

Debugfs Browser

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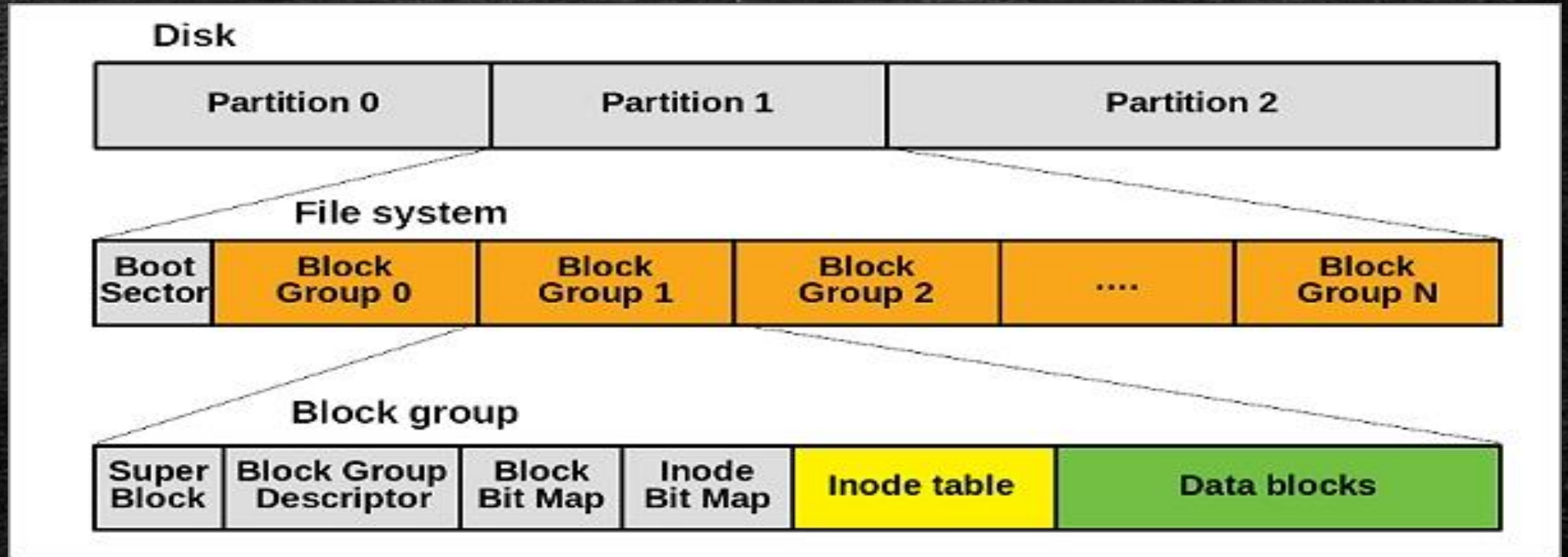
Problem Statement

- debugfs is a command-line tool available on Unix-like systems that provides direct access to the internal structures of an Ext2, Ext3, or Ext4 file system for debugging and recovery purposes.
- The goal of this project is to develop a user-friendly graphical interface that facilitates the exploration and manipulation of an Ext2 file system like the debugfs command-line utility. The proposed application, referred to as the "Debugfs Browser," will provide users with an intuitive interface to navigate through the file system's internal structures, view file metadata, and perform various operations on files and directories.

What is Ext2 FS

- The Second Extended Filesystem uses blocks as the basic unit of storage, inodes as the mean of keeping track of files and system objects, block groups to logically split the disk into more manageable sections, directories to provide a hierarchical organization of files, block and inode bitmaps to keep track of allocated blocks and inodes, and superblocks to define the parameters of the file system and its overall state.
- Ext2 shares many properties with traditional Unix filesystems. It has space in the specification for Access Control Lists (ACLs), fragments, undeletion and compression. There is also a versioning mechanism to allow new features (such as journalling) to be added in a maximally compatible manner; such as in Ext3 and Ext4.

File System



Result

Activities PyCharm Community Edition Aug 28 22:22

Debugfs Browser

Name	Inode	Permissions	numLinks	uid	gid	size	time
.	2	drwxr-xr-x	3	0	0	1024	Aug 16 20:41 2023
..	2	drwxr-xr-x	3	0	0	1024	Aug 16 20:41 2023
lost+found	11	drwx-----	2	0	0	12288	Aug 16 20:41 2023

v1.0



HOME



Stats



Zoom

```
SUPERBLOCK_OFFSET: 1024
SUPERBLOCK_SIZE: 1024
BLOCK_GROUP_OFFSET: 2048
BLOCK_GROUP_SIZE: 32
fd: <_io.BufferedReader name='/dev/sdb1'>
inodes_count: 24576
blocks_count: 98304
free_blocks_count: 90573
free_inodes_count: 24565
block_size: 0
fragment_size: 0
blocks_per_group: 8192
inodes_per_group: 2048
first_data_block: 1
magic_number: 61267
block_group_count: 12
block_group_size: 384
block_group_offset: 2048
Block Group 0:
  Blocks: 1-8192
  Free blocks: 7406
  Free inodes: 2037
Block Group 1:
  Blocks: 8193-16384
  Free blocks: 7420
  Free inodes: 2048
Block Group 2:
  Blocks: 16385-24576
  Free blocks: 7678
  Free inodes: 2048
Block Group 3:
  Blocks: 24577-32768
  Free blocks: 7420
  Free inodes: 2048
Block Group 4:
  Blocks: 32769-40960
  Free blocks: 7678
  Free inodes: 2048
Block Group 5:
  Blocks: 40961-49152
  Free blocks: 7420
```