Musab Mehadi

mmehadi@jacobs-university.de

Sheet 10

Problem 1)

A) The largest possible file system is found by assuming all 13 blocks within the inode to be triple indirect indexes.

Since we are using a 32-bit numbers (4 bytes),the number of pointers within each block=128/4=32 bytes.

Hence, each block will store: 32*32*32*128= (2^5)*(2^5)*(2^5)*(2^7)=4*(2^20)bytes=4MB

Total storage = 13*4MB=52MB.

B)

Indirect = 32*128 bytes = (2^5) *(2^7) =4096 B

Double Indirect = 32*32*128 bytes= (2^5) *(2^5) *(2^7) =128KB

Triple Indirect = 32*32*32*128 bytes= (2^5) * (2^5) * (2^5) *(2^7) =4MB

Direct=10*128 = 1280B

To determine the maximum file size, we subtract the space occupied by the metadata from the summation of the above numbers.

Maximum file size =4096+(128*1024)+(4*1024*1024)-64

= 4,329,408 B

C)

Since each block contains 128 MBs, will divide the required position by the value each block stores which is 128 B.

Number of blocks=123456/128= 964.5 which is approximately 965 blocks.