up function as the function is meant to be able to check the `truck_dict` to see if it exists and extract the package data from there. So with each package getting added, it will first be added to the `truck_dict`. Unless there were thousands of packages, then the function might slow down when searching through the dictionary, but it should still work properly.

Overhead

Adding multiple packages could potentially affect the data structure space if the size of the data structure isn't large enough. This program has the data structure size set to 48 which could cause many packages to be inserted into the buckets. Luckily the packages should spread evenly between the buckets, but if there's too many packages in a bucket it can heavily affect the space. To fix this, all that needs to be done is to set the data structure size to something much larger.

Implication

Adding more trucks shouldn't be too much of an issue as the current trucks in the program gather packages that need to be delivered early, and the other two trucks are divided by even and odd packages. With adding more trucks, some trucks could focus on later delivery times, or could split the packages using the modulo `%` to split packages by the number of trucks. Adding the additional trucks wouldn't affect the look-up time as the look-up function only looks up packages, and it shouldn't affect the space usage in a negative way, in fact it should help reduce space usage by splitting the packages up instead of having three trucks holding a lot of packages.

Adding more locations shouldn't affect the look-up time either as it would only be affected by packages (that may contain the new locations). It shouldn't affect the space usage either as in this program the new locations and distances would be added to the truck `.csv` file, not into the look-up function.

2. Alternate Data Structures

1. An alternative data structure that I would have preferred to use over a Hash Table would be a **dictionary**. The dictionary is essentially identical to a Hash Table but is a lot easier to manipulate, organize, and extract the data. The dictionary also wouldn't put the package data into buckets that contain multiple packages; it would just be possible to use a for-loop to take the data from the package `.csv` and turn it in a dictionary.
   `{1: [195 W Oakland Ave, 10:30 AM, 21, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00],`
   `2: [2530 S 500 E, EOD, 44, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]}`
2. Another alternative data structure I would have used is a **list** as it could be very similar to a dictionary without needing to use `.items()` to go through the dictionary to view its keys and values. It would be little more complicated to view (if not printed out in a for-loop), but would be very easy to organize and extract data when needed.
   `[[1, [195 W Oakland Ave, 10:30 AM, 21, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]],`
   `[2, [2530 S 500 E, EOD, 44, LOADED ON TRUCK - IN HUB, 08:00:00, 00:00:00]]]`

Data Structure Differences

1. **Dictionary**
   - Dictionaries are mutable, meaning the data within the dictionaries can be altered. This can be both be advantageous or disadvantageous as it allows you to change the keys or values, but it also means that if there are multiple keys that are the same variable, the value will be replaced each time.
   - Dictionaries are able to contain multiple data types for both keys and values, with the exception of lists. Dictionary keys can be strings, integers, boolean, etc., but can't be a list. Dictionary values can be the same as dictionary keys: strings, integers, boolean, etc, but can also be a list that contains multiple data types as well.

1. **List**
   - Just like dictionaries, lists are mutable; but unlike dictionaries, lists are altered by using the list index as compared to the key, value pair. Personally, it is a easier to view data in a list within a for-loop than it is using a dictionary.
   - Another big difference from dictionaires is that lists can contain duplicates, while dictionaries will overwrite the value if there are duplicate keys. This can be an advantage if a program that is being created may have duplicate values, such as a grocery list.

L. Sources

No outside sources were used.