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American and a half

Team 5 CSC 415 • github:
https://github.com/CSC415-Fall2021/csc415-filesystem-hugoforestier

Summary:
- Description of our File system
  1. A description of the VCB structure
  2. A description of the Free Space structure
  3. A description of the Directory system
  4. A dump (use the provided HexDump utility) of the volume file that shows the VCB, FreeSpace, and root directory.
- Issues we had
- A table of who worked on which components
- How did your team work together, how often you met, how did you meet, how did you divide up the tasks.

Description of our File System

1. Volume Control Block

```
typedef struct vcb
{
        int freeBlockSize; // The number of free blocks
        uint64_t blockSize; // Size of a block
        uint64_t numberOfBlocks; // number of block
        uint64_t signature; // check if the created volume is ours or not
        struct st_block *next; // Link to the next block
        struct st_directory *startDirectory; // a pointer to the directory struct
}  st_vcb;
```

2. How you will track the free space ?

We will go through every block and check if our Boolean *isFree* is true or not.

```
typedef struct block {
I        int location; // Which block it is
        bool isFree; // Is the block free or not
        struct st_block *next; // Link to the next block
} st_block;
```

3. Directory Entry
```
#include <time.h>;
#include <stdbool.h>
typedef struct dir
{
        char name[64];  // The name of the directory
        int location; // Where we are
        int id; //number to track file, use instead of name
        int parentId;
        time creationDate;
        time lastModDate;
        time lastAccess;
        int isDirectory
        struct dir *next; // Link to the next directory } st_dir;
```

Dump:

dump of the vcb struct:

```
Dumping file SampleVolume, starting at block 1 for 1 block:

000200: 4B 4C 00 00 00 00 00 00  00 02 00 00 00 00 00 00 | KL..............
000210: 4B 4C 00 00 00 00 00 00  42 20 74 72 65 62 6F 52 | KL......B treboR
000220: 80 6B 17 1A AB AA 00 00  A0 6B 17 1A AB AA 00 00 | k....k....
000230: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000240: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000250: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000260: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000270: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000280: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000290: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0002A0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0002B0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0002C0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0002D0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0002E0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0002F0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................

000300: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000310: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000320: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000330: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000340: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000350: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000360: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000370: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000380: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
000390: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0003A0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0003B0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0003C0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0003D0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0003E0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
0003F0: 00 00 00 00 00 00 00 00  00 00 00 00 00 00 00 00 | ................
```

```
Dumping file SampleVolume, starting at block 4 for 1 block:

000800: 03 00 00 00 01 00 00 00   00 00 00 00 00 00 00 00 | ................
000810: 00 00 00 00 00 00 00 00   51 03 02 00 00 00 00 00 | ........Q.......
000820: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000830: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000840: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000850: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000860: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000870: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000880: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000890: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0008A0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0008B0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0008C0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0008D0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0008E0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0008F0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................

000900: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000910: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000920: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000930: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000940: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000950: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000960: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000970: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000980: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000990: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0009A0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0009B0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0009C0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0009D0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0009E0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0009F0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
```

```
Dumping file SampleVolume, starting at block 5 for 1 block:

000A00: 2E 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000A10: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000A20: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000A30: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000A40: 04 00 00 00 02 00 00 00   01 00 00 00 00 00 00 00 | ................
000A50: 44 4F 77 61 00 00 00 00   44 4F 77 61 00 00 00 00 | DOwa....DOwa....
000A60: 44 4F 77 61 00 00 00 00   01 00 00 00 00 00 00 00 | DOwa............
000A70: 00 00 00 00 00 00 00 00   21 00 00 00 00 00 00 00 | ........!.......
000A80: 03 00 00 00 01 00 00 00   00 00 00 00 00 00 00 00 | ................
000A90: 00 00 00 00 00 00 00 00   51 03 02 00 00 00 00 00 | ........Q.......
000AA0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000AB0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000AC0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000AD0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000AE0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000AF0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................

000B00: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B10: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B20: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B30: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B40: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B50: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B60: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B70: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B80: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000B90: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000BA0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000BB0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000BC0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000BD0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000BE0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000BF0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
```

```
Dumping file SampleVolume, starting at block 3 for 1 block:

000600: 2E 2E 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000610: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000620: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000630: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000640: 02 00 00 00 01 00 00 00   FF FF FF FF 00 00 00 00 | ............
000650: 44 4F 77 61 00 00 00 00   44 4F 77 61 00 00 00 00 | DOwa....DOwa....
000660: 44 4F 77 61 00 00 00 00   00 00 00 00 00 00 00 00 | DOwa............
000670: 20 6C 17 1A AB AA 00 00   81 00 00 00 00 00 00 00 |  l..........
000680: 2E 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000690: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0006A0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0006B0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0006C0: 04 00 00 00 02 00 00 00   01 00 00 00 00 00 00 00 | ................
0006D0: 44 4F 77 61 00 00 00 00   44 4F 77 61 00 00 00 00 | DOwa....DOwa....
0006E0: 44 4F 77 61 00 00 00 00   01 00 00 00 00 00 00 00 | DOwa............
0006F0: 00 00 00 00 00 00 00 00   21 00 00 00 00 00 00 00 | ........!.......

000700: 03 00 00 00 01 00 00 00   00 00 00 00 00 00 00 00 | ................
000710: 00 00 00 00 00 00 00 00   51 03 02 00 00 00 00 00 | ........Q.......
000720: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000730: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000740: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000750: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000760: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000770: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000780: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
000790: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0007A0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0007B0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0007C0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0007D0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0007E0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
0007F0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ................
```

```
Dumping file SampleVolume, starting at block 2 for 1 block:

000400: 01 00 00 00 01 00 00 00   A0 6C 17 1A AB AA 00 00 | ........l....
000410: 00 00 00 00 00 00 00 00   81 00 00 00 00 00 00 00 | ...............
000420: 2E 2E 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000430: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000440: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000450: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000460: 02 00 00 00 01 00 00 00   FF FF FF FF 00 00 00 00 | ............
000470: 44 4F 77 61 00 00 00 00   44 4F 77 61 00 00 00 00 | DOwa....DOwa....
000480: 44 4F 77 61 00 00 00 00   00 00 00 00 00 00 00 00 | DOwa...........
000490: 00 00 00 00 00 00 00 00   81 00 00 00 00 00 00 00 | ...............
0004A0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0004B0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0004C0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0004D0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0004E0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0004F0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............

000500: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000510: 00 00 00 00 00 00 00 00   21 00 00 00 00 00 00 00 | ........!.......
000520: 03 00 00 00 01 00 00 00   00 00 00 00 00 00 00 00 | ...............
000530: 00 00 00 00 00 00 00 00   51 03 02 00 00 00 00 00 | ........Q.......
000540: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000550: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000560: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000570: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000580: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
000590: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0005A0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0005B0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0005C0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0005D0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0005E0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
0005F0: 00 00 00 00 00 00 00 00   00 00 00 00 00 00 00 00 | ...............
```

Issues we had

First of all on this M1 we had a lot of trouble understanding what to do and in which direction we had to go. We have had 2 discord meetings in order to find our way. This was a big problem.
The group also had a lot of troubles coding the Directory part.(size of a directory number of entry how to illustrate/code that part, number of byte and block used)
Adrian, Bhagdeep, and Gregoire are struggling on the directory part so after multiple calls Monday morning Hugo came to help us in order to finish that part.

Table of who worked on which components

Desc / name	De La Rosa Adrian	Sandhu Bhagdeep	Forestier Hugo	Brasseur Grégoire
Project Structure	OK	OK	OK	OK
Implement VCB			OK	
Implement Free Space			OK	
Implement Directory	OK	OK	OK	OK

How did your team work together, how often you met, how did you meet, how did you divide up the tasks.

We have a server discord in order to organize ourselves and we meet twice a week, the tasks are divided by drops and competence of each one we have met in class