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Project Report: File System

* First:
  + Purpose of The Project: The project intended to make the students understand the implementation of a file system. By doing this lab I understand that how does a FAT-16 file system works.
  + Program Environment: I work this project on linux system.
  + What are Given: The TA and professor provide important functions for that lab such as fseek(). Fread(), and fwrite().
  + What are required: This was one of the longest lab I have ever done. I write more than 52 functions for this file. Major functions that I have created – createRootDirectry, updateRootDirectory(), readfromfile(), writetofile(), getdateandtime(), deletefile(), Deletefolder(), openfile(), opendirectory(), createfile(), createdirectory(), get\_List\_of\_file(), get\_file\_info().
  + Methods that suggested: TA and professor suggested to use methods for toRead(),

toWrite(), toDelete(), openfile() , createDirctory() amd create folder().

* + Steps I follow:
    - I created the reserved sector, fat file, data and root directory first.
    - Then I create methods to update and get values from data, fat and root.
    - Then I make linked list in the root directory to add files and directories
    - Then ask user to enter the path name
    - Get the path name from the user and check its validity.
    - If path name is right, then update the Fat file.
    - Then create methods to open the file and directories.
    - Then make methods to write to the file and write from the file.
    - Also make a method to update the fat and root directories.
    - Then I make a method to get the list of files that available in the folder.
    - Then I make a method to get the information of the files.
    - After that I implemented methods to delete the files and directories.
    - Also implemented a user friendly interface.
    - User can open and close the files.
    - Also user can format the disk.
* Second:
  + Problem: How to make a plan to implement a file system.
    - Solution: This is a large project. So planning everything perfectly takes a long time. I tried to draw out everything on my notebook. I drew the picture of fat file, reserved sectors, data region, and root directory. It helps me to understand how does each elements work.
  + Problem: Implementing large methods
    - Solutions: There are few large methods in this lab. I tried to break down most of the methods into small methods. But still there are some large methods. Fixing the bugs inside the large method was hard. I used the printf() and de-bugger to remove the bugs from my code.
    - Int main(){
* Open the file
* Ask the user to initialize the disk
  + If user give permission reset the drive
  + Initialize reserved sector, fat , data and root directory
* Created a do while loop.
  + Get the command from the user to do the task in the FS
  + call appropriate methods for the command
  + exit the loop if user want to exit
  + Else, run over and ober again
* Return zeo;

}

Important functions:

Readfile(){

* Get the file name from the user
* Go to the root directory and make sure path exist
* Find the file and get the fat number.
* Go to the fat table and get the size of the data.
* Use fread and read from the file.
* And print to the screen

}

createfile(){

* Ask user for the pathname
* Check the path and make sure path is valid.
* Find a free root entry
* Update the created date
* Go to fat table and find free fat
* And update the fat and root directory

}

Writetofile(){

* Get the path and make sure path is valid
* Find the root directory
* Get the fat file number.
* Get data from user
* Go to fat table and then go to corresponding data section
* And write the data.

}

* Third:
  + Bugs: The issues with scanf was the one of the important problem.
    - Solution: I fix the bug by using some special characters inside scanf.
  + Requirements I have finished:
    - I can create files
    - I can create directories
    - I can Open files
    - I can open directories
    - I can delete files
    - I can delete directories
    - I can get the list of the files in a folder
    - I can get the details of the files in a folder
    - I think I have completed all the necessary requirements.
* Fourth:
  + Conclusion and thoughts: This lab help me to understand how a file system works. Also this is one of the longest assignment I have ever done.