INGENIOUS DESIGN OF BUS TRACKING AND FUEL MONITORING SYSTEM INCLUDING BREATH ANALYZER

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ABSTRACT: Well congenial development of technology acquires many advantages. This advantage has also increased the traffic in main cities cause's passengers to wait for their buses. Our project will be a good solution to avoid wasting their precious time. In our project, an efficient ingenious bus tracking system is designed to position and track the location of the bus by using GPS. The use of the fuel sensor in this system is to monitor the fuel level by an authorized person in order to avoid fuel theft and alcohol sensor is sense breath of the driver to ensure he did not consume any alcohol. This system is an embedded application that will monitor the bus and transmit to the user on demand. For doing so we have used Arduino Uno(Atmega 328) in which GSM transmitter and GPS receiver is serially interfaced. GPS is employed to track the location by returning important parameters like latitude, longitude for the navigation system. GSM is to send location, fuel details to the requested person. When the request from a user is sent to the number at the GSM modem in SMS format, the system will automatically respond with the location details of the requested bus. On clicking the coordinate information, it opens the Google Map to display the live location of the bus. By using our system introduced in this project, the bus can be tracked efficiently and accident due to drunk-anddrive can be minimized.

I. INTRODUCTION Navigation system has been a necessity of human's life. Navigation or tracking system also known as Vehicle tracking system had been used in shipping industry initially, because the people on the shore wanted to know where the ship was traveling on any particular time. Due to the rapid advancement in technology it had been designed and implemented almost in every vehicle nowadays. It is an electronic device that tracks the vehicle's location. Our project is about to design and implement a cost effective and efficient bus tracking system in order to avoid bus passenger(s) unnecessary waiting in the bus stops. Our

proposed system send the exact location of the bus using Google map so that people can calculate timing according to that they can play their journey to reach the bus stop. Fuel monitoring system help the administrator to know the exact amount of fuel content of the bus, so fuel theft could be avoided and administrator could maintain the fuel more efficiently. In addition to that alcohol sensor is used in order to sense the breath of the driver to sense whether he has drunken or not. This could minimize the risk of drunk-and-drive accidents. Current position of the vehicle was acquired by Global Position System (GPS) receiver. GPS receiver and GSM module is serially interfaced with Arduino Uno which collects all the data from fuel sensor, GPS and alcohol sensor and transfer through GSM transmitter via transmission channel in a form of SMS to the request from user or an administrator. When the user sends the code belonging to particular bus, system responds the user with the geographical coordinates(i.e., latitude and longitude) of the bus tracked via SMS. On clicking the values Google map opens and position the exact location of the bus. The user need not wait for long time on bus stops they can get the location of required bus from their current location so that they could plan their departure accordingly. Furthermore, an administrator could ensure the fuel level along with the location details based on his request to the particular bus.

II. RELATED WORKS All around the globe many vehicle tracking systems were developed in different forms with different techniques under various names at different time according to their requirements.Number of papers has been published on the development of vehicle tracking system using GPS and GSM Modem. In, differential GPS algorithm that is capable of providing real-time. RFID based tracking system [1] presents a design depend on the using RFID stickers which installed on every bus, these stickers are installed for identification at bus terminals. Every bus stop is assigned by a unique ID, this unique ID is transmitted around some distance around it RF transmitters and when the RF receiver on the bus comes within the range of the transmitters, it will receive signal that is generated by bus stop and it will indicate the passengers the next stop. Bus Locator via SMS using Android Application [2] uploads the current location of the bus to the server. The server then sends an SMS to all the registered students those are about to board at the bus stop. Here the drive's mobile phone is used as a GPS receiver. It is a tiresome process where the details of all the students are to be kept and updated time to time. The server is overloaded every now and then to get details of student at every stop. Design of punctually enhanced bus transportation system using GSM and Zigbee [3] proposed, Design of punctuality

enhanced bus transportation system using GSM and zigbee. In this way service quality of operational efficiency is improved and passenger is also able to get the information about the respective bus. Hybrid GPS-GSM Localization of Automobile tracking system [4] An integrated GPS-GSM system is proposed to track vehicles using Google Earth application. The remote module has a GPS mounted on the moving vehicle to identify its current position, and to be transferred by GSM with other parameters acquired by the automobile's data port as an SMS to a recipient station. The received GPS coordinates are filtered using a Kalman filter to enhance the accuracy of measured position. After data processing, Google Earth application is used to view the current location and status of each vehicle.

III. METHODOLOGY The architecture of the system in this paper is shown in fig.1. It provides the bus arrival time depending on the user source and destination. The overall outcomes functionality of the system comes from the interaction between the system components, which are a device on the bus and users mobile. A device on the bus consists of Arduino, GPS, GSM, fuel sensor and alcohol sensor. The GPS receive the coordinate information from satellites and send it the Arduino, the fuel and alcohol sensors used to measure the fuel level and senses whether the driver had drunk or not and send it to the Arduino, which collects all the data and send it to the user via SMS through the GSM on demand. He/she can select the station where he/she has stopping or the route want to go. After that, all buses that belongs to the particular route, the time will take to reach that location will get displayed.

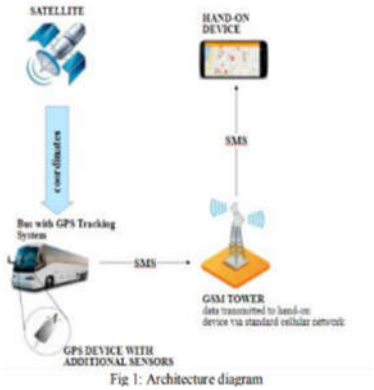
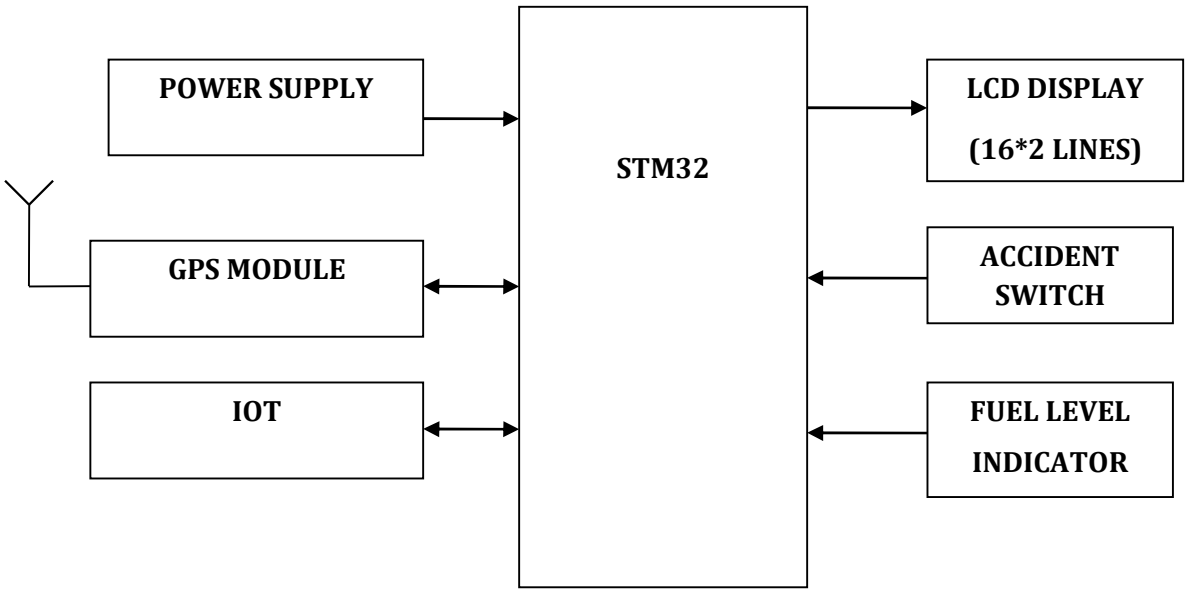


Fig 1: Architecture diagram

IMPLEMENTATION:



The device in the bus deliver a frame to the pc inside the essential station (server) .That frame embody velocity, location of the bus and its gasoline degree. The laptop shops this facts in the database for you to view it within the computing device application or internet software program. There are GSM module on the server aspect used to get keep of the data from the buses and keep it inside the database. All records approximately the buses, drivers, stations and routes are also saved within the database and the owner able to delete, update and enter new records Once the information is uploaded in the server the commuter can get proper of entry to the facts thru the internet internet web page the usage of net

Around the area severa vehicle monitoring structures are being advanced. These systems are protected in loads of public and personal vehicles in city regions.

Shruti Kotadiaa [1]: offers a format rely upon the the usage of RFID stickers which installation on each bus, those stickers are set up for identity at bus terminals. Every bus prevent is assigned through a completely unique ID, this specific ID is transmitted spherical a long way round it RF transmitters and while the RF receiver at the bus comes inside the sort of the transmitters, it'll get preserve of signal that is generated thru bus prevent and it's going to recommend the passengers the following stop.

Abid Khan [2]: proposed a layout rely upon the embedded machine it honestly is a unmarried board tool having GPS and GSM modems and ARM processor to song car. This system has massive functionality, low operation rate, sturdy expansibility.

Madhu Kumar, K. Rajashekhar, et al [3]: proposed, Design of punctuality higher bus transportation device using GSM and zigbee. In this manner business company top notch of operational overall performance is stepped forward and passenger is likewise able to get the data about the respective bus

Manini Kumbhar1, Meghana Survase [4]: proposed real time internet based totally bus tracking device given to a ways off individual who need to recognize the actual time bus facts. Some era like GPS (Global Positioning System), Google maps and GPRS (General Packet Radio Service) are used for improvement reason.

Ravi, Rohitaksha [5]. Propose a City Bus area and course navigation device the usage of smart phones with the aid of manner of using ICT (Information and Communication Technology). All previous research said above stated Vehicle monitoring, but every of them have drawbacks, for instance the RFID generation need a few exceptional device at the bus prevent similarly of the fast rang The passengers cannot get the suitable vicinity of the bus, they'll pleasant be notified at the same time as the buses are nearing the patron, and special device now not music the area at the map. This paper based totally completely totally mostly on the GPS and GSM to layout easy, accurate, masses a whole lot lots much less used of complicated circuit, energy intake and costless bus monitoring and fuel tracking tool used Arduino and map healthy Asp.MVC technologies.

RFID-primarily based Tracking System Preventing Trees Extinction and Deforestation format of a radio frequency identification tool that we referred to as Trees RFID Tracking System (TRTS). This suggested look at develops a gadget that might permit the detection and identification of timber illegal logging times and eventually stopping dangers of species distinction and deforestation threats. The TRTS includes RFID passive tags (static tags) prepared in wooden and serving as specific identification for every tree; hand-held readers (shifting devices) with a appropriate readable range and embedded round polarization antenna. These readers might be held with the beneficial beneficial aid of wooded area officials and the statistics

look at from the tags might be accessible thru the readers way to a visualization software application software that could observe and tool the statistics received. The database that saves all of the readings and customer interface and lets in get admission to to that information is placed at the server element of the device. Communication some of the tag readers and the server side is completed thru 3G connectivity enabled at the hand-held reader device. An example of this advocated have a take a look at practicality is the forests in Ifrane region of Atlas Mountains which might be widely recognized for the cedar species which might be continuously undertaking to illegal extracting and as a give up result are threatened thru extinction. Moreover there was no advocated approach to beautify their manipulate approach. Here is in which our RFID machine includes play Forests represent about 30 % of the global land place [1]. They offer habitat for each humans and a few species that proportion the treasured surroundings's devices. Managing a wooded region has grow to be a totally tough mission. Illegal logging represents definitely considered one of the most essential worrying situations of forests sustainability. According to the UN Framework Convention on Climate Change (UNFCCC), there may be extra carbon stored in the forests than there may be within the Earth's surroundings–a few 638 billion metric plenty as of 2005 [2]. In addition, it's miles envisioned that deforestation bills among 1/6 and 1/4 of global carbon emissions. These possibilities and figures are absolutely reflecting how vital the phenomena of deforestation is, it moreover urges people round the sector that have some understanding and know-how of the effects to think about answers or strategies to save you unlawful logging. Forestry departments in many countries which includes Brazil and Malaysia idea of digitizing trees and due to this remodeling forest control to a immoderate tech manner the use of RFID tags. RFID (radio frequency identification) systems generally encompass a microchip, antenna, and it may keep up to two kilobytes of information [3]. There are 3 forms of RFID tags: lively, semi lively and passive. Active and semi energetic RFID tags are electricity sources through way of an inner battery to strength their circuit. Additionally, an lively tag makes use of the internal battery to broadcast the sign to a reader, the broadcasted frequency in this case can advantage 950 Hz and be look at 31 meters away [3]. If more batteries are added into the tag, the broadcasting can be boosted and the distance should reap one hundred meters in the case of a semi lively RFID tag, broadcasting is based totally on the reader, because of this that the reader factors its power for broadcasting. The distinctive kind is passive tags. These tags do not use an inner battery rather they depend simply

at the reader that induces a modern-day in the tag antenna through manner of sending an electromagnetic wave. This form of tags has a decreased kind of broadcasting comparing to that of energetic and semi lively - simplest thirteen meters- however it has longer beneficial life that is going up to 30 years [4] or more and prices an entire lot less than an active or semi energetic tag because it does no longer consist of any inner batteries. Another factor that impacts value is garage potential. There are mainly three forms of storage, take a look at fine, examine-write and write as quickly as have a have a look at many, depending at the application reason we selected from the ones exclusive forms of RFID tags. Refinement radar used to become privy to aircraft. After that followed industrial organization programs comprising the RFID at a few level in the 70s and 80s specially for the motive of identifying a few property within one region. In the late 90s, RFIDs has been officially taken into consideration as an green answer for monitoring and identifying transferring devices amongst bodily places permitting the sharing of actual time information carried in tags. Since then, RFIDs were intensively implemented in a variety of programs, together with material tracking information structures [5], libraries manipulate structures [6], automobile tracking [7] and deliver chain manage [8], and each certainly one in each of them requiring a particular operation frequency variety permitting various detection tiers from few centimeters to a hundred meters Our assignment is involved with tracking devices, i.E. Trees, in a wooded area surroundings the usage of RFID. Several previous projects have stated using RFID in monitoring precise gadgets which consist of kids in toys villages [9]. Other responsibilities have considered the layout and implementation of RFID based absolutely clearly software program in a wooded location for the reason of monitoring hikers [10] and imparting them with guiding records in a wood environment wherein GPS has proved to be inefficient. Another tool to be taken into consideration advanced in Hawaii wooded area aiming at maintaining music of data about precise trees relevant to each investor through the usage of manner of studying such data on ordinary basis and all through durations pertinent to the development and growth of those particular trees. Each of the super programs have opted for the ideal format and implementation severa from mobile infrastructure to WI-FI infrastructure speaking with net-based completely databases, using dynamic or check-best tags with mobile or statics readers thinking about suitable regular standard performance metrics, in particular the covered region, the device charge, the general performance and reliability in transmitting data from the tag to the reader accomplishing the pc through the communication infrastructure.

Real Time Bus Monitoring System Using GPS The Real Time Bus Monitoring and Passenger Information bus tracking device will feature a likely notification device with a view to properly help pedestrians in making the selection of whether or not or no longer to sit up for the bus or walk. This tool is a standalone tool designed to expose the actual-time region(s) of the buses in Mumbai town. The device will encompass a transmitter module hooked up on the buses, receiver forums set up on the bus stops, LED embedded map of the BEST bus transportation routes on the centralized controller. It can simply have passenger facts tool software software software program set up on the bus stops and if you need to provide consumer the relevant facts regarding all the bus numbers going for his supply to vacation spot along facet the direction information and the rate. Assembly of these modules will permit the monitoring device to accumulate GPS records of the bus places, if you need to then transfer it to centralized manage unit and depict it through the usage of activating LEDs in the approximate geographic positions of the buses on the path map. It can even transmit its bus numbers and direction names continuously as fast because of the fact the bus comes inside the variety of the receiver at the bus prevent. In addition, the device is probably portable and sustainable; it will not require an outdoor power deliver, at the way to put off extended-term power fees. A passenger in Mumbai regularly faces the selection of whether or not or no longer or no longer it is probably faster to observe for the subsequent bus or to walk or to hire a cab/rickshaw to reap his/her excursion spot. Many passengers are frequently beyond because of paintings, college students are late for training due to the fact they determine to take a look at for the bus in vicinity of definitely really the use of a trade transportation. The format business enterprise surveyed 30 college college college students about their critiques at the current bus transportation business enterprise, and the subsequent conclusions have been extrapolated from the consequences: 1] 75% of the populace asserted that they've been beyond due to their excursion spot due to the fact they determined to appearance in advance to a bus in desire to taking walks. 2] ninety six% of the populace affirmed that knowledge the position of the buses on campus might be beneficial in figuring out whether or not to walk or sit up for the bus. Three] ninety six% of the populace additionally affirmed that expertise the area of the buses is more indicative of wait time than an approximate arrival time. Four] The normal approval fee of the modern transportation notification agency turn out to be 38% If passengers had an easy manner to appearance which bus is near to their place and approximate time it would take to reap the stop, in realtime, they'll make a extra correct, choice

of whether or not or no longer or no longer to wait at a save you. The Real Time Bus Monitoring and Passenger Information device will provide pedestrians with this convenience. The Real Time Bus Monitoring and Passenger Information tool is a standalone tool that shows the actual-time place(s) of the buses in Mumbai. This gadget, designed to be deployed at numerous bus stops round metropolis, is made from a strength supply, a battery, a microprocessor, LEDs, and RF Transceiver. The RF Transceiver may be used to poll a sign from the structures installation on the buses that consists of GPS data of each bus's place. The facts will then be processed thru a microprocessor related to the RF transceiver and used to expose at the LEDs (manipulate unit) on the manner to symbolize every bus's place and on the LCD video show units at the bus stops. This device will assist pedestrians in making the selection of whether or not or now not or not to expect the bus or stroll.

CONCLUSION We developed a real time bus tracking system to track bus location and fuel detection in order to avoid fuel theft. This paper furnish a good design and implementation of monitoring the location of the buses which helps the people to avoid long wait in bus stops and also provide high quality of service by using alcohol and fuel sensors. The system track the location of the particular bus based on the request of user and responds to the user via SMS. The system was able to demonstrate its effective performance to track a bus, experimentally at anytime from anywhere. This design can provide the location of the busses in the Google map with an error less than 5m in the case of speed variations. In addition to that our tracking system is of low cost that is based on easily accessible electronic components.

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