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TITLE

Use of File Extension Index for Faster Searching

ABSTRACT

A file extension index in the operating system of a computing device is used to efficiently search for files on a computing machine. By including a file extension or more general file type in the search query, the file extension index is used to quickly eliminate irrelevant files from the search. This greatly reduces the number of files to be searched and the time necessary to complete the search.

1. BACKGROUND

Problem or Opportunity

Searching for files on a computing device can be an arduous process. Traditional file searching techniques involve checking every file on the device to determine if it matches the search criteria. Newer search techniques have begun to use index files to organize file information, but the searching of large file systems can still be time consuming. A new technique is needed to efficiently search for files on a computing device.

Background Publications

Previous publications have attempted to address the problem of improving search efficiency. However the previous publications have not addressed this issue by indexing file extensions to reduce the amount of data that must be searched.

US Patent Number 6640225 describes a method for searching files using an index file. In this invention, a key file stores key strings of characters. A position file stores the location of these key character strings within documents on the computing device. These indices are used to effectively search for content within a series of documents. This invention does not implement and index of file extensions to reduce the size of data to be searched.

US Patent Number 7111015 describes a method for efficient file searching. In this invention management files located in a first directory, contain information regarding the contents of another directory. The management tables can be quickly searched to without having to search the actual directory. This invention does not utilize an index of file extensions to improve searching efficiency.

US Patent Number 6370549 describes a system for maintaining a history of file locations. A file location cache stores the location of files as determined by previously executed searches. The file location cache is referenced to increase the speed of future searches. This invention does not utilize an index of file extensions to increase the efficiency of a search.

2. SUMMARY OF INVENTION

Invention Summary

When searching for a specific file or set of files, the extension or file type of the desired files is generally known. However, current search methods do not use this available knowledge advantageously.

The present invention establishes a file Extension Index to improve the efficiency of file searches. The Extension Index stores a list of all files stored on a computing machine, organized by file extension. When executing a search containing a file extension or file type, the searching module of the operating system can quickly filter the relevant file extension or extensions relating to the search query. The efficiency of the search process is increased because files with irrelevant extensions are quickly eliminated in the first step of the search.

Unique Concepts

The unique concept of the present invention is the use of a file Extension Index to speed up the process of searching for files.

3. DESCRIPTION OF THE INVENTION

Figure 1 depicts the system for the File Extension Index.

The User Machine is a computing device such as a desktop computer, laptop, server, or mobile device.

The OS is an operating system, such as Linux, installed on the User Machine. The OS manages interactions between hardware, software, and users.

The Extension Index is an index file that contains a list of the stored locations of all files within the File System organized by file extension. The Extension Index is dynamically updated such that it is an accurate representation of the File System.

The Search Module is a module of the OS designed for searching the File System for specific files or groups of files. The Search Module uses the Extension Index to speed up the searching process.

The File System is the collection of all files stored on the User Machine.

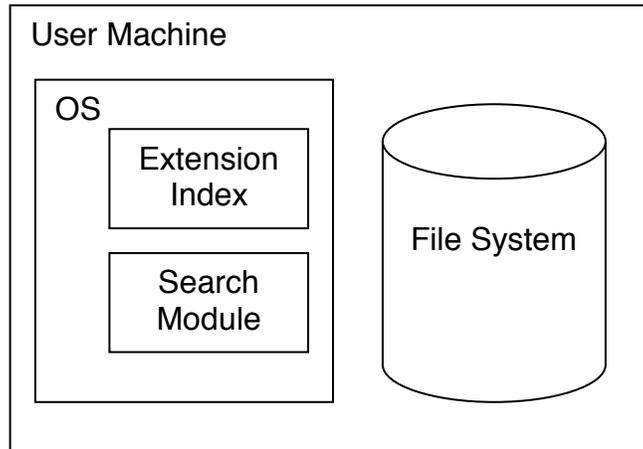


Figure 1. System for File Extension Index

Figure 2 depicts the exemplary structure of the File Extension Index.

The first column of the File Extension Index lists every file extension that exists on the User Machine. In the second column the filename and location of each file with a given file extension are stored.

.123	/temp/document.123
	/docs/text.123
	...
.ext	/usr/settings.ext
	/root/config.ext
	...
.mp3	/music/song.mp3
	/music/sowhat.mp3
	...
...	...

Figure 2. Exemplary arrangement of a file Extension Index.

Figure 3 depicts the method for searching with the File Extension Index.

In step 1, the Search Module is initiated by a user or process running on the User Machine.

In step 2, a search query, including a file extension or file type, is input to the Search Module by a user or process.

In step 3, the Search Module references the Extension Index and identifies the subset of files that correspond to the specified file extension or file types. This process quickly eliminates a large collection of irrelevant files.

In step 4, the Search Module filters each entry of the subset within the Extension Index using the original search query.

In step 5, the Search Module returns the results of the search to the requesting user or process.

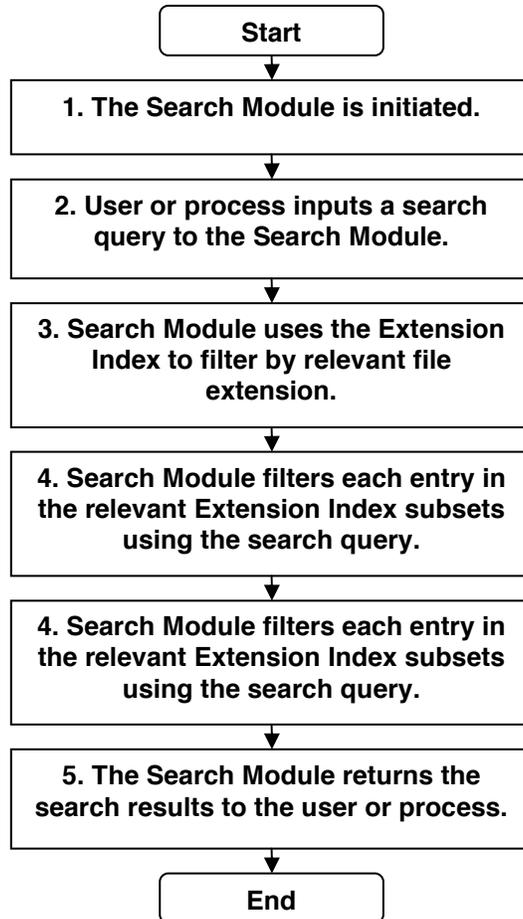


Figure 3. Method for searching with the Extension Index.