также связано с принципом мудрости, поскольку его использование дает людям возможность управлять временем, организуя настоящее, смотря в будущее и применяя опыт прошлого. Возможно, данное значение отразилось в выражении *гурван цагийн Бурхан (өнгөрсөн цаг, өнөө үе, ирээдүй)* «Будда трех времен (прошлое, настоящее, будущее)».

Число «четыре» у монгольских народов имеет особую смысловую нагрузку. Семантика названия данного числа говорит о продолжении, рождении потомства, рода, как у человека, так и у животных: четыре фазы Луны, четыре стороны света, четыре времени года, четыре возрастных периода человека играют большую роль в рождении новой жизни.

Символика числа «пять» связана с тем, что на пять групп подразделяется по цветовой символике употребляемая пища (белая, красная, желтая, зеленая и черная); выделяется пять основных видов скота (коровы, лошади, овцы, козы, верблюды); животные и люди обладают пятью органами чувств (зрение, обоняние, осязание, слух и вкус); мир состоит из пяти первоэлементов (дерево, огонь, земля, железо, вода). Символика числа «шесть» в монгольском языке связана с законом единства и борьбы противоположностей. Если Земля – это абсолютный центр, который связан с возникновением шести видов живых существ: небожителей, асуров, людей, животных, претов, ада»; *зургаан их жэшээ (улсыг удирдахын тул зурхай, урьдаас мэдэх, уламжлал, хэмжээ тарах, цэрэгийг бүтээх дүрэм, эрдэнэсийн сангыг олон болгох ба бүтээх жэшээ хэрэгтэй)* и шести великих примеров: астрологии, предсказания, традиции, соразмерности, правила для создания войск, примера размножения и создания сокровищницы, что требуется для управления государством и символизирует данное число как счастье. В целом каждое число имеет неповторимое значение, смысловую значимость и культурную ценность.

Loqman Aryan
Tabriz branch IAU, Iran

TECHNIQUES LOCKING FOR CONCURRENCY CONTROL AND GUARANTEES EXCLUSIVE TO USE DATABASE SYSTEMS

Currently, data security the most important topics in information technology (IT). This is evidenced, for example, a significant share of investments in the IT. Also conducts research and development aimed at improving the database. Special stage of this development is a comprehensive improvement of quality indicators database associated primarily with the problems of saving time, security, reliability, and cost. Therefore, the improvement of its quality is given significant attention. A lock guarantees exclusive use of a data item to a current transaction. In other words, transaction T2 does not have access to a data item that is currently being used by transaction T1. A transaction acquires a lock prior to data access; the lock is released (unlocked) when the transaction is completed so that another transaction can lock the data item for its exclusive use, figure 1. Indicates the level of lock use. Locking can take place at the following levels: database, table, page, row or even field.

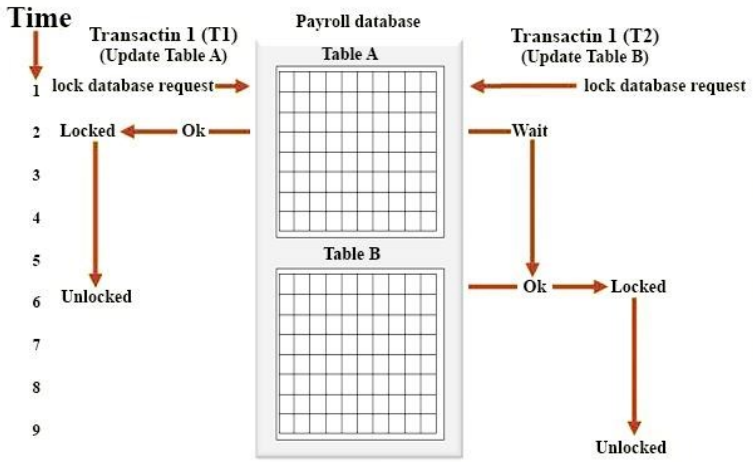

Figure 1. Model lock in the database transaction

Purpose of Concurrency Control

1. To enforce Isolation (through mutual exclusion) among conflicting transactions. 2. To preserve database consistency through consistency preserving execution of transactions. 3. To resolve read-write and write-write conflicts.

In concurrent execution environment if T1 conflicts with T2 over a data item A, then the existing concurrency control decides if T1 or T2 should get the A and if the other transaction is rolled-back or waits.

Concurrency is defined as the ability of multiple processes and threads to access and change the data records at the same time. Lower the contention to access and modify data with more users, better is the concurrency and vice

versa. A process that access data prevents other process to change the data. This reduces the concurrency. A process that modifies data prevents other process to access or change the data. This reduces the concurrency.

In general, database systems uses two approaches to manage concurrent data access; pessimistic and optimistic. Conflicts cannot be avoided in both the models, it differs only in when the conflicts are dealt.

Concurrency Control Locking Strategies

Pessimistic Locking **-** This concurrency control strategy involves keeping an entity in a database locked the entire time it exists in the database's memory. This limits or prevents users from altering the data entity that is locked. There are two types of locks that fall under the category of pessimistic locking: write lock and read lock. With write lock, everyone but the holder of the lock is prevented from reading, updating, or deleting the entity. With read lock, other users can read the entity, but no one except for the lock holder can update or delete it.

Optimistic Locking: This strategy can be used when instances of simultaneous transactions, or collisions, are expected to be infrequent. In contrast with pessimistic locking, optimistic locking doesn't try to prevent the collisions from occurring. Instead, it aims to detect these collisions and resolve them on the chance occasions when they occur. Pessimistic locking provides a guarantee that database changes are made safely. However, it becomes less viable as the number of simultaneous users or the number of entities involved in a transaction increase because the potential for having to wait for a lock to release will increase.

Optimistic locking can alleviate the problem of waiting for locks to release, but then users have the potential to experience collisions when attempting to update the database.

Lock Problems

Deadlock - When dealing with locks two problems can arise, the first of which being deadlock. Deadlock refers to a particular situation where two or more processes are each waiting for another to release a resource, or more than two processes are waiting for resources in a circular chain. Deadlock is a common problem in multiprocessing where many processes share a specific type of mutually exclusive resource. Some computers, usually those intended

for the time-sharing and/or real-time markets, are often equipped with a hardware lock, or hard lock, which guarantees exclusive access to processes, forcing serialization. Deadlocks are particularly disconcerting because there is no general solution to avoid them.

Livelock **-** Livelock is a special case of resource starvation. A livelock is similar to a deadlock, except that the states of the processes involved constantly change with regard to one another wile never progressing. The general definition only states that a specific process is not progressing.

Basic Timestamping - Basic timestamping is a concurrency control mechanism that eliminates deadlock. This method doesn't use locks to control concurrency, so it is impossible for deadlock to occur. According to this method a unique timestamp is assigned to each transaction, usually showing when it was started. This effectively allows an age to be assigned to transactions and an order to be assigned. Data items have both a read-timestamp and a write-timestamp. These timestamps are updated each time the data item is read or updated respectively.

Optimistic Concurrency Control (OCC) is superior to locking methods for systems where transaction conflict is highly unlikely, e. g query dominant systems.

– Avoids locking overhead

– Using parallel validation OCC can take full advantage of multiprocessor environment.

Расул Ариан
НТУ «ХПИ», Иран

ПОВЫШЕНИЕ ЭФФЕКТИВНОСТИ УРОВНЯ ПРОЧНОСТИ ПОРШНЕЙ АВТОТРАКТОРНЫХ ДИЗЕЛЕЙ

В настоящее время отрасль двигателестроения развивается ускоренными темпами. Об этом свидетельствует, например, существенная доля инвестиций, направляемых в транспортную отрасль. Также проводятся исследования и разработки, направленные на совершенствование дизеля. Особенностями этапов этого развития является комплексное повышение