EXPERIMENT 1

1.1   TOPIC:
File Allocation Strategies

1.2   OBJECTIVE
Write a program to simulate the following file allocation strategies.
        a) Sequential   b) Indexed   c) Linked.

1.3   DESCRIPTION
A file is a collection of data, usually stored on disk. As a logical entity, a file enables to divide data into meaningful groups. As a physical entity, a file should be considered in terms of its organization. The term "file organization" refers to the way in which data is stored in a file and, consequently, the method(s) by which it can be accessed.

1.4.1 SEQUENTIAL FILE ALLOCATION
In this file organization, the records of the file are stored one after another both physically and logically. That is, record with sequence number 16 is located just after the 15th record. A record of a sequential file can only be accessed by reading all the previous records.

1.4.2 LINKED FILE ALLOCATION
With linked allocation, each file is a linked list of disk blocks; the disk blocks may be scattered anywhere on the disk. The directory contains a pointer to the first and last blocks of the file. Each block contains a pointer to the next block.

1.4.3 INDEXED FILE ALLOCATION
Indexed file allocation strategy brings all the pointers together into one location: an index block. Each file has its own index block, which is an array of disk-block addresses. The ith entry in the index block points to the ith block of the file. The directory contains the address of the index block. To find and read the ith block, the pointer in the ith index-block entry is used.

1.4   SAMPLE PROGRAM I/O

1.4.1 SEQUENTIAL FILE ALLOCATION
INPUT
Enter no of files: 3

Enter file name 1: A
Enter starting block of file 1: 85
Enter no of blocks in file 1: 6

Enter file name 2: B
Enter starting block of file 2: 102
Enter no of blocks in file 2: 4

Enter file name 3: C

Enter starting block of file 3: 60
Enter no of blocks in file 3: 4

Enter the file name to be searched => B

OUTPUT

FILE NAME	START BLOCK	NO OF BLOCKS	BLOCKS OCCUPIED
B	102	4	102, 103, 104, 105

1.4.2 LINKED FILE ALLOCATION

INPUT

Enter no of files: 2

Enter file 1: A
Enter no of blocks in file 1: 4
Enter the blocks of the file 1: 12 23 9 4

Enter file 2: G
Enter no of blocks in file 2: 5
Enter the blocks of the file 2: 88 77 66 55 44

Enter the file to be searched: G

OUTPUT:

FILE NAME	NO OF BLOCKS	BLOCKS OCCUPIED
G	5	88 →77→66→55→44

1.4.3 INDEXED FILE ALLOCATION

INPUT

Enter no of files: 2

Enter file 1: A
Enter no of blocks in file 1: 4
Enter the blocks of the file 1: 12 23 9 4

Enter file 2: G
Enter no of blocks in file 2: 5
Enter the blocks of the file 2: 88 77 66 55 44

Enter the file to be searched: G

OUTPUT:

FILE NAME	NO OF BLOCKS	BLOCKS OCCUPIED
G	5	88, 77, 66, 55, 44