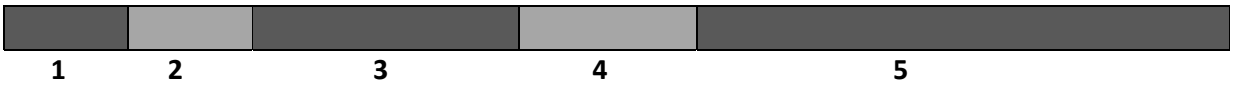
User Based File System Using Fuse

Design of the filesystem:



The above diagram depicts the overall memory division of our file system. The divisions are superblock (1), inode-bitmaps (2), datablock-bitmaps (3), inode-table (4) and datablocks (5)

Memory allocated to each of the regions:

a) **Data-Blocks (5):**

In our filesystem we are supporting storage of user data up-to 5GB. Size of one block is taken as 4KB

Number of blocks for data regions = $\frac{5 * 1024 * 1024}{4}$ = 1310720

b) **Inode Table (4)**

In our filesystem we are supporting storage up-to 80 files. Each file requires one inode which is of 256 bytes.

Number of blocks for inode table = $\frac{80 * 256}{1024 * 4}$ = 5

c) **Data-Block Bitmaps (3):**

Bitmaps are used for making sure which blocks are allocated and which are free. If the value of a bitmap is 1, it means that it is allocated and if the value of bitmap is 0, it means that it is free.
Each bitmap takes 1byte.

Number of blocks for data-block bitmaps = $\frac{1310720}{8 * 1024 * 4}$ = 40

d) **Inode Bitmaps (2):**

Following the same analogy as of above,

Number of blocks for inode bitmaps = $\frac{80}{8}$ = 10 bytes ≈ 1

e) **Superblock (1) :**

Superblock contains the information such as number of data blocks, number of inode blocks and start of inode table. We are assigning one datablock for superblock.