**File Management and Tracking System**

**Abstract:-**

File management and Tracking system is a java based standalone application. This application provide the overall structure and the attributes which are related to the specific file and directories. This application basically extract the meta-data of files and directories and also shows the parent-child relationship between files.It is used to [navigate](https://www.computerhope.com/jargon/n/navigate.htm) and manage the [drives](https://www.computerhope.com/jargon/d/drive.htm), [folders](https://www.computerhope.com/jargon/f/folder.htm), and [files](https://www.computerhope.com/jargon/f/file.htm) on your computer.

 It provides a [graphical user interface](https://en.wikipedia.org/wiki/Graphical_user_interface" \o "Graphical user interface) for accessing the [file systems](https://en.wikipedia.org/wiki/File_system" \o "File system). For example, all file managers allow the user to view, edit, copy, and delete the files on their computer [storage devices](https://www.computerhope.com/jargon/s/stordevi.htm).

What does File mean?

A file is an object on a computer that stores [data](https://www.computerhope.com/jargon/d/data.htm), [information](https://www.computerhope.com/jargon/i/informat.htm), settings, or commands used with a computer [program](https://www.computerhope.com/jargon/p/program.htm).

A file is a container in a computer system for storing information. Files used in computers are similar in features to that of paper documents used in library and office files. There are different types of files such as text files, data files, directory files, binary and graphic files, and these different types of files store different types of information. In a computer operating system, files can be stored on optical drives, hard drives or other types of storage devices.

What does Directory mean?

A directory is a location for storing files on your computer. Directories are found in a [hierarchical file system](https://www.computerhope.com/jargon/h/hierfile.htm), such as [Linux](https://www.computerhope.com/jargon/l/linux.htm), [MS-DOS](https://www.computerhope.com/msdos.htm), [OS/2](https://www.computerhope.com/jargon/o/os2.htm), and [Unix](https://www.computerhope.com/unix.htm).

In [computing](https://en.wikipedia.org/wiki/Computing" \o "Computing), a directory is a [file system](https://en.wikipedia.org/wiki/File_system" \o "File system) cataloging structure which contains references to other [computer files](https://en.wikipedia.org/wiki/Computer_file" \o "Computer file), and possibly other directories. On many computers, directories are known as folders, or drawers,[[1]](https://en.wikipedia.org/wiki/Directory_(computing)" \l "cite_note-1) [analogous](https://en.wikipedia.org/wiki/Analogy" \o "Analogy) to a [workbench](https://en.wikipedia.org/wiki/Workbench" \o "Workbench) or the traditional office [filing cabinet](https://en.wikipedia.org/wiki/Filing_cabinet" \o "Filing cabinet).

Files are organized by storing related files in the same directory. In a [hierarchical](https://en.wikipedia.org/wiki/Hierarchy" \o "Hierarchy) [file system](https://en.wikipedia.org/wiki/File_system" \o "File system) (that is, one in which files and directories are organized in a manner that resembles a [tree](https://en.wikipedia.org/wiki/Tree_structure" \o "Tree structure)), a directory contained inside another directory is called a subdirectory. The terms parent and child are often used to describe the relationship between a subdirectory and the directory in which it is cataloged, the latter being the parent. The top-most directory in such a file-system, which does not have a parent of its own, is called the root directory.

What does file system mean?

In a computer, a file system -- sometimes written filesystem -- is the way in which files are named and where they are placed logically for storage and retrieval. Without a file system, stored information wouldn't be isolated into individual files and would be difficult to identify and retrieve. As data capacities increase, the organization and accessibility of individual files are becoming even more important in data storage.

File systems can differ between operating systems (OS), such as Microsoft Windows, mac-os and Linux-based systems.

How file systems work?

A file system stores and organizes data and can be thought of as a type of index for all the data contained in a storage device. These devices can include hard drives, optical drives and flash drives.

File systems specify conventions for naming files, including the maximum number of characters in a name, which characters can be used and, in some systems, how long the file name suffix can be. In many file systems, file names are not case sensitive.

Along with the file itself, file systems contain information such as the size of the file, as well as its attributes, location and hierarchy in the directory in the **[metadata](https://whatis.techtarget.com/definition/metadata)**.

Managing Meta-data (File and File Store Attributes):

The definition of meta-data is "data about other data." With a file system, the data is contained in its files and directories, and the meta-data tracks information about each of these objects: Is it a regular file, a directory, or a link? What is its size, creation date, last modified date, file owner, group owner, and access permissions? A file system's meta-data is typically referred to as its file attributes.

In JAVA programming language, File class used to extract the files and directories meta-data.

The Files class includes methods that can be used to obtain a single attribute of a file, or to set an attribute.

File systems use meta-data to store and retrieve files. Examples of meta-data tags include:

* Date created
* Date modified
* Access permissions
* File size
* IsFile or IsDirectory

The following code snippet reads and prints the basic file attributes for a given file and uses the methods in the [BasicFileAttributes](https://docs.oracle.com/javase/8/docs/api/java/nio/file/attribute/BasicFileAttributes.html" \t "/home/aditya/Documents\\x/_blank) class.

Path file = ...;

BasicFileAttributes attr = Files.readAttributes(file, BasicFileAttributes.class);

System.out.println("creationTime: " + attr.creationTime());

System.out.println("lastAccessTime: " + attr.lastAccessTime());

System.out.println("lastModifiedTime: " + attr.lastModifiedTime());

System.out.println("isDirectory: " + attr.isDirectory());

System.out.println("isOther: " + attr.isOther());

System.out.println("isRegularFile: " + attr.isRegularFile());

System.out.println("isSymbolicLink: " + attr.isSymbolicLink());

System.out.println("size: " + attr.size());

**Java Swing : Used to create GUI**

What is Swing?

Java Swing is a lightweight Graphical User Interface (GUI) toolkit that includes a rich set of widgets. It includes package lets you make GUI components for your Java applications, and It is platform independent.

The Swing library is built on top of the Java Abstract Widget Toolkit (AWT), an older, platform dependent GUI toolkit. You can use the Java GUI components like button, textbox, etc. from the library.

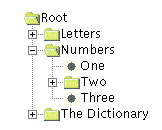
**Java JTree**

The JTree class is used to display the tree structured data or hierarchical data. JTree is a complex component. It has a 'root node' at the top most which is a parent for all nodes in the tree. It inherits JComponent class.

*Tree class declaration*

***public class JTree extends JComponent implements Scrollable, Accessible***

With the [JTree](https://docs.oracle.com/javase/8/docs/api/javax/swing/JTree.html" \t "/home/aditya/Documents\\x/_blank) class, you can display hierarchical data. A JTree object does not actually contain your data; it simply provides a view of the data. Like any non-trivial Swing component, the tree gets data by querying its data model. Here is a picture of a tree:



As the preceding figure shows, JTree displays its data vertically. Each row displayed by the tree contains exactly one item of data, which is called a node. Every tree has a root node from which all nodes descend. By default, the tree displays the root node, but you can decree otherwise. A node can either have children or not. We refer to nodes that can have children — whether or not they currently have children — as branch nodes. Nodes that can not have children are leaf nodes.

Branch nodes can have any number of children. Typically, the user can expand and collapse branch nodes — making their children visible or invisible — by clicking them.