Panturu Sara

1.

a) How many blocks does the disk have?

250 GB = 250 *1024*1024 = 262 144 000 KB

b) How many entries must the FAT have?

262 144 000 Entries

c) What size must be a table entry?

log2(262 144 000) = 27,96→ 32Bit

d)Finally what size is the FAT now?

(32 Bit/8) * 262 144 000 000= 1 048 576 000 000 Byte /1024/1024/1024 = 976 GB

2.

a)

b)

3. **With 4KB block size:**

10*4= 40KB (for the direct blocks) +

4096/ (32Bit/8 = 4Byte) = 1024 (block references in one indirect block) * 4KB +

1024*1024*4KB + (block references in one double indirect block)

1024*1024*1024*4KB (block references in one triple indirect block) =

40KB + 4096KB + 4.194.304KB + 4 294 967 296 =4 299 165 736 KB = 4,00 TB

With 1KB block size:

1024Byte / 4Byte = 256 (block references in one indirect block) * 1KB +

10*1KB +

1024*1024*1KB +

1024*1024*1024*1KB =

10KB + 1 048 576KB + 1 073 741 824KB = 1 074 790 410KB = 1,00 TB

4.

a) Will it be sufficient to keep a block size of 512?

512Bytes / (32/8)Bytes = 128 Bytes * 10 = 1280 Bytes +

128*512Bytes = 65536Bytes + (one indirect block)

128*128*512Bytes = 8 388 608 Bytes + (one double indirect block)

128*128*128*512Bytes = 1 073 741 824 Bytes

= 1280 + 65536 + 8 388 608 + 1 073 741 824 = 1 082 197 248Bytes = 1, 00GB

512 bytes isn't enough since we would only be able to save files with a size of max 1GB

b) What would change if you estimate 12GB as a max file size?

1024 / (32/8) = 256 * 10 = 2560 Bytes +

256 * 1024 = 262 144 (one indirect block) +

256*256*1024 = 67 108 864 (double indirect) +

256*256*256*1024 = 17 179 869 184 (triple indirect) =

2560 + 67 108 864 + 17 179 869 184 = 17 246 980 608Bytes = 16,06GB

Nothing would change if we estimate 12GB because we can still save files with max 16GB