Public Transportation Optimization.

PROJECT DEFINITION:

Public transportation optimization refers to process of improving the efficiency and effectiveness of public systems. This involves analyzing and identifying areas for improvement, such as routing, scheduling, vehicle allocation, and passenger demand management, to maximize the system's capacity and minimize operating costs.

ABSTRACT:

- Public transportation plays a crucial role in urban areas by efficiently transporting a large number of people while minimizing traffic congestion and carbon emission.
- This paper presents an optimization framework for public transportation systems, aimed at improving performance, reducing costs, and enhancing passenger satisfaction.

MODULE 1: NETWORK X

Network X is a Python library for studying complex networks, including transportation networks. It provides tools for analysis, visualization, and optimization of networks. It can be used to model and optimize public transportation networks.

MODULE 2: PYOMO

Pyomo is a Python-based open-source optimization modeling language. It allows users to define optimization problems and solve them using various solvers. Pyomo can be used to model and optimize public transportation routes, schedules, and capacity planning.

MODULE 3:GOOGLE OR - TOOLS

OR-Tools is an open-source software suite for optimization, including routing and scheduling problems. It provides a wide range of optimization algorithms and tools for solving real-world problems. You can use OR-Tools to model and optimize public transportation routes, schedules, and resource allocation.

MODULE 4: TRANSCAD

Trans CAD is a commercial transportation planning software that includes network modeling, simulation, and optimization capabilities. It has a user-friendly interface and offers a suite of tools for modeling and analyzing public transportation systems.

MODULE 5: MATSIM

MAT Sim (Multi-Agent Transport Simulation) is an open-source framework for simulating large-scale transportation systems. It is designed to model and simulate individual travelers' decision-making processes and interactions within a transportation system. It can be used to optimize public transportation systems by simulating different scenarios and evaluating their impacts.

BENEFITS OF PUBLIC TRANSPORTATION OPTIMIZATION:

1. Improved efficiency
2. Cost savings
3. Reduced congestion
4. Environmental benefits
5. Accessibility and equity
6. Social benefits

CONCLUSION:

Firstly, it promotes sustainability by reducing greenhouse gas emissions and congestion on road .secondly, it enhances accessibility and improves convenience for individuals who may not have access to private vehicles.

THANK YOU