Optimizing Logistics: Vehicle Routing Problem with Simultaneous Delivery and Pickups

Project Group:

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Introduction

Welcome to the intriguing world of logistics optimization, where the Logistics Wizards present their project on the *Vehicle Routing Problem with Simultaneous Delivery and Pickups* (VRP-SDP). In the complex landscape of transportation, the VRP-SDP stands as a formidable challenge that our team has embraced with enthusiasm and expertise.

The VRP-SDP involves planning routes for a fleet of vehicles to efficiently deliver goods to multiple locations while simultaneously picking up items along the way. This dynamic problem mirrors real-world scenarios in industries ranging from e-commerce to healthcare, demanding innovative solutions to minimize costs and maximize efficiency.

As we navigate through the intricacies of simultaneous delivery and pickups, our project aims to introduce groundbreaking methodologies, algorithms, and strategies to optimize routing, reduce travel time, and enhance overall logistics performance. Join us on this journey as we unravel the complexities of the VRP-SDP and pave the way for a more streamlined and effective logistics landscape.

Let the optimization journey unfold!

Routing Plan Summary:

Used Vehicles:

- 1^{st} vehicle: Used
- 2^{nd} vehicle: Not used
- 3^{rd} vehicle: Not used
- 4^{th} vehicle: Not used

- 5^{th} vehicle: Used
- 6^{th} vehicle: Not used

Vehicle Assignments:

- 5^{th} vehicle serves customers 1, 2, 3, 4, 5, 7, 9, 10
- 1^{st} vehicle serves customers 6, 8

Service Details:

The selected vehicle (5^{th}) serves customers at the following times:

- Customer 1 at 191.0 Hrs
- Customer 2 at 97.0 Hrs
- Customer 3 at 146.0 Hrs
- Customer 4 at 193.0 Hrs
- Customer 5 at 113.0 Hrs
- Customer 7 at 118.0 Hrs
- Customer 9 at 160.0 Hrs
- Customer 10 at 177.0 Hrs

The selected vehicle (1^{st}) serves customers at the following times:

- Customer 6 at 164.0 Hrs
- Customer 8 at 155.0 Hrs