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Separation Shielding and Content Supporting Locus Positioned Problems

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ABSTRACT:

In this paper we present a solution to one of the location-based query problems.

This problem is defined as follows:
(i) a user wants to query a database of location data, known as Points Of Interest (POIs), and does not want to reveal his/her location to the server due to privacy concerns;

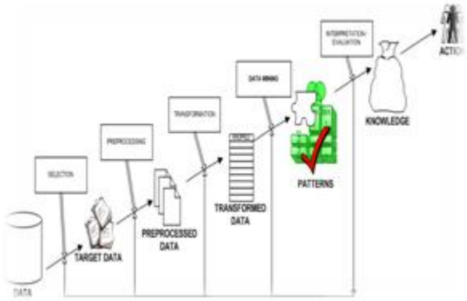
(ii) the owner of the location data, that is, the location server, does not want to simply distribute its data to all users. The location server desires to have some control over its data, since the data is its asset.

We propose a major enhancement upon previous solutions by introducing a two stage approach, where the first step is based on Oblivious Transfer and the second step is based on Private Information Retrieval, to achieve a secure solution for both parties. The solution we present is efficient and practical in many scenarios.

We implement our solution on a desktop machine and a mobile device to assess the efficiency of our protocol. We also introduce a security model and analyse the security in the context of our protocol. Finally, we highlight a security weakness of our previous work and present a solution to overcome it.

INTRODUCTION:

What is Data Mining?



Structure of Data Mining:

Generally, data mining (sometimes called data or knowledge discovery) is the process of analyzing data from different perspectives and summarizing it into useful information - information that can be used to increase revenue, cuts costs, or both. Data mining software is one of a number of analytical tools for analyzing data. It allows users to analyze data from many different dimensions or angles, categorize it, and summarize the relationships identified. Technically, data mining is the process of finding correlations or patterns among dozens of fields in large relational databases.

Data Mining Consists of Five Major Elements:

1) Extract, transform, and load transaction data onto the data warehouse system.
2) Store and manage the data in a multidimensional database system.

3) Provide data access to business analysts and information technology professionals.
4) Analyze the data by application software.
5) Present the data in a useful format, such as a graph or table.

What is Secure Computing?

Computer security (Also known as cyber security or IT Security) is information security as applied to computers and networks. The field covers all the processes and mechanisms by which computer-based equipment, information and services are protected from unintended or unauthorized access, change or destruction. Computer security also includes protection from unplanned events and natural disasters. Otherwise, in the computer industry, the term security -- or the phrase computer security -- refers to techniques for ensuring that data stored in a computer cannot be read or compromised by any individuals without authorization. Most computer security measures involve data encryption and passwords. Data encryption is the translation of data into a form that is unintelligible without a deciphering mechanism. A password is a secret word or phrase that gives a user access to a particular program or system.

Diagram clearly explain the about the secure computing

LITERATURE SURVEY:

1 "Protecting privacy against location-based personal identification,"

AUTHORS: C. Bettini, X. Wang, and S. Jajodia

This paper presents a preliminary investigation on the privacy issues involved in the use of location-based services. It is argued that even if the user identity is not explicitly released to the service provider, the geo-localized history of user-requests can act as a quasi-identifier and may be used to access sensitive information about specific individuals. The paper formally defines a framework to evaluate the risk in revealing a user identity via location information and presents preliminary ideas about algorithms to prevent this to happen.

2. "Measuring query privacy in location-based services,"

AUTHORS: X. Chen and J. Pang,

The popularity of location-based services leads to serious concerns on user privacy. A common mechanism to protect users' location and query privacy is spatial generalization.

3. "Private information retrieval,"

AUTHORS: B. Chor, E. Kushilevitz, O. Goldreich, and M. Sudan

Publicly accessible databases are an indispensable resource for retrieving up-to-date information. But they also pose a significant risk to the privacy of the user, since a curious database operator can follow the user's queries and infer what the user is after. Indeed, in cases where the users' intentions are to be kept secret, users are often cautious about accessing the database. It can be shown that when accessing a single database, to completely guarantee the privacy of the user, the whole database should be down-loaded; namely n bits should be communicated (where n is the number of bits in the database). In this work, we investigate whether by replicating the database; more efficient solutions to the private retrieval problem can be obtained.

4."A public key cryptosystem and a signature scheme based on discrete logarithms,"

AUTHORS: T. ElGamal

A new signature scheme is proposed, together with an implementation of the Diffie-Hellman key distribution scheme that achieves a public key cryptosystem.

The security of both systems relies on the difficulty of computing discrete logarithms over finite fields.

IMPLEMENTATION MODULES:

1. Users
2. Mobile Service Provider
3. Location Server

MODULES DESCRIPTION:

Users:

The users in our model use some location-based service provided by the location server LS. For example, what is he nearest ATM or restaurant? The purpose of the mobile service provider SP is to establish and maintain the communication between the location server and the user. The location server LS owns a set of POI records ri for 1≤ri ≤ρ. Each record describes a POI, giving GPS coordinates to its location (xgps,ygps), and a description or name about what is at the location.

Mobile Service Provider:

We reasonably assume that the mobile service provider SP is a passive entity and is not allowed to collude with the LS. We make this assumption because the SP can determine the whereabouts of a mobile device, which, if allowed to collude with the LS, completely subverts any method for privacy. There is simply no technological method for preventing this attack. As a consequence of this assumption, the user is able to either use GPS (Global Positioning System) or the mobile service provider to acquire his/her coordinates.

Location Server:

We are assuming that the mobile service provider SP is trusted to maintain the connection, we consider only two possible adversaries. Each and every one for individual communication direction. We consider the case in which the user is the adversary and tries to obtain more than he/she is allowed. Next we consider the case in which the location server LS is the adversary, and tries to uniquely associate a user with a grid coordinate.

SOFTWARE ENVIRONMENT:

Java Technology:

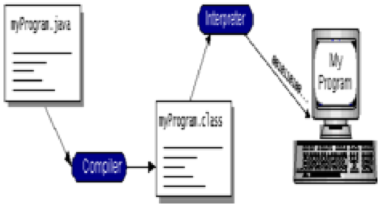
Java technology is both a programming language and a platform.

The Java Programming Language:

The Java programming language is a high-level language that can be characterized by all of the following buzzwords:

- Simple
- Architecture neutral
- Object oriented
- Portable
- Distributed
- High performance
- Interpreted
- Multithreaded
- Robust
- Dynamic
- Secure

With most programming languages, you either compile or interpret a program so that you can run it on your computer. The Java programming language is unusual in that a program is both compiled and interpreted. With the compiler, first you translate a program into an intermediate language called Java byte codes —the platform-independent codes interpreted by the interpreter on the Java platform. The interpreter parses and runs each Java byte code instruction on the computer. Compilation happens just once; interpretation occurs each time the program is executed. The following figure illustrates how this works.



You can think of Java byte codes as the machine code instructions for the Java Virtual Machine (Java VM).

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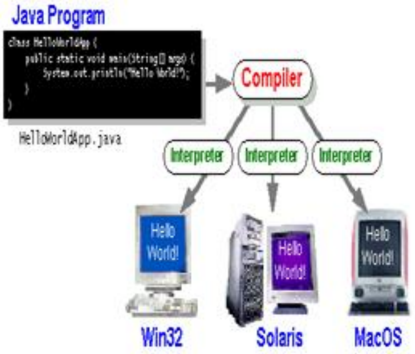
Every Java interpreter, whether it’s a development tool or a Web browser that can run applets, is an implementation of the Java VM. Java byte codes help make “write once, run anywhere” possible. You can compile your program into byte codes on any platform that has a Java compiler. The byte codes can then be run on any implementation of the Java VM. That means that as long as a computer has a Java VM, the same program written in the Java programming language can run on Windows 2000, a Solaris workstation, or on an iMac.



```
class HelloWorldApp {
    public static void main(String[] args) {
        System.out.println("Hello World!");
    }
}
```

SYSTEM STUDY FEASIBILITY STUDY:

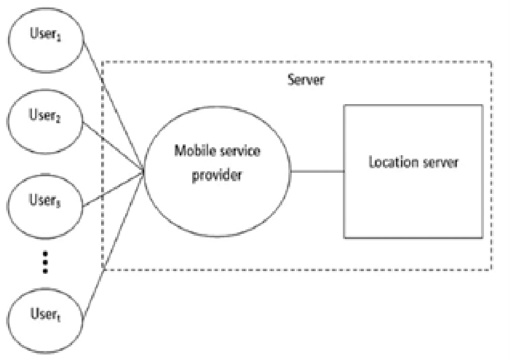
The feasibility of the project is analyzed in this phase and business proposal is put forth with a very general plan for the project and some cost estimates. During system analysis the feasibility study of the proposed system is to be carried out. This is to ensure that the proposed system is not a burden to the company. For feasibility analysis, some understanding of the major requirements for the system is essential.

Three key considerations involved in the feasibility analysis are

- ECONOMICAL FEASIBILITY
- TECHNICAL FEASIBILITY
- SOCIAL FEASIBILITY

SYSTEM DESIGN

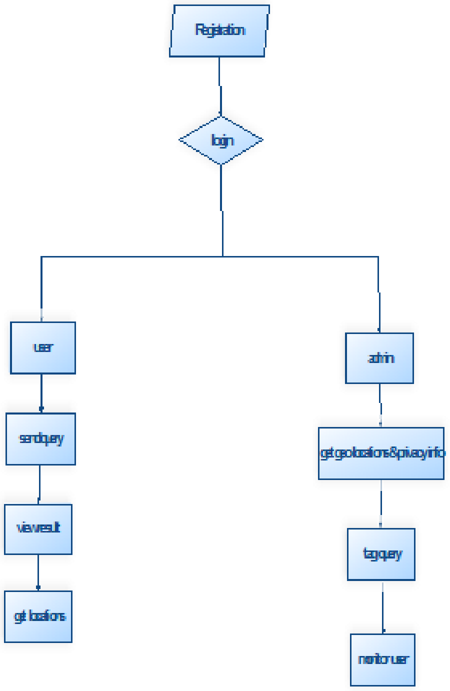
SYSTEM ARCHITECTURE:



DATA FLOW DIAGRAM:

1. The DFD is also called as bubble chart. It is a simple graphical formalism that can be used to represent a system in terms of input data to the system, various processing carried out on this data, and the output data is generated by this system.

The data flow diagram (DFD) is one of the most important modeling tools. It is used to model the system components. These components are the system process, the data used by the process, an external entity that interacts with the system and the information flows in the system.



SYSTEM ANALYSIS

EXISTING SYSTEM:

The Location Server (LS), which offers some LBS, spends its resources to compile information about various interesting POIs. Hence, it is expected that the LS would not disclose any information without fees. Therefore the LBS has to ensure that LS's data is not accessed by any unauthorized user. During the process of transmission the users should not be allowed to discover any information for which they have not paid. It is thus crucial that solutions be devised that address the privacy of the users issuing queries, but also prevent users from accessing content to which they do not have authorization.

DISADVANTAGES OF EXISTING SYSTEM:

- Among many challenging barriers to the wide deployment of such application, privacy assurance is a major issue
- The user can get answers to various location based queries,

PROPOSED SYSTEM:

- In this paper, we propose a novel protocol for location based queries that has major performance improvements with respect to the approach by Ghinita at el. And. Like such protocol, our protocol is organized according to two stages. In the first stage, the user privately determines his/her location within a public grid, using oblivious transfer. This data contains both the ID and associated symmetric key for the block of data in the private grid. In the second stage, the user executes a communicational efficient PIR, to retrieve the appropriate block in the private grid. This block is decrypted using the symmetric key obtained in the previous stage.

ADVANTAGES OF PROPOSED SYSTEM:

- ✓ Redesigned the key structure.
- ✓ Added a formal security model.
- ✓ Implemented the solution on both a mobile device and desktop machine.

SYSTEM TESTING:

The purpose of testing is to discover errors. Testing is the process of trying to discover every conceivable fault or weakness in a work product. It provides a way to check the functionality of components, sub assemblies, assemblies and/or a finished product It is the process of exercising software with the intent of ensuring that the Software system meets its requirements and user expectations and does not fail in an unacceptable manner. There are various types of test. Each test type addresses a specific testing requirement.

CONCLUSION:

In this paper we have presented a location based query solution that employs two protocols that enables a user to privately determine and acquire location data. The first step is for a user to privately determine his/her location using oblivious transfer on a public grid. The second step involves a private information retrieval interaction that retrieves the record with high communication efficiency. We analysed the performance of our protocol and found it to be both computationally and communicationally more efficient than the solution by Ghinita et al., which is the most recent solution. We implemented a software prototype using a desktop machine and a mobile device. The software prototype demonstrates that our protocol is within practical limits.

Future work will involve testing the protocol on many different mobile devices. The mobile result we provide may be different than other mobile devices and software environments. Also, we need to reduce the overhead of the primality test used in the private information retrieval based protocol. Additionally, the problem concerning the LS supplying misleading data to the client is also interesting. Privacy preserving reputation techniques seem a suitable approach to address such problem. A possible solution could integrate methods from [15]. Once suitable strong solutions exist for the general case, they can be easily integrated into our approach.

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