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Smart Public Transport Using IOT Technology

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ABSTRACT: the goal of this paper is to review the past work of monitoring and alerting system, to categorize various methodologies and identify new trends. City bus, monitoring and alerting system is challenging problem. There are various challenges encounter in city bus, monitoring and alerting due to deficiency in proper real time vehicle location and problem of alerting system. GPS (Global Positioning System) is most widely used technology for city bus and keep regular monitoring of vehicle. The objective of city bus system is to manage and control the transport using GPS transreceiver to know the current location of vehicle. In number of system, is most widely used for alerting system. Alerting system is essential for providing the location and information about vehicle to passenger, owner or user.

KEYWORDS: City bus, Vehicle Monitoring, Alerting system.

I. INTRODUCTION

Public transportation systems play an increasingly important role in the way people move around their communities. I consider some of the benefits of public transportation, the challenges facing its widespread adoption, and the role transit traveler information systems can play in meeting those challenges. For individuals, public transportation provides mobility to those who cannot or prefer not to drive, including access to jobs, education, and medical services. In general, transport mobility - the ability for people to move around their community - is a strong indicator for employment, with studies showing, for example, a direct connection between car ownership and employment. By helping travelers move from single-occupancy vehicles to public transportation systems, communities can reduce traffic congestion as well as its environmental impact.

II. MOTIVATION

The ability to track vehicles is useful in many applications including security of personal vehicles,public transportation systems, fleet management and others. Furthermore, the number of vehicles on the road globallyis also expected to increase rapidly. Therefore, the development of city bus system using the Global PositioningSystem (GPS) is undertaken with the aim of enabling users to locate their vehicles with ease and in a convenient manner. The system will provide users with the capability to track vehicle remotely through the mobile network. This project presents the development of the city bus system's hardware prototype. Specifically, the system will utilize GPS to obtain a vehicle's coordinate and transmit it using GSM modem to the user's phone through the mobile network. The main hardware components of the system are. The developed city bus system demonstrates the feasibility of near real-time city bus of vehicles and improved customizability, global operability and cost when compared to existing solutions. We can also monitor the number of available seats and according to that we can book the ticket.

III. OBJECTIVES

- E-ticketing systems.
- Android tablet phones.
- Crowd sourcing location data.

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- IOT backend architecture

IV. LITERATURE SURVEY

Hsu-Yung Cheng and et al [1] in this work, a city bus system is developed to deal with daytime and nighttime traffic surveillance videos. For daytime videos, vehicles are detected via background modeling. For nighttime videos, headlights of vehicles need to be located and paired to initialize vehicles for the city bus purpose. An algorithm based on likelihood computation is developed to pair the headlights of vehicles. In addition, we apply a specialized system state transition model of the Kalman filter to adapt to common settings of traffic surveillance cameras. The experimental results have shown that the proposed method can effectively track vehicles in both daytime and nighttime surveillance videos.

Iman M. Almomani and et al [2] Global Positioning System (GPS) is becoming widely used for city bus and monitoring vehicles. Many systems have been created to provide such services which make them popular and needed more than ever before. In this paper a "GPS city bus system" is proposed. This system is useful for fleet operators in monitoring driving behavior of employees or parents monitoring their teen drivers. Moreover, this system can be used in theft prevention as a retrieval device in addition of working as a security system combined with car alarms. The main contribution of this paper is providing two types of end user applications, a web application and a mobile application. This way the proposed system provides a ubiquitous city bus system with maximum accessibility for the user anytime and anywhere. The system`s city bus services includes acquiring the location and ground speed of a given vehicle in the current moment or on any previous date. It also monitors the vehicle by setting speed and geographical limits and therefore receiving SMS alerts when the vehicle exceeds these pre-defined limits. Additionally, all the movements and stops of a given vehicle can also be monitored. City bus vehicles in our system uses a wide range of new technologies and communication networks including General Packet Radio Service (GPRS), Global System for Mobile Communication (GSM), the Internet or the World Wide Web and Global Positioning System (GPS).

Ronald de Feijter and et al [3] the congestion of our infrastructure, particularly (urban) motorways, continues to increase. Efficient planning, for instance in freight transport, is hindered by the resulting unreliability of travel times. Another effect of this congestion is a reduced utilization rate of the road. This paper presents trip booking, a method aimed at improvement of the reliability of travel times as well as an increase in the effective use of road capacity. Increased reliability facilitates better logistic planning. Furthermore, it allows the sharing of infrastructure between different modalities, with each modality having its own operational time window. The system aims at open dedicated infrastructure, such as bus lanes and dedicated freight lanes, and preserves the autonomy of both the provider and user of the infrastructure. The advantage claims are supported by simulation results for basic network configurations.

Sokèmi René Emmanuel Datondji and et al [4] Visual surveillance of dynamic objects, particularly vehicles on the road, has been, over the past decade, an active research topic in computer vision and intelligent transportation systems communities. In the context of traffic monitoring, important advances have been achieved in environment modeling, vehicle detection, city bus, and behavior analysis. This paper is a survey that addresses particularly the issues related to vehicle monitoring with cameras at road intersections. In fact, the latter has variable architectures and represents a critical area in traffic. Accidents at intersections are extremely dangerous, and most of them are caused by drivers' errors. Several projects have been carried out to enhance the safety of drivers in the special context of intersections. In this paper, we provide an overview of vehicle perception systems at road intersections and representative related data sets. The reader is then given an introductory overview of general vision-based vehicle monitoring approaches. Subsequently and above all, we present a review of studies related to vehicle detection and city bus in intersection-like scenarios. Regarding intersection monitoring, we distinguish and compare roadside (pole-mounted, stationary) and in-vehicle (mobile platforms) systems. Then, we focus on camera-based roadside monitoring systems, with special attention to unidirectional setups. Finally, we present possible research directions that are likely to improve the performance of vehicle detection and city bus at intersections.

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Thuong Le-Tien and et al [5] the paper describes a practical model for routing and city bus with mobile vehicle in a large area outdoor environment based on the Global Positioning System (GPS) and Global System for Mobile Communication (GSM). The supporting devices, GPS module-eMD3620 of AT&S company and GSM modem-GM862 of Telit company, are controlled by a 32bits microcontroller LM3S2965 implemented a new version ARM Cortex M3 core. The system is equipped the Compass sensor-YAS529 of Yamaha company and Accelerator sensor-KXSC72050 of Koinix company to determine moving direction of a vehicle. The device will collect positions of the vehicle via GPS receiver and then sends the data of positions to supervised center by the SMS (Short Message Services) or GPRS (General Package Radio Service) service. The supervised center is composed of a development kit that supports GSM techniques-WMP100 of the Wavecom company. After processing data, the position of the mobile vehicle will be displayed on Google Map.

Pham Hoang Oat and et al [6] the ability to track vehicles is useful in many applications including security of personal vehicles, public transportation systems, fleet management and others. Furthermore, the number of vehicles on the road globally is also expected to increase rapidly. Therefore, the development of city bus system using the Global Positioning System (GPS) and Global System for Mobile Communications (GSM) modem is undertaken with the aim of enabling users to locate their vehicles with ease and in a convenient manner. The system will provide users with the capability to track vehicle remotely through the mobile network. This paper presents the development of the city bus system's hardware prototype. Specifically, the system will utilize GPS to obtain a vehicle's coordinate and transmit it using GSM modem to the user's phone through the mobile network. The main hardware components of the system are u-blox NEO-6Q GPS receiver module, u-blox LEON-GIOO GSM module and Arduino Uno microcontroller. The developed city bus system demonstrates the feasibility of near real-time city bus of vehicles and improved customizability, global operability and cost when compared to existing solutions.

Lei Xie and et al [7] Issue in video-based Intelligent Transportation Systems and has been broadly investigated in the past. This paper presents a robust and real-time method for city bus vehicles and the proposed algorithm includes two stages: object region extraction, city bus. Object region extraction is a key step and the concept of city bus vehicle is built upon the vehicle-segmentation method. According to the segmented vehicle shape, we propose a three-step predict method based on Kalman filter to track each vehicle. The proposed method has been tested on a number of monocular traffic-image sequences and the experimental results show that the algorithm is robust and real-time. The correct rate of city bus is higher than 85 percent, independent of environmental conditions.

IV. PROPOSED SYSTEM

The description of the block Diagram is given below.
In this project IR sensor are connect directly to microcontroller (port pin). The GPS is connected via serial cable and data send to server by means of wireless commutation.The data is received at server side which is operating on Linux based system. Which support the MYSQL based data base which contain all detail:-

- Location
- Vacant seat.

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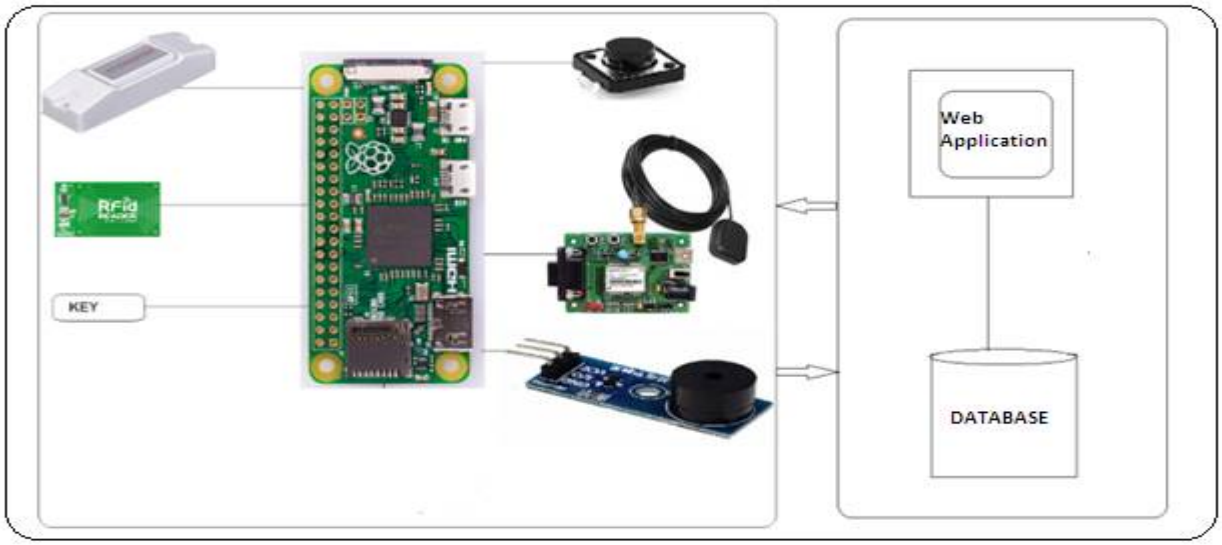

Fig.1. Block Diagram of proposed system

The server runs on it. To fulfill the entire above requirement we had used the raspberry pi.Which is easily can run server all command and support all sever function. The data form server can made available toend user using mobile application or web page. This data from server tells about location of bus, vacant seat available on the bus etc. These things can be control dynamically from both side i.e. user commandcan be answered from server side which make it complete IOT based system.

V. RESULT

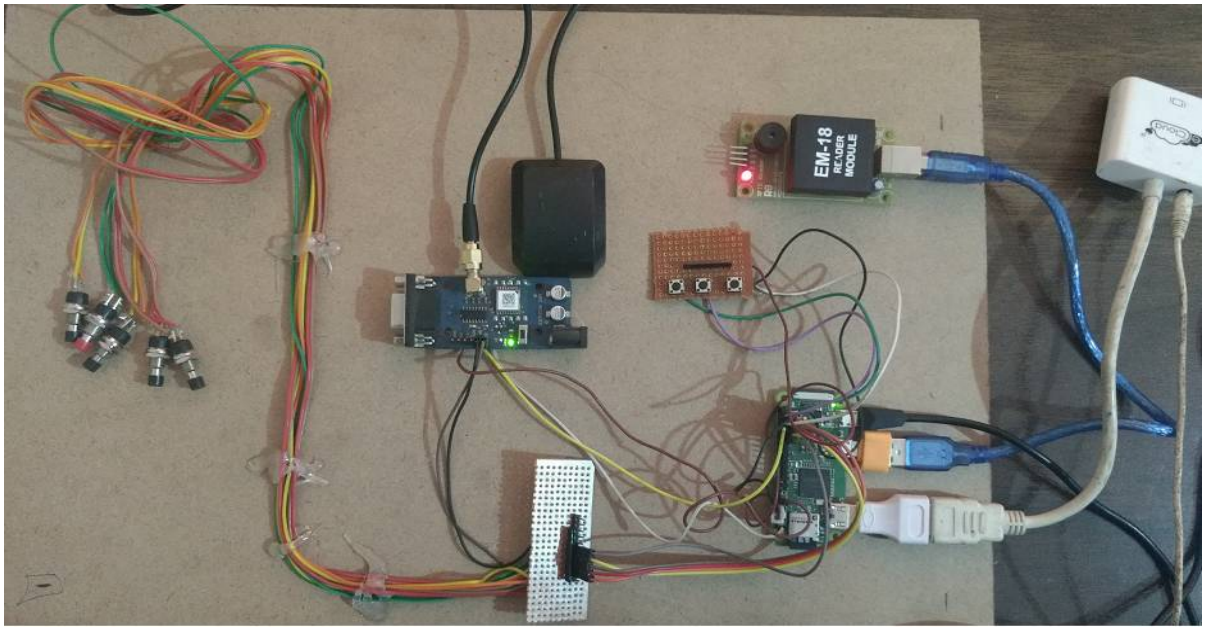

Fig.2. Hardware

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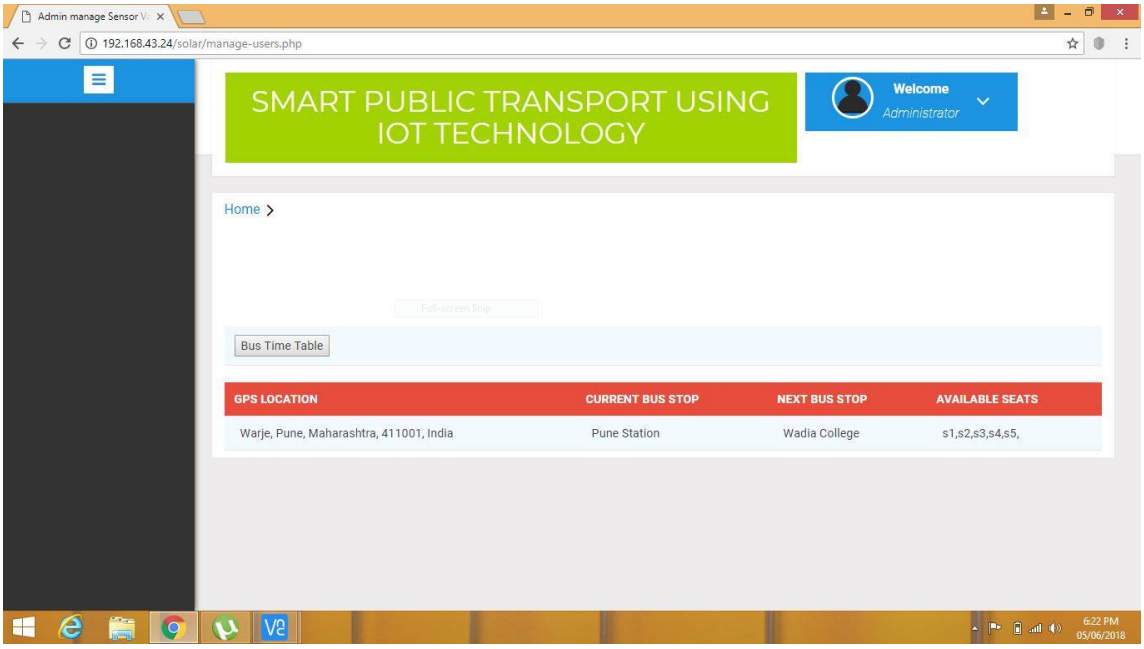

Fig.3. Home Page (Available Seats)

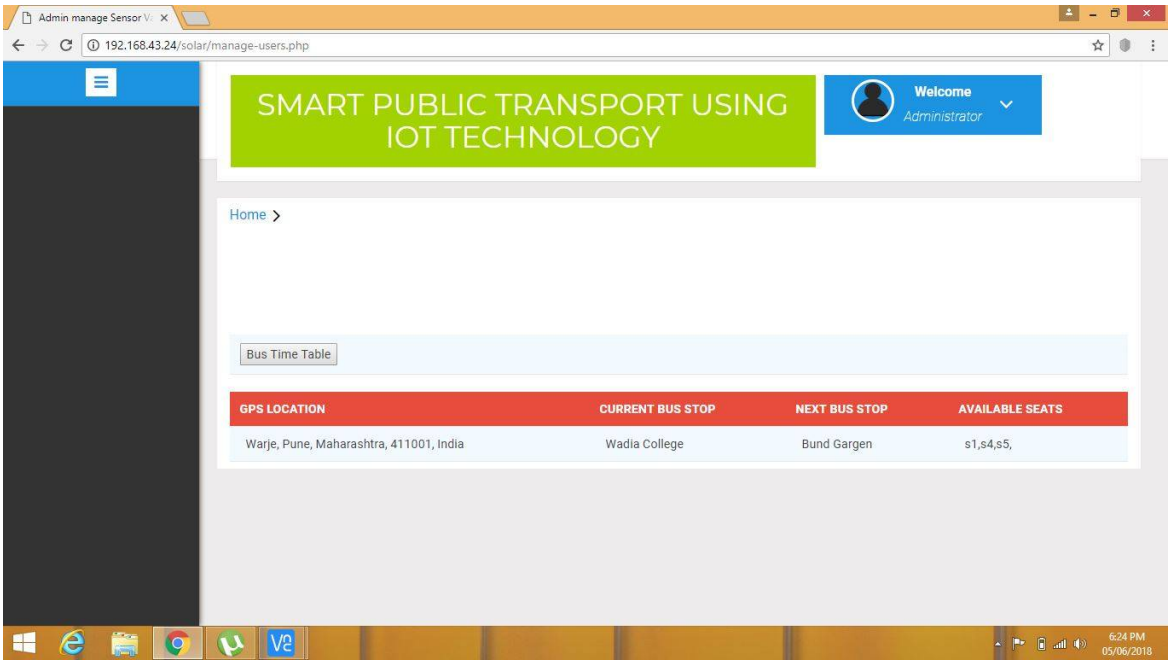

Fig. 4. Occupied Seats and current Location

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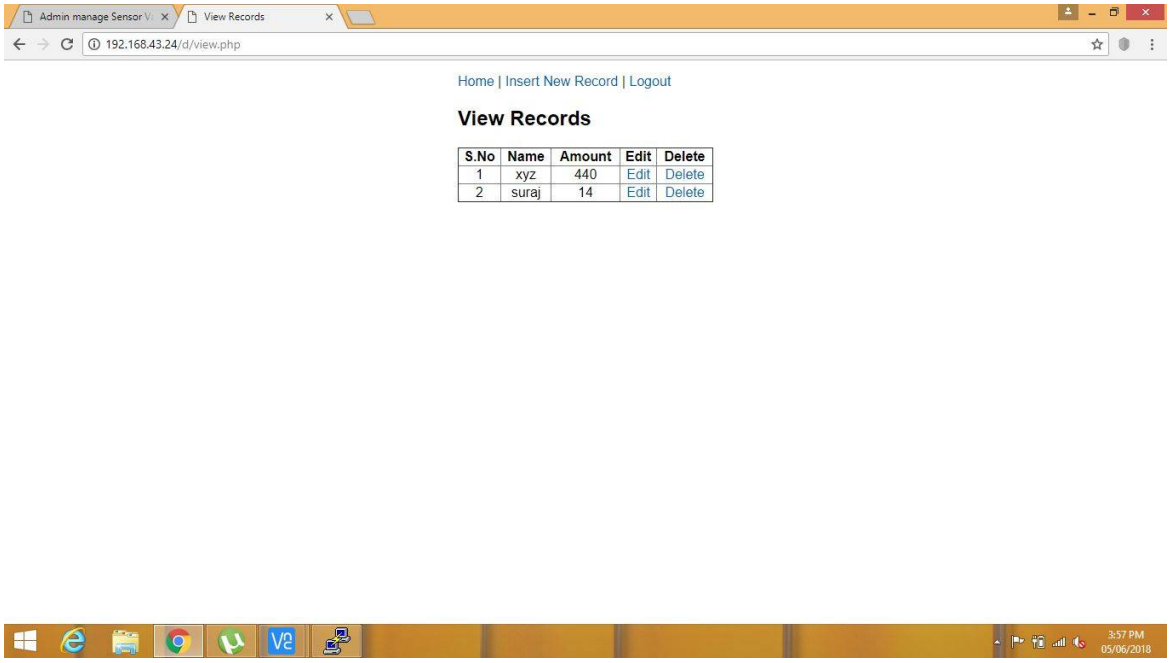

Fig.5. Show Available Balance

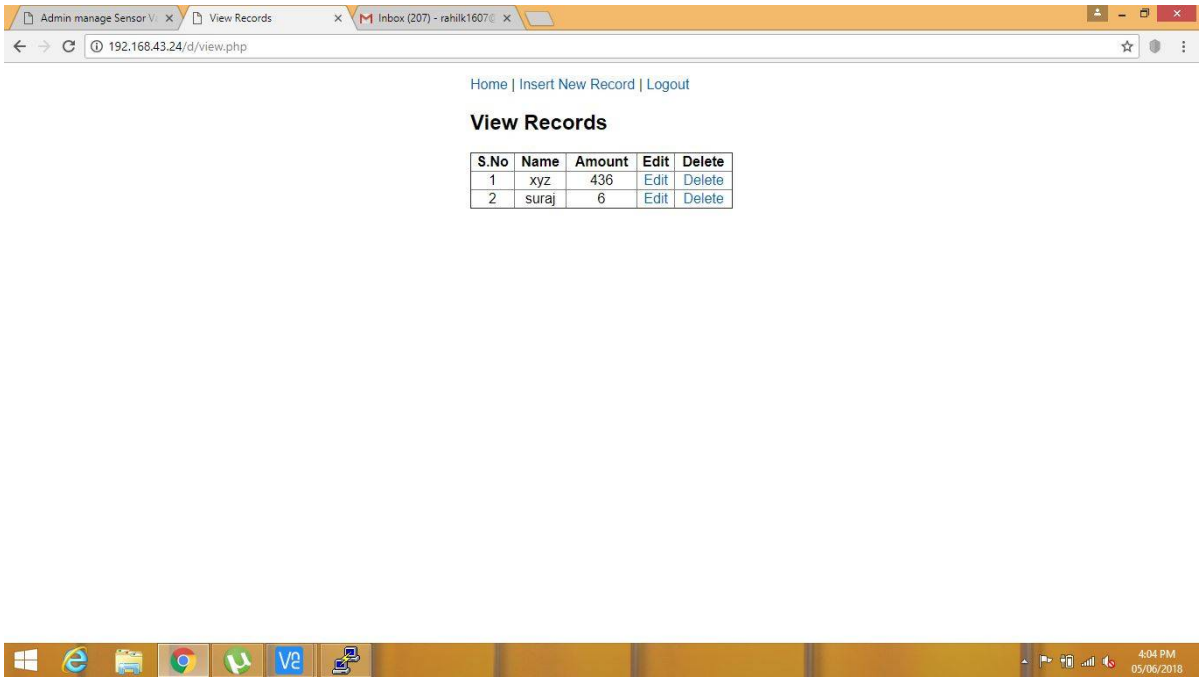

Fig.5. Show deduction amount

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VI. CONCLUSION

In this paper, we have reviewed a various existing techniques of city bus, monitoring andalerting system. We have studied various technologies, algorithms and methods for city bus, monitoring and alerting system. Every system has its own importance; different authors have tried different methods based on applications. Still there is scope to optimize different methodologies and algorithm to make system more users friendly and wide application areas. Unable user to easily fetch the live location of buses, known the estimated time for arrival and also the time to reach the destination, user will be aware of place available, can plan their travel very accurately and the public bus service will become more efficient and reliable due to availability of real time data are some advantages of this system whereas it suffers from one limitation as relays have to attach to every seat of bus which increases the installation cost.

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