Homework for chapter12

1. Define:

B= block size

R= record size

P= size of block pointer

F= blocking factor; expected number of records within a block

Give a formula for F for the three blocking methods depicted in Figure 12.6.

1. One scheme to avoid the problem of preallocation versus waste or lack of contiguity is to allocate portions of increasing size as the file grows. For example, begin with a portion size of one block, and double the portion size for each allocation. Consider a file of n records with a blocking factor of F, and suppose that a simple one-level index is used as a file allocation table.

a. Give an upper limit on the number of entries in the file allocation table as a function of F and n.

b. What is the maximum amount of the allocated file space that is unused at any time?

1. Ignoring overhead for directories and file descriptors, consider a file system in which files are stored in blocks of 16K bytes. For each of the following file sizes, calculate the percentage of wasted file space due to incomplete filling of the last block: 41,600 bytes; 640,000 bytes; 4.064,000 bytes.
2. 某磁盘组有6片盘片，每片有两个记录面，存储区域内径为22cm，外径为33cm，道存储密度为40道/cm，内层位存储密度为400b/cm，转速为3000r/min（转/分），问共有多少柱面？盘组总存储量为多少？平均等待时间为多少？
3. 设文件索引节点中有7个地址项，其中4个为直接地址索引，2个是一级间接地址索引，1个是二级间接地址索引，地址项大小为4B，若磁盘索引块和磁盘数据块大小均为1KB，求可表示的单个文件的最大长度。