Chapter 12 – File Management

True / False Questions:

1. A file is a collection of fields, which is in turn a collection of related records.
2. At the lowest level of the file system architecture, device drivers communicate directly with peripheral devices or their controllers or channels.
3. A pile file refers to the least complicated form of file organization, where data are collected in sorted order and each record consists of one burst of data.
4. The key field in a sequential file acts as an identifier for each record and must therefore be unique to that record.
5. In the indexed sequential file structure, multiple indexes (each referencing a defined portion of the file) can be used to increase record access efficiency.
6. In the general indexed file structure, there are no key fields and variable-length records are allowed.
7. The address information element of a file directory maintains data about the owner of the file, the file access information, and a list of actions permitted on the file.
8. Typically, an interactive user or a process has associated with it a current directory, often referred to as the working directory.
9. The primary issues involved in the simultaneous access of files for updating or appending are mutual exclusion and starvation.
10. The larger the file block size the more records are passed per I/O transaction, but this requires larger I/O buffers making buffer management more difficult.
11. A preallocation policy for secondary storage management requires that the minimum size of a file be declared at the time of the file creation request.
12. In the Free Block List strategy of free disk space management, each block is assigned a number sequentially and the list of the numbers of all free blocks is maintained in a reserved portion of the disk.
13. Reliability problems can occur when the disk allocation table and file allocation table are stored on disk.
14. The UNIX kernel views all files as streams of bytes, any internal logical structure is application specific.
15. The first few sectors of any W2K disk partition using the NTFS file system is occupied by the master file table (MFT).

Multiple Choice Questions:

1. A file is generally defined to be:
    a. A basic element of data
    b. A collection of related fields
    c. A collection of similar records
    d. All of the above
2. The level of the file system architecture that enables users and applications to access file records is called the:
    a. Basic file system level
    b. Basic I/O supervisor level
    c. Logical I/O level

   d. All of the above
3. Record access in a pile file can be conducted by:
   a. Exhaustive search
   b. Key field
   c. Partial index
   d. All of the above
4. Sequential files are optimal in scenarios involving:
   a. Applications that require frequent queries
   b. Applications that require the processing of all records in the file
   c. Applications that require infrequent updates
   d. All of the above
5. Indexed sequential files similar to sequential files, but contain two added features:
   a. Hash function and an overflow file
   b. Hash function and file index
   c. File index and overflow file
   d. All of the above
6. Direct or hashed files are often used where:
   a. Very rapid access is required
   b. Fixed length records are used
   c. Records are always accessed one at a time
   d. All of the above
7. The file directory information element that holds information such as the identity of the creator of the file is the:
   a. Address information element
   b. Access control information element
   c. Usage information element
   d. All of the above
8. In a tree-structured directory, the series of directory names that culminates in a file name is referred to as the:
   a. Pathname
   b. Working directory
   c. Symbolic name
   d. None of the above
9. Access rights on a file typically are considered to constitute a hierarchy, with each right implying those that:
   a. Supercede it
   b. Precede it
   c. Succeed it
   d. None of the above
10. Fixed file blocking experiences the following potential problem:
   a. Gaps due to hardware design
   b. External fragmentation
   c. Internal fragmentation
   d. None of the above
11. In which of the following file allocation methods is preallocation required:
   a. Contiguous

   b. Chained
   c. Indexed
   d. None of the above
12. The technique of free disk space management that employs a pointer and length value of each free portion is the:
   a. Free block list
   b. Bit tables
   c. Indexing
   d. None of the above
13. The data structure that maintains information on available disk space is called the:
   a. File Allocation Table (FAT)
   b. Disk Allocation Table
   c. Bit Table
   d. None of the above
14. File allocation in a UNIX system has the following characteristics:
   a. Dynamic allocation using non-contiguous blocks with indexing
   b. Dynamic allocation using contiguous blocks without indexing
   c. Preallocation using non-contiguous blocks without indexing
   d. None of the above
15. In a W2K NTFS file system, the smallest physical storage unit on the disk (almost always 512 bytes) is called a:
   a. Cluster
   b. Sector
   c. Volume
   d. None of the above

Fill-In-The-Blank Questions:

1. The essential aspects of a _____ are that relationships among data are explicit and that it is designed for use by a number of different applications.
2. The level of the file system architecture that provides a standard interface between applications and the file systems and devices is often termed the _____.
3. A basic requirement for a file management system states that each user should have _____ access to other user's files.
4. The _____ file organization is the only one that is easily stored on tape as well as disk.
5. In the indexed sequential file structure, multiple level of indexing can be used to increase efficiency in _____.
6. The direct file makes use of _____ on the key value.
7. The file directory information element that holds information such as the permitted actions on the file (e.g., reading, writing, executing, etc.) is the _____ information element.
8. Typically, an interactive user or a process has associated with it a current directory, often referred to as the _____.

9. Issues of _____ and deadlock must be addressed in designing the shared access capability for a file.
10. _____ blocking is the common mode of file blocking for sequential files with fixed-length records.
11. The data structure or table that is used to keep track of the portions assigned to a file is referred to as a _____.
12. In order to keep track of the free portions of the disk, a _____ is needed in addition to the file allocation table.
13. Reliability problems can arise when copies of the File Allocation Table and Disk Allocation Table are maintained in _____.
14. UNIX employs _____, which is a control structure that contains the key information needed by the operating system for a particular file.
15. In a W2K NTFS file system, the _____ contains information about files and folders on a particular volume as well as information about available unallocated space.