TINF-OS Exercises.

1. **FAT Main Memory Requirements** You already know that the main disadvantage of FAT is, that the complete file allocation table has to be held in main memory all the time to make it work. Assume a 250 GB disk and a 1 KB block size.
   (a) How many blocks does the disk have?
   (b) How many entries must the FAT have?
   (c) What size must be a table entry?
   (d) Finally what size is the FAT now?

2. **Random Access of Files** Describe in detail how the access position 107834590 in the following file systems.
   (a) UFS with a block size of 1 KB.
   (b) FAT32 with a block size of 1 KB

   Beschreiben Sie genau, wie Sie auf die Position 107834590 in den folgenden Filesystemen zugreifen.
   (a) UFS mit einer Blockgröße von 1 KB.
   (b) FAT32 mit einer Blockgröße von 1 KB

3. (20 %) **UFS (i-node) File Size** What is the difference of the maximum file size in UFS when using a block size of 4 KB compared to a block size of 1 KB. Assume 32 Bit block numbers.

   Wie unterscheidet sich die maximale Dateigröße in UFS (i-node), wenn man statt einer Blockgröße von 4 KB nur 1 KB nimmt. Nehmen Sie 32 Bit Block-Adressen an.

4. (20 %) **UFS File Size** You are currently using UFS with a block size of 512 bytes on the system disk of your computer. Since you want to build up a multi-media library on an extra hard disk and your experience with UFS was pretty good (stable, fast, etc.), you consider to again use UFS as your file system. So you buy an external hard disk and have to choose a proper block size for this. You estimate to have a maximum file size of around 5 GB.
   (a) Will it be sufficient to keep a block size of 512 or do you have to take 1024 bytes? Why?
   (b) What would change if you estimate 12 GB as a max. file size of your multi-media files? Why?