CS321 - Operating Systems

Project

Simple Shell & File system (FAT)

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OS Project Report #1

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Introduction

This project is written in Python programing language. And the following section will present the structure of the source code.

Virtual Disk class:

The poupous of this class is to initialize the Min-fat file if the file is existed, and if not it create the Min-fat file, with method Write Cluster to write data into the file system, method read Cluster to read data from the file system.

Mini FAT class:

this class has the array of int which called FAT and its size equals to 1024 items.it contains some methods. A method to prepare the FAT array: this method which assign the values -1,2,3,4,-1 or -1 for the items with indices 0,1,2,3,4 respectively the rest items is assigned 0, we will use this function. A method to print the FAT array for Debugging. A method that get the index of an available cluster (the index of item with value 0) (if that item does not exist this means that our disk is full and all of our clusters is full so the method return in that case -1). A method for getting a cluster pointer it takes the cluster number which you will use it as an index to a FAT array item to get the value in that item which (may be 0 ”empty cluster” ,-1 ”full cluster and this cluster is the end of the content of what this cluster is belonged to”, any value between (5 and 1023) “ indicates that a cluster is full and the cluster with that number completes its content”. A method for setting a cluster pointer which takes cluster number to use it as an index to a FAT array item and assign to that item the second parameter (cluster pointer) which represents the status of that cluster.

A method to set the FAT array which take an array of int as parameter and assign it to the FAT array. A method to write the FAT array into our virtual Disk, it writes it in clusters 1,2,3,and 4.it makes use of WriteCluster method (that you have implemented in Virtual_Disk class) to write the FAT array cluster by cluster into the virtual disk. A method to read FAT array from our Virtual Disk, it makes use of ReadCluster method (that you have implemented in the Virtual_Disk class) to read the FAT array from the virtual disk cluster by cluster.

Directory_Entry class:

which any instance of it will represent a file or directory in our file system. It’s have A method to write the content of that directory to the virtual disk, what we will write we will write the items in the data structure that represents directory_entries of that directory. A method to read directory from the virtual disk it starts reading from the firstcluster of that directory if it does not equal to zero (non empty directory), you read cluster by cluster each of which is 1024 bytes, combine them and loop on them, every 32 byte try to convert them to a Directory_Entry and add it to the directory list of Directory_Entry.

File_Entry class:

it looks like class Directory except instead of the list of directory_Entries we have a string represents the content of the file.and when we write the file or read it we write that string and read it (in the m

Path class:

it is contain the default constructor to start the program. It is have the structure to execute the commands.