COMP 7500 Project 4
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Design

I designed this project based on the provided lectures.

DirStructType *mkDirStruct(int index,uint8_t *e):
This function will allocate memory and initialize for a DirStructType object, lastly copy this memory to the buffer where the pointer e pointed to.

void writeDirStruct(DirStructType *d, uint8_t index, uint8_t *e);
This function can write information in DirStructType back to the specified index of the extent in block of memory pointed by e. Pretty much a reverse version of mkDirStruct.

void makeFreeList();
This function will populate a free list used to represent the usage of blocks in the disk. True if block is free and false if block is in use.

void printFreeList()
This function will print free list blocks by blocks. "." If block is free and "*" if block is in use

int findExtentWithName(char *name, uint8_t *block0)
Given a name, this function will return the extent index in blocks

bool checkLegalName(char *name);
helper function to see if a name is legal or not. Name can only be numbers, upper- and lower-case characters base on ASCII table I found online.

void cpmDir()
Print the directory with file name, extension and file size.

int cpmRename(char *oldName, char * newName)
This function can change a file's old name into an new name. It should check if the old name exist in disk, then check if new name is valid, lastly modify that extent and write to disk

int cpmDelete(char * name);
This function will delete a file with given name. First check if the file exist, then mark that block as used in free list, then mark as used in block0, write block0 to disk.

Lessons

This whole project is full of challenges. I was particularly struggled with how to search for a sector by file name and how to toggle with the index when populating a DirStructType. Hopefully these experiences can be useful in my future career.