

WGU C950 Data Structures and Algorithms 2- Task 2

By: Andrew Vigil

Date: 3/10/24

D. Provide an intuitive interface for the user to view the delivery status (including delivery time) of any package at any time and the total miles traveled by all trucks.

```
/Users/andrewstephens/PycharmProjects/c950/.venv/bin/python /Users/andrewstephens/PycharmProjects/c950/main.py
Western Governors University Parcel Service (WGUPS)
Select from the 4 options below:
1. Package Statuses and Total Miles for All 3 Trucks
2. Package Statuses at a specific time
3. Get single package status for a specific time
4. Exit the program
Input selection:
```

1. Provide screenshots to show the status of all packages loaded onto each truck at a time between 8 :35 am and 9:25 am.

```
Please enter a time for which you'd like to see the status of all packages. Format: (h)m:PM : 08:35
ID: 1, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:39:00, Address: 195 W Oakland Ave UT 84115, Deadline: 10:30 AM, Notes:
ID: 2, Truck 1, Status: At Hub, Address: 2530 S 500 E UT 84106, Deadline: EOD, Notes:
ID: 3, Truck 1, Status: At Hub, Address: 233 Canyon Rd UT 84103, Deadline: EOD, Notes: Can only be on truck 2
ID: 4, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:28:40, Address: 280 W 2000 S UT 84115, Deadline: EOD, Notes:
ID: 5, Truck 2, Status: En Route, Departure: 8:00:00, Address: 430 S State St UT 84111, Deadline: EOD, Notes:
ID: 6, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:39:20, Address: 1800 Lester St UT 84119, Deadline: 10:30 AM, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 7, Truck 1, Status: At Hub, Address: 1330 2100 S UT 84106, Deadline: EOD, Notes:
ID: 8, Truck 1, Status: At Hub, Address: 300 State St UT 84103, Deadline: EOD, Notes:
ID: 9, Truck 1, Status: At Hub, Address: 300 State St, Salt Lake City, UT 84103, Deadline: EOD, Notes: Wrong address listed
ID: 10, Truck 2, Status: En Route, Departure: 8:00:00, Address: 600 E 900 South UT 84105, Deadline: EOD, Notes:
ID: 11, Truck 1, Status: At Hub, Address: 2600 Taylorsville Blvd UT 84118, Deadline: EOD, Notes:
ID: 12, Truck 1, Status: At Hub, Address: 3575 W Valley Central Station Bus Loop UT 84119, Deadline: EOD, Notes:
ID: 13, Truck 1, Status: En Route, Departure: 8:00:00, Address: 2010 W 500 S UT 84106, Deadline: 10:30 AM, Notes:
ID: 14, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:06:20, Address: 4300 S 1300 E UT 84117, Deadline: 10:30 AM, Notes: Must be delivered with 15, 19
ID: 15, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 9:00 AM, Notes:
ID: 16, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 10:30 AM, Notes: Must be delivered with 15, 19
ID: 17, Truck 1, Status: At Hub, Address: 3140 S 1300 W UT 84119, Deadline: EOD, Notes:
ID: 18, Truck 2, Status: En Route, Departure: 8:00:00, Address: 1400 4800 S UT 84123, Deadline: EOD, Notes: Can only be on truck 2
ID: 19, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:49:40, Address: 177 W Price Ave UT 84115, Deadline: EOD, Notes:
ID: 20, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:40:00, Address: 3995 Main St UT 84115, Deadline: 10:30 AM, Notes: Must be delivered with 13, 15
ID: 21, Truck 1, Status: At Hub, Address: 3000 Main St UT 84115, Deadline: EOD, Notes:
ID: 22, Truck 1, Status: At Hub, Address: 4351 South 900 East UT 84121, Deadline: EOD, Notes:
ID: 23, Truck 1, Status: At Hub, Address: 5100 South 2700 West UT 84118, Deadline: EOD, Notes:
ID: 24, Truck 1, Status: At Hub, Address: 5025 State St UT 84107, Deadline: EOD, Notes:
ID: 25, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:00:00, Address: 5383 South 900 East #104 UT 84117, Deadline: 10:30 AM, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 26, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:00:00, Address: 5383 South 900 East #104 UT 84117, Deadline: EOD, Notes:
ID: 27, Truck 1, Status: En Route, Departure: 8:00:00, Address: 1000 Dalton Ave S UT 84104, Deadline: EOD, Notes:
ID: 28, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:23:20, Address: 2835 Main St UT 84115, Deadline: EOD, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 29, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:29:40, Address: 1330 2100 S UT 84106, Deadline: 10:30 AM, Notes:
ID: 30, Truck 1, Status: En Route, Departure: 8:00:00, Address: 300 State St UT 84103, Deadline: 10:30 AM, Notes:
ID: 31, Truck 1, Status: En Route, Departure: 8:00:00, Address: 3365 S 900 W UT 84119, Deadline: 10:30 AM, Notes:
ID: 32, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:34:20, Address: 3365 S 900 W UT 84119, Deadline: EOD, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 33, Truck 1, Status: At Hub, Address: 2010 S 500 E UT 84106, Deadline: EOD, Notes:
ID: 34, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:15:00, Address: 4500 S 2300 E UT 84117, Deadline: 10:30 AM, Notes:
ID: 35, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:15:00, Address: 1000 Dalton Ave S UT 84104, Deadline: EOD, Notes:
ID: 36, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:44:40, Address: 2300 Parkway Blvd UT 84119, Deadline: EOD, Notes: Can only be on truck 2
ID: 37, Truck 1, Status: En Route, Departure: 8:00:00, Address: 430 S State St UT 84111, Deadline: 10:30 AM, Notes:
ID: 38, Truck 2, Status: En Route, Departure: 8:00:00, Address: 430 S State St UT 84111, Deadline: EOD, Notes: Can only be on truck 2
ID: 39, Truck 1, Status: At Hub, Address: 2010 W 500 S UT 84104, Deadline: EOD, Notes:
ID: 40, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:42:40, Address: 500 W 2000 S UT 84115, Deadline: 10:30 AM, Notes:
```

2. Provide screenshots to show the status of all packages loaded onto each truck at a time between 9:35 am and 10:25 am.

```
Input selection: 2
Please enter a line for which you'd like to see the status of all packages. Format: (24)HH:MM : 00-00
ID: 1, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:39:00, Address: 195 W Oakland Ave UT 84115, Deadline: 10:30 AM, Notes:
ID: 2, Truck 3, Status: En Route, Departure: 9:33:00, Address: 2530 S 500 E UT 84106, Deadline: EOD, Notes:
ID: 3, Truck 3, Status: En Route, Departure: 9:33:00, Address: 233 Canyon Rd UT 84103, Deadline: EOD, Notes: Can only be on truck 2
ID: 4, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:28:40, Address: 300 W 2800 S UT 84115, Deadline: EOD, Notes:
ID: 5, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:14:40, Address: 410 S State St UT 84111, Deadline: EOD, Notes:
ID: 6, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:39:20, Address: 3060 Lester St UT 84119, Deadline: 10:30 AM, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 7, Truck 3, Status: En Route, Departure: 9:33:00, Address: 1330 2100 S UT 84106, Deadline: EOD, Notes:
ID: 8, Truck 3, Status: En Route, Departure: 9:33:00, Address: 300 State St UT 84103, Deadline: EOD, Notes:
ID: 9, Truck 3, Status: En Route, Departure: 9:33:00, Address: 300 State St, Salt Lake City, UT 84103, Deadline: EOD, Notes: Wrong address listed
ID: 10, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 9:08:40, Address: 600 E 900 South UT 84105, Deadline: EOD, Notes:
ID: 11, Truck 3, Status: En Route, Departure: 9:33:00, Address: 2600 Taylorville Blvd UT 84118, Deadline: EOD, Notes:
ID: 12, Truck 3, Status: En Route, Departure: 9:33:00, Address: 3575 N Valley Central Station bus Loop UT 84119, Deadline: EOD, Notes:
ID: 13, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:19:00, Address: 2030 W 900 S UT 84106, Deadline: 10:30 AM, Notes:
ID: 14, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:06:20, Address: 4300 S 1300 E UT 84117, Deadline: 10:30 AM, Notes: Must be delivered with 15, 19
ID: 15, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 9:00 AM, Notes:
ID: 16, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 10:30 AM, Notes: Must be delivered with 15, 19
ID: 17, Truck 3, Status: En Route, Departure: 9:33:00, Address: 3140 S 1100 W UT 84119, Deadline: EOD, Notes:
ID: 18, Truck 2, Status: En Route, Departure: 8:00:00, Address: 1488 4000 S UT 84123, Deadline: EOD, Notes: Can only be on truck 2
ID: 19, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:49:40, Address: 177 W Price Ave UT 84115, Deadline: EOD, Notes:
ID: 20, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:48:00, Address: 3595 Main St UT 84115, Deadline: 10:30 AM, Notes: Must be delivered with 15, 15
ID: 21, Truck 3, Status: En Route, Departure: 9:33:00, Address: 3095 Main St UT 84115, Deadline: EOD, Notes:
ID: 22, Truck 3, Status: En Route, Departure: 9:33:00, Address: 4351 South 900 East UT 84121, Deadline: EOD, Notes:
ID: 23, Truck 3, Status: En Route, Departure: 9:33:00, Address: 5100 South 2700 West UT 84118, Deadline: EOD, Notes:
ID: 24, Truck 3, Status: En Route, Departure: 9:33:00, Address: 5025 State St UT 84107, Deadline: EOD, Notes:
ID: 25, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:18:40, Address: 5303 South 900 East #104 UT 84117, Deadline: 10:30 AM, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 26, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:08:00, Address: 5303 South 900 East #104 UT 84117, Deadline: EOD, Notes:
ID: 27, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:13:40, Address: 1860 Dalton Ave S UT 84104, Deadline: EOD, Notes:
ID: 28, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:25:20, Address: 2835 Main St UT 84115, Deadline: EOD, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 29, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:29:40, Address: 1330 2100 S UT 84106, Deadline: 10:30 AM, Notes:
ID: 30, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:13:00, Address: 300 State St UT 84103, Deadline: 10:30 AM, Notes:
ID: 31, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:58:40, Address: 3365 S 900 W UT 84119, Deadline: 10:30 AM, Notes:
ID: 32, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:34:00, Address: 3365 S 900 W UT 84119, Deadline: EOD, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 33, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:14:40, Address: 2030 W 900 S UT 84106, Deadline: EOD, Notes:
ID: 34, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 10:30 AM, Notes:
ID: 35, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:54:00, Address: 1860 Dalton Ave S UT 84104, Deadline: EOD, Notes:
ID: 36, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:44:40, Address: 2300 Parkway Blvd UT 84119, Deadline: EOD, Notes: Can only be on truck 2
ID: 37, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:29:40, Address: 410 S State St UT 84111, Deadline: 10:30 AM, Notes:
ID: 38, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 9:14:40, Address: 410 S State St UT 84111, Deadline: EOD, Notes: Can only be on truck 2
ID: 39, Truck 3, Status: En Route, Departure: 9:33:00, Address: 2010 N 500 S UT 84104, Deadline: EOD, Notes:
ID: 40, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:42:40, Address: 300 W 2800 S UT 84115, Deadline: 10:30 AM, Notes:
```

3. Provide screenshots to show the status of all packages loaded on each truck at a time between 12:03 am and 1:12 pm.

```
Input selection: 2
Please enter a time for which you'd like to see the status of all packages. Format: (24)HH:MM : 12:03
ID: 1, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:39:00, Address: 195 W Oakland Ave UT 84115, Deadline: 10:30 AM, Notes:
ID: 2, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:14:20, Address: 2530 S 500 E UT 84106, Deadline: EOD, Notes:
ID: 3, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:39:20, Address: 233 Canyon Rd UT 84103, Deadline: EOD, Notes: Can only be on truck 2
ID: 4, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:28:40, Address: 300 W 2800 S UT 84115, Deadline: EOD, Notes:
ID: 5, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 9:14:40, Address: 410 S State St UT 84111, Deadline: EOD, Notes:
ID: 6, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:39:20, Address: 3060 Lester St UT 84119, Deadline: 10:30 AM, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 7, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:19:40, Address: 1330 2100 S UT 84106, Deadline: EOD, Notes:
ID: 8, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:37:20, Address: 300 State St UT 84103, Deadline: EOD, Notes:
ID: 9, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:34:00, Address: 410 S State St UT 84111, Deadline: EOD, Notes: Wrong address listed
ID: 10, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 9:08:40, Address: 600 E 900 South UT 84105, Deadline: EOD, Notes:
ID: 11, Truck 3, Status: En Route, Departure: 9:33:00, Address: 2600 Taylorville Blvd UT 84118, Deadline: EOD, Notes:
ID: 12, Truck 3, Status: En Route, Departure: 9:33:00, Address: 3575 N Valley Central Station bus Loop UT 84119, Deadline: EOD, Notes:
ID: 13, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:19:00, Address: 2030 W 900 S UT 84106, Deadline: 10:30 AM, Notes:
ID: 14, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:06:20, Address: 4300 S 1300 E UT 84117, Deadline: 10:30 AM, Notes: Must be delivered with 15, 19
ID: 15, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 9:00 AM, Notes:
ID: 16, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 10:30 AM, Notes: Must be delivered with 15, 19
ID: 17, Truck 3, Status: En Route, Departure: 9:33:00, Address: 3140 S 1100 W UT 84119, Deadline: EOD, Notes:
ID: 18, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 9:58:00, Address: 1488 4000 S UT 84123, Deadline: EOD, Notes: Can only be on truck 2
ID: 19, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:49:40, Address: 177 W Price Ave UT 84115, Deadline: EOD, Notes:
ID: 20, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:48:00, Address: 3595 Main St UT 84115, Deadline: 10:30 AM, Notes: Must be delivered with 15, 15
ID: 21, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:06:40, Address: 3095 Main St UT 84115, Deadline: EOD, Notes:
ID: 22, Truck 3, Status: En Route, Departure: 9:33:00, Address: 4351 South 900 East UT 84121, Deadline: EOD, Notes:
ID: 23, Truck 3, Status: En Route, Departure: 9:33:00, Address: 5100 South 2700 West UT 84118, Deadline: EOD, Notes:
ID: 24, Truck 3, Status: En Route, Departure: 9:33:00, Address: 5025 State St UT 84107, Deadline: EOD, Notes:
ID: 25, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:08:00, Address: 5303 South 900 East #104 UT 84117, Deadline: 10:30 AM, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 26, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:08:00, Address: 5303 South 900 East #104 UT 84117, Deadline: EOD, Notes:
ID: 27, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:13:40, Address: 1860 Dalton Ave S UT 84104, Deadline: EOD, Notes:
ID: 28, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:25:20, Address: 2835 Main St UT 84115, Deadline: EOD, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 29, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:29:40, Address: 1330 2100 S UT 84106, Deadline: 10:30 AM, Notes:
ID: 30, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:13:00, Address: 300 State St UT 84103, Deadline: 10:30 AM, Notes:
ID: 31, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:58:40, Address: 3365 S 900 W UT 84119, Deadline: 10:30 AM, Notes:
ID: 32, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:34:00, Address: 3365 S 900 W UT 84119, Deadline: EOD, Notes: Delayed on flight--will not arrive to depot until 9:05 am
ID: 33, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:14:20, Address: 2530 S 500 E UT 84106, Deadline: EOD, Notes:
ID: 34, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:13:00, Address: 4500 S 2300 E UT 84117, Deadline: 10:30 AM, Notes:
ID: 35, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:54:00, Address: 1860 Dalton Ave S UT 84104, Deadline: EOD, Notes:
ID: 36, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 8:44:40, Address: 2300 Parkway Blvd UT 84119, Deadline: EOD, Notes: Can only be on truck 2
ID: 37, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 9:29:40, Address: 410 S State St UT 84111, Deadline: 10:30 AM, Notes:
ID: 38, Truck 2, Status: Delivered, Departure: 8:00:00, Delivery: 9:14:40, Address: 410 S State St UT 84111, Deadline: EOD, Notes: Can only be on truck 2
ID: 39, Truck 3, Status: Delivered, Departure: 9:33:00, Delivery: 12:35:20, Address: 2010 N 500 S UT 84104, Deadline: EOD, Notes:
ID: 40, Truck 1, Status: Delivered, Departure: 8:00:00, Delivery: 8:42:40, Address: 300 W 2800 S UT 84115, Deadline: 10:30 AM, Notes:
```

E. Provide screenshots showing successful completion of the code that includes the total mileage traveled by all trucks.

```
4. Exit the program
Input selection: 1

*** Total Miles for 3 Trucks: 105.4 ***

10: 1, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:39:00, Address: 395 W Oakland Ave, Salt Lake City, UT, 84115, Deadline: 10:30 AM, Weight: 21, Notes:
10: 2, Truck 1, Status: Delivered, Departed: 9:33:00, Delivered: 12:14:20, Address: 2508 S 500 E, Salt Lake City, UT, 84106, Deadline: EOD, Weight: 40, Notes:
10: 3, Truck 1, Status: Delivered, Departed: 9:33:00, Delivered: 12:39:20, Address: 233 Canyon Rd, Salt Lake City, UT, 84103, Deadline: EOD, Weight: 2, Notes: Can only be on truck 2
10: 4, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:28:40, Address: 380 W 3800 S, Salt Lake City, UT, 84115, Deadline: EOD, Weight: 4, Notes:
10: 5, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 9:16:40, Address: 418 S State St, Salt Lake City, UT, 84111, Deadline: EOD, Weight: 9, Notes:
10: 6, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:39:20, Address: 3060 Lester St, West Valley City, UT, 84119, Deadline: 10:30 AM, Weight: 80, Notes: Delayed on flight--will not arrive to depot until 9:05 am
10: 7, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 12:19:40, Address: 1350 2100 S, Salt Lake City, UT, 84106, Deadline: EOD, Weight: 8, Notes:
10: 8, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 12:37:20, Address: 300 State St, Salt Lake City, UT, 84103, Deadline: EOD, Weight: 9, Notes:
10: 9, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 12:54:00, Address: 410 S State St, Salt Lake City, UT, 84111, Deadline: EOD, Weight: 2, Notes: Wrong address listed
10: 10, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 9:08:40, Address: 400 E 900 South, Salt Lake City, UT, 84105, Deadline: EOD, Weight: 1, Notes:
10: 11, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 14:27:00, Address: 2600 Taylorsville Blvd, Salt Lake City, UT, 84118, Deadline: EOD, Weight: 1, Notes:
10: 12, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 15:17:20, Address: 3070 S Valley Central Station Bus Loop, West Valley City, UT, 84119, Deadline: EOD, Weight: 1, Notes:
10: 13, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 9:19:00, Address: 2010 W 500 S, Salt Lake City, UT, 84104, Deadline: 10:30 AM, Weight: 2, Notes:
10: 14, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:06:20, Address: 4300 S 1300 E, Millcreek, UT, 84117, Deadline: 10:30 AM, Weight: 80, Notes: Must be delivered with 15, 19
10: 15, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:13:00, Address: 4500 S 2300 E, Holladay, UT, 84117, Deadline: 9:00 AM, Weight: 4, Notes:
10: 16, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:13:00, Address: 4500 S 2300 E, Holladay, UT, 84117, Deadline: 10:30 AM, Weight: 80, Notes: Must be delivered with 15, 19
10: 17, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 15:30:40, Address: 3140 S 1100 W, Salt Lake City, UT, 84119, Deadline: EOD, Weight: 2, Notes:
10: 18, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 9:08:00, Address: 1400 4000 S, Salt Lake City, UT, 84122, Deadline: EOD, Weight: 8, Notes: Can only be on truck 2
10: 19, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:09:40, Address: 377 W Prince Ave, Salt Lake City, UT, 84115, Deadline: EOD, Weight: 37, Notes:
10: 20, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:48:00, Address: 3595 Main St, Salt Lake City, UT, 84115, Deadline: 10:30 AM, Weight: 37, Notes: Must be delivered with 15, 15
10: 21, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 12:06:40, Address: 3595 Main St, Salt Lake City, UT, 84115, Deadline: EOD, Weight: 3, Notes:
10: 22, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 14:00:20, Address: 4201 South 900 East, Murray, UT, 84122, Deadline: EOD, Weight: 2, Notes:
10: 23, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 14:20:20, Address: 5100 South 2700 West, Salt Lake City, UT, 84118, Deadline: EOD, Weight: 3, Notes:
10: 24, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 15:54:00, Address: 5025 State St, Murray, UT, 84107, Deadline: EOD, Weight: 7, Notes:
10: 25, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:08:00, Address: 5303 South 900 East #10, Salt Lake City, UT, 84117, Deadline: 10:30 AM, Weight: 1, Notes: Delayed on flight--will not arrive to depot until 9:05 am
10: 26, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:08:00, Address: 5303 South 900 East #10, Salt Lake City, UT, 84117, Deadline: EOD, Weight: 20, Notes:
10: 27, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 9:13:40, Address: 1800 Dalton Ave S, Salt Lake City, UT, 84104, Deadline: EOD, Weight: 5, Notes:
10: 28, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:23:20, Address: 2835 Main St, Salt Lake City, UT, 84115, Deadline: EOD, Weight: 7, Notes: Delayed on flight--will not arrive to depot until 9:05 am
10: 29, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:20:00, Address: 1320 2100 S, Salt Lake City, UT, 84106, Deadline: 10:30 AM, Weight: 2, Notes:
10: 30, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 9:13:00, Address: 300 State St, Salt Lake City, UT, 84103, Deadline: 10:30 AM, Weight: 1, Notes:
10: 31, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:58:40, Address: 3345 S 900 W, Salt Lake City, UT, 84119, Deadline: 10:30 AM, Weight: 1, Notes:
10: 32, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:14:20, Address: 3345 S 900 W, Salt Lake City, UT, 84119, Deadline: EOD, Weight: 1, Notes: Delayed on flight--will not arrive to depot until 9:05 am
10: 33, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 12:14:20, Address: 2530 S 500 E, Salt Lake City, UT, 84106, Deadline: EOD, Weight: 1, Notes:
10: 34, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:13:00, Address: 4500 S 2300 E, Holladay, UT, 84117, Deadline: 10:30 AM, Weight: 2, Notes:
10: 35, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:56:00, Address: 1800 Dalton Ave S, Salt Lake City, UT, 84104, Deadline: EOD, Weight: 80, Notes:
10: 36, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 8:14:40, Address: 2300 Parkway Blvd, West Valley City, UT, 84119, Deadline: EOD, Weight: 80, Notes: Can only be on truck 2
10: 37, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 9:29:40, Address: 410 S State St, Salt Lake City, UT, 84111, Deadline: 10:30 AM, Weight: 2, Notes:
10: 38, Truck 2, Status: Delivered, Departed: 8:00:00, Delivered: 9:14:40, Address: 410 S State St, Salt Lake City, UT, 84111, Deadline: EOD, Weight: 9, Notes: Can only be on truck 2
10: 39, Truck 3, Status: Delivered, Departed: 9:33:00, Delivered: 12:53:20, Address: 2010 W 500 S, Salt Lake City, UT, 84104, Deadline: EOD, Weight: 9, Notes:
10: 40, Truck 1, Status: Delivered, Departed: 8:00:00, Delivered: 8:42:40, Address: 380 W 2000 S, Salt Lake City, UT, 84110, Deadline: 10:30 AM, Weight: 40, Notes:
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F. Justify the package delivery algorithm used in the solution as written in the original program by doing the following:

1. Describe 2 or more strengths of the algorithm used in the solution.

The first strength of the Nearest Neighbor algorithm would be its simplicity, its digestible to understand and works simply fine for a small sample size like this project or a bit bigger where you can still manually load vehicles. The second, and playing-off of the first, would be ease of implementation. I was able to create the bulk of the algorithm in 25 or so lines, which I was surprised by.

2. Verify that the algorithm used in the solution meets all requirements in the scenario.

The algorithm I selected meets all the requirements of the given scenario including 1) keeping the mileage under 140 total miles, 2) delivering packages to their address by/after a specific time, and 3) accommodating to packages with special instructions.

3. Identify two other named algorithms that are different from the algorithm implemented in the solution and would meet all requirements in the scenario.

The two algorithms that I was contemplating using were Prim's algorithm and Kruskal's algorithm

a. Describe how both algorithms identified in part F3 are different from the algorithm used in the solution.

From what I understand, Kruskal's algorithm works by sorting the graph's edges by weight to find the minimum spanning tree. It seems simple and should produce a good result, but I am just less familiar with the heap data structure that is recommended for it.

Prim's algorithm is very similar to Kruskal's except it prefers a list data structure and it starts the minimum spanning tree from any vertex in the graph, as opposed to the vertex carrying the minimum weight like in Kruskal's.

G. Describe what you would do differently, other than the two algorithms identified in part F3, if you did this project again, including details of the modifications that would be made.

If I did this project again, I would spend more time optimizing for scalability. For example, for this project I loaded the trucks manually, but something I would do different in the future is make it so it can programmatically load the trucks.

H. Verify that the data structure used in the solution meets all requirements in this scenario.

The hash data structure meets all the requirements for the scenario provided. It accurately stores all package info, with the ID acting as the unique key. The values it stores are the address, street, city, zip, weight, status, deadline, and special notes. The hash allows for packages to be inserted, searched for, and deleted.

1. Identify two other data structures that could meet the same requirements in this scenario.

I believe that a queue or a doubly linked list both could have worked as an alternative data structure option.

a. Describe how each data structure identified in H1 is different from the data structure used in the solution.

A FIFO queue data structure takes in data and puts it at the end and takes from the front of the queue. It is less efficient because you must go through the queue to retrieve what you are looking for versus a hash where you can go directly to what you are looking for with a key value pair. The same is the case for the doubly linked list, which is an often useful structure and would work in this situation as well, but would also warrant the traversal of an entire data set to find the desired value.