Bulletin of Environment, Pharmacology and Life Sciences
Bull. Env. Pharmacol. Life Sci., Vol 3 [Spl issue II]2014: 36-39

Online ISSN 2277-1808
Journal's URL:http://www.bepls.com
CODEN: BEPLAD
Global Impact Factor 0.533
Universal Impact Factor 0.9804

The evaluation of obligatory timing effect on the recovery of realtime database and giving optimized approaches

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ABSTRACT

As we know the realtime systems are subjected to those ones that they struggle as a software program like other systems in this regard. Therefore, the main difference of these systems with other systems is not subjected to their consequences. But, time of giving the related consequence is very essential in this way. This feature is true for Real Time Database Systems [RTDBS], too. This article is to discover and evaluate the ideas and algorithms and the role of every recovering methods of database systems over the time trying to represent the most optimized approaches in this regard.
Key words: *realtime database, recovery, optimized recovering approaches*

INTRODUCTION

In the process of realtime database systems the existence of the temporary data along with stable data is an inevitable process. In some temporary data the risk of losing a part of the related data may happen after passing the related opportunity time; for the reason, a periodical signature and reliable distance should be attached to these temporary data potentially. The periodical signature represents the stream of the data item and the absolute reliable distance is subjected to the duration of the periodical distance the recent data stream is being evaluated in this process[1].Some systems like the control of weather traffic, trading of stakeholders and telecommunications can be applied in real time database systems [RTDBS]. A general sample of these systems is subjected to the data collection of the surrounding and responding timely in this case. In order to reach to a superior system, the Main Memory Database [MMDB] is suggested in this regard. Because a main part of the related data can be related to the main memory in MMDB system; so the process of a reaction can be accepted by little number of I/O potentially. However, during the system error coming from a one error in system code of the database management or an operational error as well as a hardware failure or even cutting the electricity, a huge number of data get lost due to the existence of the main memory composed of a semi conductor material. Probably this problem happens for several times during a week; thus, the occurrence of the process periodical opportunity will be lost along with huge number of data as well as temporary data in this case. Along this, and for the guaranteeing of recycling a MMDB system, the Logging register and Check pointing activities should be carried out during the system normal actions as well as Reloading activity after the occurrence of any failure in the system. There have been evaluated and studied many different technologies for recovering the conventional database systems [2]. However these carried out works are not more in relation to the recovery of database systems. Recently, there has been carried out a recovery on the database system. Now we try to show the details of the check pointing methods and reloading process in removing any intriguing issues.

First method: registration: common approach:

When a system is being at an error or failure, it should be returned to the database for making the adaptation of the database and the whole successful consequences in a process that it is possible only through the operation of Redo; it is clear that the entire happened changes of a failure process should be removed by the database that it is also carried out by Undo operation. The operation of Redo is carried out after the operation of Image [AFIMs]. AFIM is subjected to the degree of final processes data items before their changes. The operation of Undo also is related to Before Images [BFIMs]. BFIM also is subjected to the degree of the lack of finalized processes of data items; it is the failure process before the changes of the data items. In despite of the registration operation in common database, **realtime** registration not only is being guaranteed the degree of the data, but also it is responsible for the periodical adjustment and timely response in this regard. As it mentioned before, a temporary data not only keeps its own reliability but also it has to have two features in this case: periodical signature and absolute reliable distance. Therefore,

not only the degree of data should be given to every data-item in registration record but also these two features should be kept in a registration record regarding to every data item. A simple method for supplementing this purpose is subjected to the devotion of the contraction registration method; in this mood, the corresponding registration keeps the AFIM or BFIM due to its up-to-date policy for every data item. In addition, the degree of AFIM/BFIM and INTERVAL is also kept for every data item. Indeed, A TIME / B TIME is the same periodical signatures of the data item. INTERVAL is subjected to the absolute reliable distance. In these systems, only a one Buffer is being used for keeping both groups of stable registered records and temporary data. It is obvious thatthe application of a Buffer is easy for both data groups; but, a stable data and temporary data are tolerated due to the existence of different registration record formats to evaluate the registration record format during the recovery period. There have to be applied some extra Buffers in order to remove the extra loading in this case. This makes the stable and temporary registered records get registered separately. In the other hand, some temporary data items may have the shortest reliable period in this case. For the reason, their degree may become unreliable due to their upgrading process. As a consequence, it is not necessary to keep their old degree in the registration record. This leads to mitigate the registration record and their reduction of the registered data. This also causes to the reduction of registration record period during the recovery process [3]. Based on this, four suggestions should be given due to whether these some Buffers should be applied in the registered system or only a one Buffer is enough?
These moods have been given in table 1 as following:

Table 1: four suggestive approaches for registering MMDB [3]

	First suggestion	Second suggestion	Third suggestion	Fourth suggestion
Application of several registration Buffer	**Negative**	**Negative**	**Positive**	**Positive**
Registration of unreliable temporary data	**Positive**	**Negative**	**Positive**	**Negative**

In order to evaluate every above mentioned mood, a simulation model using SLAM II Language [4] can be applied in this regard. Due to the effectiveness of two key factors on the registration of MMDB systems,some registering Buffers particularly the reliable temporary data should be devoted in this case:
First the application of some Buffers requires a scale for recognizing the registration format being tolerated by the considerable loading process on the usual process reducing the period of the recovery. Second, the registration of temporary data with unreliable degree and extra registration record can increase the periodical process.

Suggestive approach:

A problem in registration method is that the entire temporary data is the same during their reliable duration. In a MMDB system there have been some temporary data with the shortest lifelong; the degree of these data will be reliable due to their recovery operation. Thus, the operation of Undo and Redo is not necessary for the temporary data. Another disadvantage of these registration systems is that in every time only a one up-to-date process is achieved. It is obvious that when the rate of the failure processes is low, the up-to-date policy will have better efficacy in this regard. Because the realtime up-to-date policy is processing the suspended up-to-date rapidly but if the rate of the failure process is high, the realtime up-to-date will have terrible consequences in the system. So the suspended up-to-date is suggested in this mood.

Second approach: evaluation: common approach:

The word evaluation is subjected to the process where a copy of up-to-date is being kept from the database on the disk. When a failure is happened into the system, the evaluation points will prepare a copy of updated database in this case. Many information get appeared in the registration step will not be necessarily useful during recovery process. [5]. For the evaluation operation, there are two evaluation operations; in first idea, both stable and temporary data will be categorized based on their frequency. Those ones with high frequency will be evaluated firstly in compare to low level frequency. In the second idea, the stable data is categorized with its frequency but the temporary data will be grouped based on its reliability. Along this, temporary data with low reliable duration is given high opportunity to be supplemented. This categorization leads the temporary data with shortened reliable period to be recovered before ending the reliable time preventing the cancelation of these groups of data.

Suggestive approach:

In above mentioned evaluation plans, a MMDBis evaluated based on the realtime data features such as periodical opportunities or updating frequency; but, the process features such as periodical opportunities will never get evaluated; for example, a process of emergency like firefighting shows its own reaction in this case possibly. It will be absolutely critical than a robotic movement under operational status while we know the main aim of an realtime system is to respond to a critical event in a periodical limitation.In order to reach to these purposes, it should be pointed to the reduction of degree of informational registration during the recovery period making the permit of process in high opportunity process in this regard. Hence, if the priority of the evaluation being achieved to the critical process based on their practical type is not let, the supplementation operation will be mitigated in this path. In order to recovery in all over the process,a one data item should be specified based on their critic and periodical limitation.

Third method: reloading process: common approach:

In fact the process of Reloading in failure systems will appear after the occurrence of failures into the related systems. Although the process of transformation is achieved simply in a large database, but this work takes high expenses along with time-consuming issues. For example, for the recovery of a one Giga Byte of database, about 28:43 minutes requires in this case. [6]. In order to find the recycle of the process, the speed and the lack of any reduction at system supplementation and a one Reloading plan are requires necessarily. There have been given two types of algorithms for the process of recovery in database systems. In first algorithm, a one piece is selected as the recovery unit. The system achieves the process of supplementation again when a specified number of data are out of memory for their own processing issue along with their corresponding data registration process; this algorithm lets high supplementation processes get entered into the memory rapid than their periodical opportunity. In addition, this algorithm determines the process periodical opportunities and reloading priority as the concept of process priority heritage. In the second algorithm, a sheet is applied as the recovery unit. When the related sheet is entered into the memory, the process supplementation is achieved in this path. This algorithm also determines the process periodical opportunities and reloading priority as the concept of process priority heritage concept in this regard. In despite of the first algorithm, this algorithm transfers rapidly the sheets with high frequency than the sheets with low frequency. In the other hand we know that the temporary data are prior than stable data in relation to their Reloading process. [7].

Suggestive approach:

A represented problem is that the supplementation is reduced when the temporary data get increased; for the reason, when the degree of the temporary data increased, high data would get entered into the main memory and the whole temporary data had to be evaluated in order to prevent any losing data in the specified periodical opportunity. The tolerated loading is weightier than the beneficiary impact of the system simplification process. For the recovery of the database reloading process, the Reloading plan is suggested that the same process determines the iteration and type of the loading priority based on their frequencies into the related data; also, it can determine the degree of data before the beginning of the system in the memory.

CONCLUSION

The recovery of database is one of the most essential foundations of the management system in database affairs playing a key role in the formation of database along with the optimized application of informational banking systems. In one hand, along with the development of the computer sciences and technology,the high vast of discussions have been devoted to the realtime database systems; these systems are susceptible to the general disaster terribly and they cannot get out of any failures guaranteed. The main aim of the present study is to determine the related failures and their overcoming methods in this case. Along this, there have been carried out many various approaches for evaluating the informational banks recovery process particularly in Database Systems; for the reason, there have been also given some basic approaches to remove these problems. The development of the suggestive approaches and tendency of the related affairs towards out of theoretical discussions and entering into the new world of supplementary ways will be our next activity in near future.

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