File System Exploration

Question 1

Question 1

```c
(root)
  ├── (home)  // Root directory starts at block 2
  │     └──[file1 - 2000 bytes]  // file in 'home' directory, starting at block 3
  ├── (var)  //starts at block 4
  │     ├── [file2 - 1000 bytes]  // file in 'tmp' directory, starting at block 10
  │     └── (tmp)   // subdirectory,  starting at block 11
  └── (usr)   // subdirectory, starting at block 7
        └── (pjd)   // subdirectory, starting at block 9
              └── [file3 - 800 bytes]  // file in 'pid' directory, starting at block 8
```

I am not sure where to put the data in the file directory though. not sure the location of file1 as well


```
(root)
  ├── (home)  // Root directory starts at block 2
  │     └──[file1 - 2000 bytes]  // file in 'home' director
y, starting at block 3
  ├── (var)  //starts at block 4
    │     ├── [file2 - 1000 bytes]  // file in 'tmp' direct
ory, starting at block 10
    │       └── (tmp)   // subdirectory,  starting at block
11
    └── (usr)   // subdirectory, starting at block 7
                └── (pjd)   // subdirectory, starting at bl
ock 9
                      └── [file3 - 800 bytes]  // file in
'pid' directory, starting at block 8
```

I am not sure where to put the data in the file directory though. not sure the location of file1 as well

Question 2

1. **Block 5**: This block contains "ccc."
    a. According to the FAT (File Allocation Table), this is linked to block 8.
    b. Looking at block 4, "file2" starts at block 10 and "tmp" at block 11, so they can't be the right files.
    c. "ccc" is not the start of a file, as its block is not referenced by any directory as a start. It is likely part of "file1" since "file1" has a length of 2000 bytes and starts at block 3.
        i. **Block 3**: The data here corresponds to "aaa."
            1. From the directory entry in block 2 that "home" starts at block 6 and "var" starts at block 4, which means "aaa" does not correspond to these.
            2. In block 7, "usr" starts at block 7 which is after block 3. So "aaa" must be the data for "file1" starting at block 3 with a length of 2000 bytes as mentioned in block 6.
            3. The portion of the file held in block 3 would be bytes 0-1023.
    d. The FAT shows block 3 is linked to block 5. Hence, block 5 holds bytes 1024-2047 of "file1".
2. **Block 8**: This block contains "ddd."
    a. Based on the directory in block 7, "pjd" starts at block 9, which comes after block 8.
    b. The previous entries in the FAT link block 5 to block 8, and we've determined block 5 holds the second portion of "file1."
    c. Thus, "ddd" is also part of "file1," and since "file1" is longer than 1024 bytes, block 8 holds bytes 2048-3071.
3. **Block 10**: This block contains "eee."
    a. Looking at the directory in block 9, we can see that "file3" starts at block 8.
    b. Since block 8 has already been allocated to "file1," this means "eee" is the data for "file3."
    c. The directory entry for "file3" does not have a linked FAT entry suggesting it is not longer than 1024 bytes.
    d. Thus, block 10 holds bytes 0-1023 of "file3."

4. **Block 12**: This block contains "fff."
    a. There is no directory linking to block 12, and the FAT does not show a continuation from another block to block 12.
    b. Since there is no reference to block 12 from the directories or the FAT, it's likely that "fff" is unused or part of a deleted file. Without further context or links, we can't definitively assign "fff" to a file.
    c. It's possibly free space or corrupted data.

The summary for each block is:

- Block 3: "file1", bytes 0-1023
- Block 5: "file1", bytes 1024-2047
- Block 8: "file1", bytes 2048-3071
- Block 10: "file2", bytes 0-1023
- Block 12: Not determinable from the given information