Efficient Tuner for Enhancing the System's Memory Performance

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ABSTRACT:
There have been existing working system tuners, but in this project we propose a System tuner with more efficient algorithm working in each of its components. It'll provide services of garbage collection, memory compaction, virus detection and data compression. System Tuner optimizes your computer's performance and helps protect your privacy on the Internet. It can recover disk space, clean up the system registry, and remove web browser cookies and history entries. It can also switch off unused startup programs or remove chat histories and other records by your computer to help protect your privacy. Before making any changes, System Tuner also backs up your system settings.

KEYWORDS: system tuner, efficient, garbage collection, memory compaction, virus detection, data compression

1. INTRODUCTION:
A system tuner ensures the efficient working of a system by providing several tuning services.
Garbage collection (**GC**) is a form of automatic memory management. The garbage collector, or just collector, attempts to reclaim garbage, or memory occupied by objects that are no longer in use by the program.
Memory compaction method is used to relocate information blocks in main memory in order to maximize the available free space in the memory. **Virus Detection** is any technique designed to monitor a computer system for unauthorized program code that is sent to attach itself to software applications and cause damage or data loss.
Data Compression is a technique in information technology by which the same amount of **data** is transmitted by using a smaller number of bits; for example, by replacing a string of ten repeated digits with a command to repeat the digit ten times.
It presents itself in a clean, decluttered interface to match its motive and purpose, and is incredibly easy to get started with. You'll be able to see just how much space you have used / remaining on your device (as well as any SD cards you may have installed), and by checking for overly bloated caches attached to some of your working programs, you can readily identify and delete anything you deem to be a waste of space.

2. EXISTING SYSTEM:
The Existing System can have problems of memory management with interference in the working of the system due to virus affected files. The existing systems do provide the stated functionalities and services for an efficient working of system but these too are limited and lack beyond some points. These problems could be providing only a limited not all services for one system or purchasing of additional tuners to provide all services.
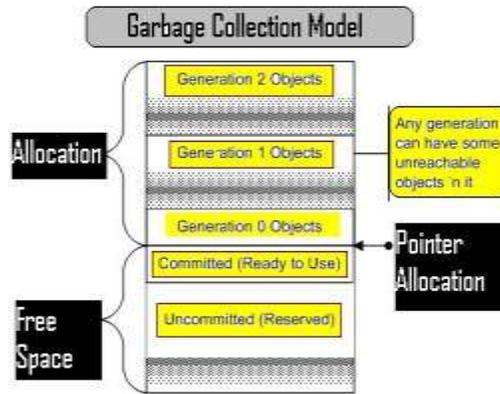
3. PROPOSED SYSTEM:

The proposed System Tuner Software spreads volumes evenly and widely across all available resources so that system can deliver balanced performance. Relocation operations run as a background process that is non-disruptive to users and applications.

The proposed system would use more efficient algorithms in each of its components to provide more balanced and tuned software for the complete and progressive working of the system.

4. EXPERIMENTAL METHOD:

4.1 GARBAGE COLLECTION:

Garbage collection (GC) is a form of automatic memory management. The garbage collector, or just collector, attempts to reclaim garbage, or memory occupied by objects that are no longer in use by the program.

The existing system tuners use the Reference Counter Algorithm which maintains a counter to count the number of references made to an object. This requires maintenance and regular updation of a database.
COMPLEXITY=O(LOG N)

In our proposed system tuner we have implemented an algorithm for garbage collection that does not require a data base maintenance or updation hence making the implementation easier and more efficient working.
COMPLEXITY=O(N LOG N)

4.2 MEMORY COMPACTION:

Memory compaction method is used to relocate information blocks in main memory in order to maximize the available free space in the memory. Virus Detection is any technique designed to monitor a computer system for unauthorized program code that is sent to attach itself to software applications and cause damage or data loss.

- Compaction is a method to overcome the external fragmentation problem.
- All free blocks are brought together as one large block of free space
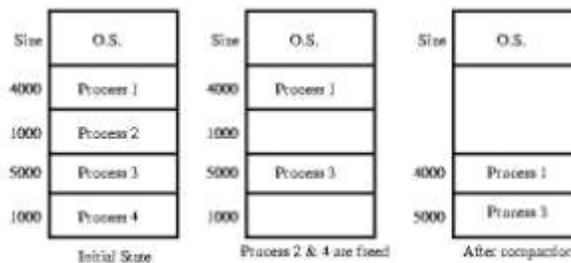
4.3 VIRUS DETECTION:
SYSTEM FUNCTIONS:
- ## DATABASE UPDATION:
s1.1-Adding new code to the database.
s1.2-Deleting the existing old code.
- ## SCANNING FILES:
 s2.1-Scanning the selected file or folder
 s2.3-A report is generated with status of scanned files.
s2.4-Provides the option to delete the files which is infected
 s2.5-Provides an alternate option to record the infected file location.

- ## SCANNING REPORT:
s3.1-Shows the infected files after scanning is completed.
s3.2- Provides the options like moving to vault and delete now.
- ## VIRUS VAULT:
s4.1-View the affected files.
s4.2-Delete the selected files.
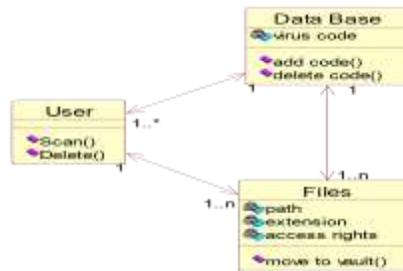
4.4 DATA COMPRESSION:
Data Compression is a technique in information technology by which the same amount of data is transmitted by using a smaller number of bits; for example, by replacing a string of ten repeated digits with a command to repeat the digit ten times.
- Data compression is the art of reducing the number of bits needed to store or transmit data.
- Compression can be either lossless or lossy. Losslessly compressed data can be decompressed to exactly its original value.
- Makes optimal use of limited storage space
- Save time and help to optimize resources:
If compression and decompression are done in I/O processor, less time is required to move data to or from storage subsystem, freeing I/O bus for other work
    -In sending data over communication line: less time to transmit and less storage to host

5. PERFORMANCE BENEFITS:
The proposed system's garbage collection algorithm traces out the set of objects accessible from the roots, it is able to correctly identify and collect garbage even in the presence of reference cycles.
A secondary benefit of the approach is that the normal manipulations of reference variables in curs no overhead.

Methods /Parameter	Signature based virus detection	Anomaly Based Detection	Code Emulation
Strength	Efficient	New malware	Encrypted viruses
Limitation	New malware	Unproven	Complex
Cost	Low	Costly to implement	Costly to implement
Accuracy	More if database is updated	Less	More

6. CONCLUSION:

In this paper, we present a well-organized, proficient and resourceful system tuner for the able working of a system without any interference in the standard and regular working of the system and to provide an ease of use to the users.

7. ACKNOWLEDGEMENTS:

We have tried our best to present this paper as clearly as possible using basic terms that we hope will be comprehended by the widest spectrum of researchers, analysts and students for further studies.
We are also thankful to our institution for supporting us in completion of our work.

8. REFERENCES:

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